

The prevalence of allergic diseases and related risk factors in 13-14 year-old children living in Malatya

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Abstract

Aim: To determine the prevalence of allergic diseases and related risk factors in 13-and 14- year-old children in Malatya, Turkey.

Material and Methods: 13-and 14-year-old students in the province of Malatya were given the questionnaire of International Study of Asthma and Allergies in Childhood (ISAAC) which was validated.

Results: 304 (53.5%) of the 568 students were females and the mean age was 13.08±0.27 years. The lifetime prevalence of wheezing, rhinitis and atopic eczema were 11.4%, 36.4% , and 4.9% respectively, while the reported prevalence for the last 12 months were 6.3%, 13.9% and 3.9% respectively. The rate of diagnosis by the physician was 6.5% for asthma, 3.9% for allergic rhinitis and 5.1% for atopic dermatitis. When the risk factors related to allergic diseases were examined, the risk factors associated with wheezing were; smoking at home (p = 0.022), parental history of allergic diseases (p =0.012) and cockroaches at home (p = 0.023). Risk factor related to rhinitis is parental history of allergic diseases (p =0.023). Risk factors associated with atopic eczema were female gender (p =0.017) and breast milk intake for less than six months (p =0.034).

Conclusion: This study is the first to investigate the prevalence of allergic disease in the 13-and 14- age group in Malatya by using the ISAAC questionnaire. The current study shows that the prevalence of allergic diseases is not low in children who are living in Malatya.

Keywords: Asthma; Eczema; ISAAC; Prevalence; Rhinitis.

INTRODUCTION

Asthma is a chronic disease characterized by reversible airway obstruction, bronchial hyperresponsiveness and airway inflammation. Its prevalence differs between 2 and 15% in childhood age group (1). Recently, the prevalence of asthma and other allergic diseases has been gradually increasing in our country (2). Environmental factors as well as genetic factors have been reported to play a significant role in different prevalence of allergic diseases in different regions. Being exposed to cigarette smoke, air pollution, viral infections, fungi, animal epithelium and pollens can be given as examples to environmental factors which trigger asthma in children (3). Allergic diseases place heavy burdens on both the family and the society. For example, asthma is one of the most important reasons for referral to emergency services, hospitalizations and absence from school (4). Approximately 6% of referrals to pediatric emergency services are due to asthma attacks and 15-20% of these patients are kept under observation in the emergency service or hospitalized (5-7). Thus, asthma

is a disease which brings a high degree of economic burden on the patient, the family of the patient, the society and health organizations (4). For this reason, having information about the prevalence of allergic diseases and the related risk factors in a region is important in terms of having information about the services that can be given to the patients in this region, the precautions that can be taken and the burden on the society and the economy. The prevalence of allergic diseases in different regions of Turkey has been found with studies conducted. However, no study has been conducted so far on the prevalence of allergic diseases in children from 13 to 14 age group and the related risk factors in province of Malatya. Our aim in this study is to determine the prevalence of allergic diseases and related risk factors in 13-14 year-old children in the province of Malatya.

MATERIAL and METHODS

The study was conducted in the province of Malatya in 2016. The 25,000 children living in Malatya were 13-14

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year-olds. Sample analysis representing the universe was conducted statistically. In the sample analysis, the minimum sample size required to predict at a level of 3% deviation and 95% confidence interval was determined as 532 participants. The study was started after required permissions were taken from the management of schools which were determined.

In the study, "International Study of Asthma and Allergy in Childhood (ISAAC)" questionnaire form which asks questions to children to find out whether they had wheezing, asthma, rhinitis, conjunctivitis, atopic dermatitis, asthma and wheezing attacks during the past year. ISAAC which was translated into Turkish and validated previously (8). ISAAC has been used in our country and various other countries for 6-7 year old and 13-14 year-old children. In our study, we used the ISAAC questionnaire for 13-14 year-olds. The questionnaire form was given to students under the supervision of teachers to be filled by parents. The questionnaire forms filled in by the parents were collected within three days.

The research protocol was approved by the ethics committee of Inonu University Faculty of Medicine. All the participants provided written informed consent.

Statistical Analyses

Statistical assessment was performed by using SPSS (SPSS for Windows, Version 17.0, SPSS Inc, U.S.A) program. Descriptive statistics were expressed as the frequency and percentage for categorical variables, whereas quantitative data were expressed median. Variables related with qualitative data were given as numbers and percentages. Chi-square test was used in the statistical assessment of the data. $p < 0.05$ values were considered as statistically significant.

RESULTS

Of the 650 students who were given questionnaire form, 568 (87.3%) students whose families filled in the questionnaire were included in the study. Three hundred four (53.5%) of the students were females. Their mean age was 13.08 ± 0.27 .

Wheezing attack / Asthma

The 11.4% of the children defined "wheezing" in any period of their lives. The rate of having "wheezing" or attack in the last 12 months was found as 6.3%. The rate of being diagnosed as asthma by the physician was 6.5%. 1.8% of the children were found to have more than 3 wheezing attacks in the last 12 months. In the last 12 months, 4.3% of the children were found to have a complaint of not being able to sleep at night due to wheezing, 1.6% were found to have a difficulty of speaking due to severe wheezing and 4.9% were found to have a complaint of wheezing due to exercise. The complaint of waking up due to cough in the last 12 months was found as 14.6% (Table 1). When the risk factors about wheezing in any period were examined, the factors of cigarette use at home ($p=0.022$), parental allergic disease history ($p=0.012$) and having cockroaches at home ($p=0.023$) were found to be statistically significant.

Allergic rhinitis

In terms of rhinitis complaint, 36.4% of the children defined rhinitis complaint in any part of their life. Rhinoconjunctivitis complaint in the last 12 months was found with a rate of 13.9%. The rate of being diagnosed as allergic rhinitis by the physician was 3.9%. The rate of child's activities being affected more than moderate levels by allergic rhinitis complaints in the last 12 months was found as 10.4% (Table 2). Statistically significant risk factors related to allergic rhinitis were the presence of rhinitis symptoms at any time and parental allergic disease history ($p=0.023$).

Table 1. The prevalence of wheezing, asthma and other symptoms in 13-and 14- year-olds in Malatya

	n (%)
Lifetime wheezing complaint	65 (11.4)
Wheezing complaint in the last 12 months	36 (6.3)
Number of wheezing attacks in the last 12 months	
1-3	26 (4.6)
4-12	9 (1.6)
≥ 12	1 (0.2)
Not being able to sleep due to wheezing in the last 12 months	11 (1.9)
Never woke up	
<1 night a week	18 (3.2)
>1 night a week	6 (1.1)
Difficulty of speaking in the last 12 months due to severe wheezing complaint	9 (1.6)
Wheezing complaints following exercise in the last 12 months	28 (4.9)
Waking up due to cough in the last 12 months	83 (14.6)
Physician-diagnosed asthma so far	37 (6.5)

Table 2. Prevalence of allergic rhinitis in 13-and 14- year-olds in Malatya

	n (%)
Lifetime allergic rhinitis complaint	207 (36.4)
Allergic conjunctivitis in the last 12 months	79 (13.9)
The rate of child's activities being influenced by allergic rhinitis complaint in the last 12 months	
Never	62 (10.9)
Slightly	80 (14.1)
Moderately	52 (9.2)
Too much	7 (1.2)
Physician-diagnosed allergic rhinitis so far	22 (3.9)

Atopic eczema

The 4.9% of the children defined atopic eczema complaint in any period of their life. Atopic eczema complaint in the last 12 months was found with a rate of 3.9%. The rate of being diagnosed with atopic eczema by a physician was 5.1%. The rate of waking up due to itching in the last 12 months was found as 2.3% (Table 3). The risk factors related with the presence of rash for six months and longer were female gender ($p=0.017$) and having been breastfed for less than six months ($p=0.034$).

Table 3. The prevalence of atopic eczema in 13-and 14- year-olds in Malatya

	n (%)
Children who have had lifetime atopic eczema symptoms	28 (4.9)
Children who have had atopic eczema symptoms in the last 12 months	22 (3.9)
Waking up due to itching in the last 12 months	
Never	8 (1.4)
Less than a night a week	8 (1.4)
One night or more in a week	5 (0.9)
Lifetime physician-diagnosed atopic eczema	29 (5.1)

DISCUSSION

The present study is the first study conducted in province of Malatya by using ISAAC questionnaire forms with 13-14 year old school children. In this study, the prevalence of lifetime wheezing was 11.4%, the prevalence of wheezing in the last 12 months was 6.3% and the rate of having been diagnosed with asthma by the physician was found as 6.5%. In a study conducted with 3000 children whose ages were 13-and 14- year-old in Denizli, in 2002, Akçay et al. found the prevalence of lifetime wheezing, the prevalence of wheezing in the last 12 months and the rate of asthma diagnosed by the physician as 10.2%, 5% and 2.1%, respectively (9). In another study conducted in Sivas, in 2008 with 7-15 year-old children, Arslan et al. found the prevalence of lifetime wheezing as 26.8%, the prevalence of wheezing in the last 12 months as 6.5% and the rate of asthma diagnosed by the physician as 10.1% (10). In another study conducted in Zonguldak in 2004 with 6-16 year-old children, Tomaç et al. reported the prevalence of lifetime wheezing as 15.5%, the prevalence of wheezing in the last 12 months as 11.2% and the rate of asthma diagnosed by the physician as 4.9% (11). It can be seen that there are differences between these studies conducted in different regions of Turkey and our study. This difference between the regions can be resulting from environmental factors and climatic conditions. When the risk factors about wheezing were examined, the factors of cigarette use at home, parental allergic disease history and having cockroaches at home were found to be risk factors associated with wheezing. The presence of parental allergic disease history can be explained with the disease being genetically transmitted. We think that with the damage it causes to lower respiratory tracts, cigarette use at home triggers asthma symptoms.

In our study, lifetime rhinitis prevalence was found as 36%. Rhinoconjunctivitis complaint in the last 12 months was found with a rate of 13.9%. The rate of being diagnosed as allergic rhinitis by the physician was 3.9%. In a study conducted in Denizli by Akçay et al., the prevalence of lifetime rhinitis, the prevalence of rhinoconjunctivitis in the last 12 months and the prevalence of having been diagnosed with rhinitis by the physician were found as 34.2%, 9.6% and 4.3%, respectively (9). In the study

conducted by Arslan et al. in Sivas in 2008, the prevalence of lifetime rhinitis was found as 25.2% and the prevalence of allergic rhinoconjunctivitis in the last 12 months was found as 16.9% (10). In an ISAAC study conducted in Tokat with 13-15 year-old children, the prevalence of lifetime rhinitis was found as 46.4%, the prevalence of allergic rhinoconjunctivitis in the last 12 months was found as 17.7% and the prevalence of having been diagnosed with rhinitis by the physician was 10.4% (12). We are of the opinion that the differences in these studies were due to environmental factors and climatic conditions of the regions. When risk factors related with rhinitis were examined, the presence of parental allergic rhinitis was found as a risk factor. This can be explained with the genetic transition of the disease.

In our study, the prevalence of lifetime atopic dermatitis symptoms was found as 4.9% and the prevalence of atopic dermatitis symptoms in the last 12 months was found as 3.9%. The prevalence of atopic dermatitis diagnosed by a physician was 5.1%. In the study conducted in Denizli by Akçay et al., the prevalence of lifetime atopic dermatitis symptoms was 20.8%, the prevalence of atopic dermatitis symptoms in the last 12 months was 15.4% and the prevalence of atopic dermatitis diagnosed by a physician was 2.1% (9). In the study conducted by Arslan et al. in Sivas, the prevalence of lifetime atopic dermatitis symptoms was 28.3% and the prevalence of atopic dermatitis symptoms in the last 12 months was 20.5% (10). In another study conducted with 13-14 year olds in Aydin in 2009 by Cetemen et al., the prevalence of lifetime atopic dermatitis symptoms was 12%, the prevalence of atopic dermatitis symptoms in the last 12 months was 7.4% and the prevalence of atopic dermatitis diagnosed by a physician was 2.8% (13). Based on these results, we believe that the results were caused by climatic differences. In terms of atopic eczema risk factors, female gender and having been breastfed for less than 6 months were found to be risk factors. Breast milk has been shown to be protective in allergic diseases such as asthma in some studies (14,15). There are also some studies which have not reported a significant association with allergic diseases (16).

The limitation of our study was that the participant of study were chosen in the center of province. It may be more accurate if the rural area were be included in the study.

CONCLUSION

As a conclusion, allergic diseases in children are frequent in our region. It has been shown by our study that the presence of allergic disease in parents is a risk factor for the development of allergic disease in children.

Competing interests: The authors declare that they have no competing interest.

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