The Prevalence of Allergy symptoms in Students in Rural Area

Original Article

Iraj Mohammadzadeh (MD) [*1]
Ali Jafarian (MD) [1]
Javad Ghaffari (MD) [2]
Reza Alizadeh-navaei (MD) [2]

1. Non-communicable Pediatric Research Center, Babol University of Medical Sciences, Babol IR Iran.
2. Mazandaran University of Medical Sciences, Sari, IR Iran.

*** Correspondence:**
Iraj Mohammadzadeh, Non-Communicable Pediatric Diseases Research Center, No 19, Amirkola Children's Hospital, Amirkola, Babol, Mazandaran Province, 47317-41151, IR Iran.

E-mail: irjmoh2000@yahoo.com
Tel: +98 1132346963
Fax: +98 1132346963

Received: 28 April 2014
Revised: 26 May 2014
Accepted: 24 June 2014

Abstract

Background: Asthma, allergic rhinitis and eczema as a common disorder in childhood, has many epidemiologic variations in different geographic areas. This study aimed at determining the prevalence of pediatric allergic disease in rural area of Babol.

Methods: This analytical-cross sectional study was performed in 2012 by random sampling on 2 groups of children; the first group aged 6-7 years (n=1735) and the second group aged 12-14 years (n=2080) during 2012. Data was collected by ISAAC first phase questionnaire and analyzed by SPSS 17 and Chi square test.

Results: The prevalence of asthma in elementary school was 19% and in guidance school was 29.9% (p=0.000). The prevalence of allergic rhinitis in primary school in guidance school was 9.9% and 18.1%, respectively (p=0.000). There was no significant difference (p=0.223) between Elementary school (6.1%) and Guidance school (5.5%) in terms of prevalence of eczema.

Conclusions: The results showed that the prevalence of asthma and allergic rhinitis in the rural area of Babol was remarkable that was high in older age group and needs to more attention in health program for decreasing this prevalence.

Keywords: Asthma, Allergic rhinitis, Eczema, Rural Area

Citation:
Mohammadzadeh I, Jafarian A, Ghaffari J, Alizadeh- navaei R. The Prevalence of Allergy symptoms in Students in Rural area. Caspian J Pediatr Sep 2015; 1(2): 50-53.

Introduction

Asthma, allergic rhinitis and eczema as a chronic disease are common in children [1]. The prevalence of these diseases has considerably increased all over the world in recent years [2]. This increase has been observed in different age groups in different populations over the past several decades [1]. The prevalence of asthma symptoms in Iran is higher than that estimated in the international reports, a systematic review and meta-analysis from Iran showed that the lowest prevalence of asthma symptoms was 2.7% in Kerman and the highest was 35.4% in Tehran. The overall prevalence of asthma symptoms at a national level was estimated as 13.14% (95% CI: 9.97–16.3%) [3]. Information about the prevalence of allergic diseases should be effective on its prevention strategies. Genetic and environmental factors are effective on disease prevalence. Different prevalence between regions observed in the past can be recognized at least in part to the use of different survey questionnaire. In recent years, more validate data have been obtained with the International Study of Asthma and Allergy in Childhood (ISAAC) form [4]. The prevalence of allergic diseases was different between countries and sometimes even between regions in the same geographical area [5-7]. Several international studies were done in urban, but studies in rural areas are limited [4-7]. Therefore, the aim of this study was to determine the prevalence of pediatric allergic disease in rural area of Babol.

[Downloaded from caspianjp.ir on 2026-11-13]

[DOI: 10.22088/acadpub.BUMS.1.2.50]

Methods

This study was a cross-sectional study, which has been carried out in 6-7 and 12-14 year-old students in a rural area of the North of Iran in 2012. Our sample size based on p=0.045, a=0.05 and d=0.01 and related formula was calculated 1650 in younger group (6-7 years old) and 1650 in oldest group (12-14 years old). Standard ISAAC questionnaire was used for wheezing, rhinitis and eczema [1].

The exclusion criteria in this study were mentally retarded children. All schools in rural areas of Babol were studied. Each school was a cluster and the students were randomly selected from these schools. The students of elementary school and their parents answered the questions and the students of Guidance school completed the answer sheet alone. Asthma, allergic rhinitis and eczema symptoms, sex and age group were recorded for students.

The study was approved by the Ethic Committee of Babol University of Medical Sciences. Data were analyzed with SPSS 17 and Chi-Square test and odds ratio was calculated. P value less than 0.05 was statistically significant.

Results

The study was performed on 1735 Elementary school children (6 to 7 years) and 2080 guidance school students (12 to 14 years). In Elementary school, 889 (51.2%) and 846 (48.8%) students were female and male, respectively. In guidance school 1015 (48.8%) students were female and 1065 (51.2%) were male.

Frequency distribution of asthma symptoms in children was shown in table 1 and as shown in the table, the distribution of symptoms for ever or current in guidance school students was significantly higher than elementary School. Frequency distribution of allergic rhinitis symptoms in children was indicated in table 2 and is shown as the rate of rhinitis symptoms for ever (p=0.000), symptoms of rhinitis in the current year (p=0.000) and doctor-diagnosed rhinitis (p=0.000) in the Guidance school students were significantly more than the elementary School. Frequency of eczema symptoms was shown in table 3. As shown in the table, the symptoms of eczema (p=0.001) in current years in Guidance school students were significantly lower than elementary school.

Table 1. Distribution of asthma symptoms in children

Asthma symptom		Primary school students N (%)	Guidance school students N (%)	Odds Ratio (CI95%)	p-value
Current year	No	1438 (82.9)	1502 (72.2)	1.86 (1.5-2.1)	0.000
	Yes	297 (17.1)	578 (27.8)		
For ever	No	1406 (81)	1458 (70.1)	1.82 (1.5-2.1)	0.000
	Yes	329 (19)	622 (29.9)		
Doctor-diagnosed	No	1621 (93.4)	1926 (92.6)	1.13 (0.8-1.4)	0.174
	Yes	114 (6.6)	154 (7.4)		

Table 2. Distribution of allergic rhinitis symptoms in children

Allergic rhinitis symptom		Primary school students N (%)	Guidance school students N (%)	Odds Ratio (CI95%)	p-value
current year	No	1596 (92)	1789 (86)	2.1 (1.9-2.7)	0.000
	Yes	139 (8)	291 (14)		
For ever	No	1564 (90.1)	1704 (81.9)	2 (1.6-2.4)	0.000
	Yes	171 (9.9)	376 (18.1)		
Doctor-diagnosed	No	1657 (95.5)	1843 (88.6)	2.7 (2-3.5)	0.000
	Yes	78 (4.5)	237 (11.4)		

Table 3. Distribution of atopic eczema symptoms in children

Atopic eczema symptoms		Primary school students N (%)	Guidance school students N (%)	Odds Ratio (CI95%)	p-value
current year	No	1632 (94.1)	1976 (95)	1.2 (1.1-1.9)	0.001
	Yes	103 (5.9)	104 (5)		
At least 6 month for ever	No	1629 (93.9)	1966 (94.5)	0.89 (0.6-1.1)	0.223
	Yes	106 (6.1)	114 (5.5)		
Doctor-diagnosed	No	1671 (96.3)	1980 (95.2)	1.3 (0.9-1.8)	0.052
	Yes	64 (3.7)	100 (4.8)		

[Downloaded from caspianjp.ir on 2026-11-13]

[DOI: 10.22088/acadpub.BUMS.1.2.50]

Discussion

According to this study, prevalence of asthma symptoms in primary school students and Guidance school was 19% and 29.9%, respectively (p=0.000). In a study performed in Korea by Suh et al.'s the prevalence of asthma was 4.8 % and the prevalence rate was statistically significant between urban and rural areas [8]. In another study conducted by Guner et al.'s. in Turkey, the prevalence of asthma was 11.5%, but this rate was not significantly different between urban and rural areas [4]. Also, in Ma et al.'s the prevalence of asthma in rural areas (1%) was significantly lower than urban areas (7.2%) in China [9]. Shakurnia et al.'s showed the prevalence of asthma in the 13-14-year-old students was 14.1% in Ahwaz of Iran [10]. Our previous study in urban area of Babol showed that the prevalence of wheezing in the last 12 months in elementary and guidance school was 16.8% and 21.7%, respectively [11]. Comparative studies show that the prevalence of asthma symptoms in Iran was higher than in other countries and in our region was higher than other regions of Iran. These differences may due to genetic and geographic distribution.

In the present study, the prevalence of allergic rhinitis symptoms in children of elementary and guidance school was 9.9% and 18.1%, respectively (p=0.000). In Suh et al.'s study in Korea, the prevalence of allergic rhinitis was 32.9% and this rate was significant difference between urban and rural areas [8]. In Guner et al.'s study in Turkey in 2011, the prevalence of allergic rhinitis was 22.1% and this rate was not significant difference between urban and rural areas [4]. Also, in a study which was performed by Ogorodova et al.'s in Russia, the prevalence of allergic rhinitis in rural areas was 38.9% [12] that was higher than the present study. Nevertheless, in Ma et al.'s study in China, the prevalence of allergic rhinitis in rural areas (1.1%) was significantly (P<0.05) lower than urban area (6.3%) [9]. In Shakurnia et al.'s study in Ahvaz in Southwest of Iran, the prevalence of allergic rhinitis in guidance school was 18.2% [10]. Also, the prevalence of allergic rhinitis symptoms in the last 12 months in elementary and guidance school in our previous study was 16.8% and 21.7%, respectively, in urban area of Babol [11]. Results our findings showed that the prevalence of allergic rhinitis symptoms in rural areas was similar to in urban of our region. Nevertheless, the differences between different regions could be due to ethnic differences and the influence of geographical environment.

According to the results of the present study, the prevalence of eczema symptoms among elementary (6.1%) and guidance school children (5.5%) was not significantly difference (P=0.223). Our previous study in urban area of Babol showed that the prevalence of eczema in elementary and guidance school was 4.5% and 8.2%, respectively [1]. In a study by Hogewoning et al.'s in Ghana, Gabon and Rwanda, the prevalence of eczema had no significant difference in urban and rural areas. The point prevalence of eczema in Ghana was 1.5 to 1.6% in Gabon 4% and in Rwanda 0.8% [13]. In another study was performed in Turkey that eczema prevalence rate was 10.7% and there were no significant differences between urban and rural areas [4]. Comparing the results of these studies indicated that the prevalence of eczema in different areas was equal and there was significant difference between geographic areas in terms of asthma.

Finally, compared with national and international studies, the results of this study showed that the prevalence of allergic disease in our area was higher than other regions. This difference may be due to moderately hot and humid climate of the region or to the greater use of domestic animals and poultry in rural areas and forest cover in some rural areas of our region.

In conclusion, the results showed that the prevalence of asthma and allergic rhinitis which was high in older age group was remarkable in the rural area of Babol and needs to more attention in health program for decreasing this prevalence.

Acknowledgment

The authors wish to thank the Research Council, staff of Clinical Research Development Committee of Amirkola Children's Hospital, Mrs. Faeze Aghajanpour, all children, parents and teachers for their contribution to this study.

Funding: This study was supported by a research grant and Residency thesis of Dr Ali Jafarian from the Non-Communicable Pediatric Diseases Research Center of Babol University of Medical Sciences (Grant Number: 9133415).

Ethical approval: This study obtained ethics committee approval.

Conflict of interest: There was no conflict of interest.

[Downloaded from caspianjp.ir on 2026-11-13]

[DOI: 10.22088/acadpub.BUMS.1.2.50]

References

1. Beasley R, Ellwood P, Asher I. International patterns of the prevalence of pediatric asthma the ISSAC program. Pediatr Clin North Am 2003; 50(3): 539-53.
2. Solis-Soto MT, Patiño A, Nowak D, Radon K. Association between environmental factors and current asthma, rhinoconjunctivitis and eczema symptoms in school-aged children from Oropeza Province-Bolivia: a cross-sectional study. Environ Health 2013; 12(95): 1-9.
3. Entezari A, Mehrabi Y, Varesvazirian M, et al. A systematic review of recent asthma symptom surveys in Iranian children. Chron Respir Dis 2009; 6(2): 109-14.
4. Guner SN, Gokturk B, Kilic M, Ozkiraz S. The prevalences of allergic diseases in rural and urban areas are similar. Allergol Immunopathol (Madr) 2011; 39(3): 140-4.
5. Zeyrek CD, Zeyrek F, Sevinc E, Demir E. Prevalence of asthma and allergic diseases in S¸anliurfa, Turkey, and the relation to environmental and socioeconomic factors: Is the hygiene hypothesis enough? J Investig Allergol Clin Immunol 2006; 16(5): 290-5.
6. Demir AU, Karakaya G, Bozkurt B, et al. Asthma and allergic diseases in schoolchildren: third cross-sectional survey in the same primary school in Ankara, Turkey. Pediatr Allergy Immunol 2004; 15 (6): 531-8.
7. Yuksel H, Dinc G, Sakar A, et al. Prevalence and comorbidity of allergic eczema, rhinitis, and asthma in a city in western Turkey. J Investig Allergol Clin Immunol 2008; 18(1): 31-5.
8. Suh M, Kim HH, Sohn MH, et al. Prevalence of allergic diseases among Korean school-age children: a nationwide cross-sectional questionnaire study. J Korean Med Sci 2011; 26(3): 332-8.
9. Ma Y, Zhao J, Han ZR, et al. Very low prevalence of asthma and allergies in school children from rural Beijing, China. Pediatr Pulmonol 2009; 44(8): 793-9.
10. Shakurnia A, Assar SH, Afra M, Latifi M. Prevalence of Symptoms of Asthma, Allergic Rhinitis and Eczema in 6-7 and 13-14 years old Ahvazian School children. Sci Med J 2011; 9(6): 593-603.
11. Mohammadzadeh I, Ghafari J, Savadkoohi RB, et al. The Prevalence of Asthma, Allergic Rhinitis and Eczema in North of Iran: the International Study of Asthma and Allergies in Childhood (ISAAC). Iran J Pediatr 2008; 18(2): 117-122.
12. Ogorodova LM, Kamaltynova EM, Deev IA, et al. Epidemiology of allergic rhinitis in children residing in the city of Tomsk and rural areas of the Tomsk region. Vestn Otorinolaringol 2010; 3: 19-23.
13. Hogewoning AA, Bouwes Bavinck JN, Amoah AS, et al. Point and period prevalences of eczema in rural and urban schoolchildren in Ghana, Gabon and Rwanda. J Eur Acad Dermatol Venereol 2012; 26(4): 488-94.

[Downloaded from caspianjp.ir on 2026-11-13]

[DOI: 10.22088/acadpub.BUMS.1.2.50]