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Investigation of the Prevalence and Associated Risk Factors of Asthma and Allergic Diseases in Children aged 13-14 in Adıyaman Province

Adıyaman İlindeki 13-14 Yaş Grubundaki Çocuklarda Astım ve Alerjik Hastalıkların Prevalansı ve İlişkili Risk Faktörlerinin İncelenmesi

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Abstract

Aim: While the prevalence of allergic diseases in Turkey cannot be determined clearly due to the regional nature of the studies, it is known that the frequency is increasing. The aim of this study is to evaluate the frequency of allergic diseases and risk factors in Adıyaman province.

Material and Method: The research was conducted as a cross-sectional prospective. The research was carried out in Adıyaman province between November 2021 and January 2022. The universe of the research consists of students aged 13-14 studying in secondary and high schools.

Results: In our study, the prevalence of wheezing in the chest at any time during their lifetime was determined as 10.5%. In the last year, this rate has been determined as 4.9%. 4.9% of the participants stated that their child was diagnosed with asthma by the doctor. The rate of participants diagnosed with hay fever was 3.1%.

Conclusion: Although allergic diseases and asthma are diseases with an increasing frequency, it is striking that they are not yet fully recognized by the society. Studies have shown that family burden is an important risk factor. The necessity of using all communication channels in order to increase the health literacy of the society shows itself in every research.

Keywords: Allergy, eczema, asthma

Öz

Amaç: Alerjik hastalıkların Türkiye'deki prevalansı, çalışmaların bölgesel olması nedeniyle net olarak tespit edilememekle birlikte, sıklığın arttığı bilinmektedir. Bu çalışmanın amacı, Adıyaman ilinde alerjik hastalıkların sıklığını ve risk faktörlerini değerlendirmektir.

Gereç ve Yöntem: Araştırma, kesitsel, prospektif olarak yapılmıştır. Araştırma Adıyaman ilinde Kasım 2021 – Ocak 2022 tarihleri arasında gerçekleştirilmiştir. Araştırmanın evrenini ortaokul ve liselerde öğrenim gören 13-14 yaş arası öğrenciler oluşturmaktadır.

Bulgular: Çalışmamızda yaşamları boyunca herhangi bir zamanda göğüste hışıltı görülme sıklığı %10,5 olarak belirlendi. Son bir yılda bu oran %4,9 olarak belirlenmişti. Katılımcıların %4,9'u çocuğuna doktor tarafından astım teşhisi konduğunu belirtmiştir. Saman nezlesi tanısı konan katılımcıların oranı %3,1'dir.

Sonuç: Alerjik hastalıklar ve astım görülme sıklığı artan hastalıklar olmasına rağmen toplum tarafından henüz tam olarak tanınmamış olmaları dikkat çekicidir. Araştırmalar aile yükünün önemli bir risk faktörü olduğunu göstermiştir. Toplumun sağlık okuryazarlığının artması için tüm iletişim kanallarının kullanılması gerekliliği her araştırmada kendini göstermektedir.

Anahtar Kelimeler: Alerji, egzama, astım

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INTRODUCTION

Allergic diseases are common in children and adolescents. It imposes a serious financial burden on the health system. In addition, school life for children causes lost days for business life for adults. Despite increasing knowledge about its pathophysiology and diversifying treatment protocols, it is considered that the prevalence increases due to the interaction of genetic and environmental factors such as exposure to cigarette smoke, air pollution, and pollen.[1]

Epidemiological studies have been conducted to determine the prevalence of asthma regionally and globally and to understand risk factors. One of them, ISAAC (International Study of Asthma and Allergies in Childhood), was used to measure the frequency and severity of asthma and allergic diseases in children and adolescents, and later the change in frequency, using a standardized questionnaire.[2] While the prevalence of allergic diseases in Turkey cannot be determined clearly due to the regional nature of the studies, it is known that the frequency is increasing.[3]

In this study, we aimed to investigate the prevalence and risk factors of allergic diseases in adolescent children aged 13-14 in Adıyaman province. We questioned the frequency of asthma, rhinitis and eczema, which are among the allergic diseases. Our study should be evaluated within the scope of ISAAC survey studies.

MATERIAL AND METHOD

Study Design

The research is a cross-sectional prospective study. The research was conducted in Adıyaman province. Data collection took place between November 2021 and January 2022. The population of the research consists of students aged 13-14 studying in secondary and high schools in Adıyaman city center. Schools were selected by cluster sampling method. At least 162 people were included in the study with a confidence level of 95% and a margin of error of 0.05. Questionnaire form was used as data collection tool. Consent form was obtained from the students and their parents, and permission was obtained from the Directorate of National Education.

Statistical Analysis

Data were evaluated in SPSS 20 package program. Qualitative data are presented as numbers and percentages (%). Chi-Square and Fisher's exact tests were used in the analysis of categorical data. For statistical significance, a p value of <0.05 was considered significant.

RESULTS

162 parents participated in the study. the mean age of the children is 13.0±0.2 (Min:13 and max:14). The descriptive characteristics of the children are presented in **Table 1**.

Table 1: Descriptive characteristics of children

Characteristics	Number	%
Breastfeeding status		
Breastfed	132	81.5
Not breastfed	10	6.2
Uninformed	20	12.3
Breastfeeding time		
1-5 months	14	8.6
6-12 months	41	25.3
13 and above months	62	38.3
Person who cares for the child		
At home by mother	143	88.3
At home by caregiver	1	0.6
Other	2	1.2
Smoking in the home		
Yes	99	61.1
No	45	27.8

The incidence of asthma in children whose siblings have asthma is significantly higher than those whose siblings do not have asthma (p=0.015). The incidence of eczema in children whose fathers had eczema was significantly higher than those whose fathers did not have eczema (p=0.005). The incidence of hay fever in children whose parents had hay fever was significantly higher than those whose parents did not have hay fever (p=0.022, p=0.45, respectively).

Table 3: Frequency of allergic diseases in mothers, fathers and siblings of children

Disease	Number	%
Asthma		
Mother	17	10,5
Father	8	4,9
Siblings	10	6,2
Hay fever		
Mother	1	0,6
Father	3	1,9
Siblings	4	2,5
Eczema		
Mother	5	3,1
Father	7	4,3
Siblings	10	6,2
Other allergy		
Mother	8	4,9
Father	3	1,9
Siblings	13	8,0

Table 2: Symptoms observed by parents in their children

Symptoms	Number	%
Anyone who hears wheezing / rustling in their child's chest at any time	17	10.5
Those who have heard wheezing / rustling in their child's chest in the last 12 months	8	4.9
Number of wheezing/rustling heard in the child's chest in the past 12 months		
1-3 time	8	4.9
4-12 time	0	0.0
More than 12 times	0	0.0
Number of nights the child was unable to sleep due to wheezing in the last 12 months		
Less than one night a week	6	3.7
Once a week or more	2	1.2
Children with speech difficulties due to wheezing in the last 12 months	2	1.2
Those who say that the child has asthma	8	4.9
Wheezing in the child's chest after exercise in the last 12 months	6	3.7
Nocturnal dry cough attacks without cold or infection in the last 12 months	23	14.2
Children with runny nose, congestion, sneezing without cold and infection	65	40.1
In the last 12 months, the child has runny nose, congestion, sneezing without a cold or infection	59	36.4
In the last 12 months, the child has itchy eyes without a cold or infection	21	13
Month of nose problem		
January	10	6.2
February	2	1.2
March	5	3.1
April	7	4.3
May	5	3.1
June	2	1.2
July	2	1.2
August	1	0.6
September	3	1.9
October	9	5.6
November	19	11.7
December	24	14.8
The degree to which the child's nose problem has affected his/her daily activities in the last 12 months		
None	17	10.5
Slightly	22	13.6
Moderate	15	9.3
Too much	2	1.2
Children diagnosed with hay fever	5	3.1
Child with an itchy rash in the past 12 months	6	3.7
Spill sites		
Front of elbow	2	1.2
Behind the knee	2	1.2
Anterior ankle	3	1.9
Butt bottom	4	2.5
Around the neck	1	0.6
Ear eye area	1	0.6
Age of rash		
Before 12 months	0	0.0
After 12 months	4	2.5
Number of children who had a rash-free period in the last 12 months	4	2.5
Number of nights awakened due to itchy rash in the last 12 months		
None	3	1.9
Less than 1 night per week	1	0.6
1 night per week or more often	1	0.6
Children said to have eczema	10	6.2
Allergy diagnoses made by the doctor from birth		
Asthma	8	4.9
Hay fever	3	1.9
Eczema	7	4.3
Urticaria	4	2.5
Food allergy	11	6.8

Table 4: Frequency of environmental risk factors in children's home environment

	Number	%	Time (month)
Indoor smoking	50	30,9	
Smoking outside the home	47	29	
Carpet in nursery	150	92,6	
Seeing cockroaches/heating beetles at home			
None	108	66,7	
Rarely	44	27,2	
Often	2	1,2	
Pet feeding			
Dog (n=0)			
Cat (n=4)	1	0,6	7
	1	0,6	12
	1	0,6	24
	1	0,6	48
Fish (n=7)	2	1,2	2
	3	1,8	6
	2	1,2	24
	2	1,2	48
Turtle (n=1)	1	0,6	48
Bird (n=12)	2	1,2	1
	2	1,2	3
	3	1,8	6
	3	1,8	24
	2	1,2	72

DISCUSSION

In our study, the prevalence of wheezing in the chest at any time during their life was determined as 10.5%, while this rate was determined as 4.9% in the last year. While 4.9% of the participants stated that their child was diagnosed with asthma by the doctor, the rate of the participants who were diagnosed with hay fever was 3.1%. In the ISAAC survey study conducted with 568 participants in the province of Malatya, the prevalence of wheezing in the chest at any time during their lifetime was determined as 11.4%, while this rate was 6.3% in the last year. In the same study, the rate of those diagnosed with asthma by a physician was 6.5%.[4] In a study conducted within the scope of a master's thesis published in 2019, the rate of life-long wheezing in Konya was 21.8%, while this rate was 53% in the last year. In studies in Malatya and Adıyaman, it was observed that while the rate of symptomatic patients decreased in the last year, this rate increased significantly in Konya.[5] Parallel to this increase, the rate of those who were diagnosed with asthma by a physician in a study conducted in Konya was 8.7%, which is higher than in other provinces.[6] It is considered that the higher prevalence in Konya is due to the rapid industrialization in the city. In a survey conducted with 85 children living in low-income areas in Ankara and their parents, the lifetime wheezing/wheezing frequency was 12.9%, and this rate was 10.5% in the last year.[7] In our study, it was found that children with asthma

Table 5: Asthma, eczema, hay fever status in children according to some variables

	n	Children diagnosed with asthma by the doctor		
		S	%	p
Breastfeeding				
Breastfed	121	7	5,8	0.446
Not breastfed	9	1	11,1	
Smoking at home				
Smoking	93	5	5,4	0,700
No smoking	41	3	7,3	
Mother's history of asthma				
Maternal asthma (+)	16	1	6,3	0,584
Maternal asthma (-)	123	6	4,9	
Father's history of asthma				
Paternal asthma (+)	6	0	0,0	0,553
Paternal asthma (-)	126	7	5,6	
History of asthma in siblings				
Siblings asthma (+)	10	2	20,0	0,015
Siblings asthma (-)	99	3	3,0	
		Children diagnosed with eczema by the doctor		
Breastfeeding				
Breastfed	121	5	4,1	0,356
Not breastfed	9	1	11,1	
Smoking at home				
Yes	93	5	5,4	0,905
No	41	2	4,9	
Mother's history of eczema				
Maternal eczema (+)	5	0	0,0	0,600
Maternal eczema (-)	134	7	5,2	
Father's history of eczema				
Paternal eczema (+)	7	2	28,6	0,005
Paternal eczema (-)	125	5	4,0	
History of eczema in siblings				
Siblings eczema (+)	10	1	10,0	0,513
Siblings eczema (-)	99	5	5,1	
		Children diagnosed with hay fever by the doctor		
Breastfeeding				
Breastfed	121	3	2,5	0,633
Not breastfed	9	0	0,0	
Smoking at home				
Yes	93	3	90	0,533
No	41	0	0,0	
Mother's history of hay fever				
Maternal hay fever (+)	1	1	100,0	0,022
Maternal hay fever (-)	138	2	1,4	
Father's history of hay fever				
Paternal hay fever (+)	3	1	33,3	0,045
Paternal hay fever (-)	129	1	0,9	
History of hay fever in siblings				
Siblings hay fever (+)	4	1	25,0	0,072
Siblings hay fever (-)	105	1	1,00	

in one of their siblings were significantly more likely to have asthma than those without. Exposure to cigarette smoke, presence of pests at home, having siblings at a higher risk when considering family history as risk factors that increase the incidence of the disease support the hypothesis that genetic and environmental factors increase the incidence of the disease.

When life-long rhinitis symptoms were questioned in our study, it was found that these symptoms were observed in 40.1% of the participants, and this rate decreased to 36.4% in the last year. The fact that only 3.1% of the participants was diagnosed with hay fever is considered to be that the severity of the disease does not affect the quality of life or that the families do not take these symptoms seriously when they increase or decrease seasonally. As a matter of fact, in our study, it was observed that although the symptoms of runny nose increased in the spring months, they intensified in the winter months. In addition, a significant number of parents said that their nasal symptoms did not affect their daily activities at all or very little. These situations explain the fact that a small proportion of the disease is diagnosed despite the proportion of those who show symptoms. In the study conducted by Ozbay and Topal in Malatya province, while the lifetime prevalence of rhinitis symptoms was 36%, this rate was 13.9% in the last year, but the rate of those diagnosed with hay fever remained at 3.9%.[4] In the study conducted by Akçay et al. in Denizli, the lifetime prevalence of rhinitis was 34.2%, while it was 9.6% in the last year, and the rate of those diagnosed was 4.3%.[7] In an ISAAC prevalence study conducted in the province of Tokat in 2010, the prevalence of lifetime rhinitis, prevalence of rhinitis in the last year, and those diagnosed with hay fever were 46.7%, 17.7%, and 10.4%, respectively.[8] Children whose parents were diagnosed with hay fever had a significantly higher risk of developing hay fever than those without. This situation coincides with the fact that the probability of having asthma is increased in those with a sibling with asthma, and it shows the necessity of questioning the family burden of allergic diseases. Although it varies regionally, hay fever symptoms are common in the community in general, but the rate of those diagnosed remains low.

While the rate of lifelong eczema symptoms was 4.3% in our study, this rate was 3.7% in the last year, and the rate of children diagnosed with eczema was 6.2%. Again, in this diagnosis, it was determined that children whose fathers were diagnosed with eczema were at a significantly higher risk than those who did not. When the lifetime prevalence of atopic dermatitis, the prevalence in the last year, and the prevalence of diagnosed children in a study conducted in Malatya were examined, these rates were found to be +.9%, 3.9%, and 5.1%, respectively.[4] While the lifetime prevalence of atopic dermatitis was 28.3% in the prevalence study conducted in Sivas province by Arslan et al., this rate was 20.5% in the last year.[9] In the study conducted in Aydın province with 1537 participants aged 12-13 years, the rate of those with lifelong atopic dermatitis symptoms was 12%, while this rate was 7.4% in the last year. The rate of children diagnosed with atopic dermatitis was 2.8%.[10] In the study conducted by Akçay et al. in Denizli, the rates of lifelong symptomatic, symptomatic and diagnosed in the last year were 20.8%, 15.4% and 2.1%, respectively.[7] Although we could not detect any risk other than family burden in our study, it was observed in other studies conducted in the country that the incidence of atopic dermatitis symptoms is higher in regions with dry and cold climate.

CONCLUSION

Although allergic diseases and asthma are diseases with an increasing frequency, it is striking that they are not yet fully recognized by the society. Studies have shown that family burden is an important risk factor. The necessity of using all communication channels in order to increase the health literacy of the society shows itself in every research.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Adıyaman University Non-Interventional Clinical Researches Ethics Committee (Date: 26.10.2021, Decision No: 2021/08-17).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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