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Prevalence of Asthma and Related Symptoms in School-Aged Children in Boroojerd -IRAN

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ABSTRACT

Background: *Asthma is the most common respiratory disease among children, which is widely underdiagnosed. This epidemiological study was performed between 1998 and 1999 in Boroojerd to determine the prevalence of asthma and its risk factors among school-aged children.*

Materials and Methods: *The ISSAC written questionnaires were used.*

Results: *A total of 1287 of 1331 questionnaires (96.7%) were returned. Prevalence of physician diagnosis of asthma, asthma ever, current asthma, and episodically nocturnal cough with chest tightness were 1.5%, 21.1%, 5.7%, and 16.6% respectively. Main risk factors for childhood asthma included: familial history of asthma, large family size, history of severe respiratory infection in early childhood, paternal smoking, and keeping birds at home.*

Conclusion: *There is a high prevalence rates for asthma among 7-12 year old children in non-pollutant towns such as Boroojerd.* ***(Tanaffos 2002;1(1):22-27)***

Keywords: *Asthma, Childhood, Prevalence.*

INTRODUCTION

Respiratory diseases are among the leading causes of mortality and morbidity at any age(1,2,3). Asthma is the most common chronic disease in childhood (4,5) where 6-7% of all school-aged children are affected(12,13). Childhood asthma is followed by child's failure to attend school as well as parent's wastes of working-hours(2).

During the previous decades, asthma and its related mortality have been increased worldwide , particularly in countries with western life-style (6,7,8,9). Epidemiological studies over asthma are mainly performed in primary schools. The prevalence of asthma varies among different countries and geographical areas; therefore, the international study of asthma and allergies in childhood (ISSAC) was setup(10,11).

This program was undertaken in Boroojerd, an ancient town situated in a mountainous region in the west of Iran. Style of living in this small town is a sample of traditional Iranian urbanity. Indigenous industries are of great interest there, thus main pollutant industries hav not appeared yet.

MATERIALS AND METHODS

A total of 1331, including 645 boys and 686 girls, were selected through a cluster sampling in 1999. 29 schools with 30 classes, 15 for boys and 15 for girls were chosen randomly. The ISSAC written

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questionnaires with some additional questions were used. Details of the questionnaires were explained and two medical students mimicked wheezing. Self-administrated questionnaires were given to the children and completed by their parents. If the one of the participants was absent, another visit took place.

Definition of terms

-Asthma diagnosed ever:a physician has clearly told parents that their child had asthma.

-Allergy diagnosed ever: recurrent episodes of sneezing, itching [pruritis], and nasal discharge or nasal congestion.

- Airway hypersensivity diagnosed ever: recurrent episodes of cough, chest tightness, and/or dyspnea.

- Asthma ever: history of paroxysmal dyspnea with wheezing in lifetime.

- Current asthma: history of at least one episode of dyspnea with wheezing in the last 12 months.

- Non-specific complaints :related-symptoms without documented diagnosis of asthma, i.e exercise-induced wheezing and dyspnea, exercise-induced cough, and frequent nocturnal dyspnea or cough.

The data was analyzed using SPSS version.10.5 software. We made a comparison between age and sex using chi-square test. We did a multivariate analysis using multiple regression.

RESULTS

A total of 1287 of 1331 questionnaires (96.7%) were returned. There is no relation between age and prevalence of asthma ever. However multiple regression analysis revealed a significant relation between prevalence of current asthma and age increase. Table 1 shows age and sex distribution of the participants. Correlation between current asthma and asthma ever with risk factors is indicated in Table 2. Table 3 shows the prevalence of parents' smoking or Hubbell-bubble (kalyan) addiction. Table 4 indicates the prevalence of asthma and the related symptoms.

Table 1. Age distribution of children by gender.

Age (year)	Male(%)	Female(%)	Total(%)
<7	1(0.2)	3(0.5)	4(0.4)
7	69(13.5)	71(12.5)	140(13)
8	72(14.1)	135(23.7)	207(19.2)
9	88(17.2)	107(18.8)	195(18.1)
10	87(17)	100(17.6)	187(17.3)
11	117(22.9)	132(23.2)	249(23.1)
12	61(11.9)	20(3.5)	81(7.5)
>13	16(3.1)	1(0.2)	17(1.6)
Total	511(47.3)	569(52.7)	1080(100)

*207 cases didn't mentioned their age.

Table 2. Correlation between pulmonary asthma and active asthma and some important risk factors

Variable	Asthma ever	current asthma
	P-value	
Age	NS	0.001
Gender	NS	0.004
Education level of father	0.026	0.006
Paternal smoking	0.025	0.035
The number of households	0.002	NS*
History of early childhood Respiratory infection	0.001	0.001
Similar disease of parents	0.015	0.05
Similar disease of siblings	0.046	0.023
Keeping birds at home	0.013	0.007

* NS=Non Significant

Table 3. The prevalence of smoking and hookah addiction among the parents of understudy by cases.

	Smoking(%)	Giving up(%)
Father	260(20.2)	34(2.7)
Mother	10(0.8)	87(6.7)

Table 4. The prevalence of asthma and probable related respiratory symptoms in the understudy population.

gender	Male(%)	Female(%)	Statistical significance	
			P-value	OD*(CI)**for boys
History of diagnosed asthma	15(2.4)	4(0.6)	0.009	(5.9-1.03)2.47
History of upper respiratory tract Hypersensitivity	26(4.2)	21(3.2)	NS	
History of lower respiratory tract Hypersensitivity	34(5.5)	13(2)	0.001	(3.02-1.2)1.9
Asthmatic attack life time	148(23.8)	124(18.7)	0.029	(1.32-1.02)1.3
Active asthma during past 12 months	46(7.4)	27(2.1)	0.01	(1.59-1.01)1.3
Nocturnal cough and chest tightness	100(16.1)	114(17.2)	NS	
Exercise induced asthma	173(13.4)	221(34.4)	0.34	(0.99-0.77)0.87

*OD=Odd Ratio **CI=Confidence Interval

DISCUSSION

Our findings indicated that prevalence of asthma ever (21.1%) and current asthma (5.7%) were more than expected rates in Boroojerd. However these rates are less than reported data from England, Newzeland, and Australia (14,15,16), but in comparison with German, Greece (17,18), and some of the Asian countries these rates are high. The prevalence of disease in Boroojerd was similar to the reported data from Korea, Canada (19,20,21), and Turkey. Regarding to the relatively low rate of air pollutants in Boroojerd, these findings may indicate the influence of ethnical difference.

Structural design of buildings in Boroojerd causes not to have drafty rooms;in addition , relatively cold weather aggravates ventilation problems. This may lead to high densities of indoor endotoxins and biological remnants(19,22,23,24). Therefore, it is highly recommended to examine the rule of endotoxines and protein remnants in the prevalence of asthma. Our study, unlike that of others (25), didn't indicate relation between insects i.e. cockroaches and asthma.

Dissimilarity between diagnosed asthma (1.5%) and actual prevalence of disease (21.2% asthma ever vs. 5.7% current asthma) was observed in this study like other reports throughout Iran (12,13) and the world(26,27). This finding is unlikely due to physician carelessness(28). Developing chronic disease is a fearful dilemma for parents, thus physicians are obliged to use substituted terms (allergy, hypersensitivity) instead of asthma. We believe that mass media can play a crucial role in promoting the people's knowledge about the nature of disease in order to diminish their worries.

Boys had higher prevalence rate than girls for symptoms of asthma. This significant difference didn't increase the risk of developing asthma among boys more than 1.4 times (Table 4). This seems to reflect a true gender difference and suggests that physicians in Boroojerd may underdiagnose asthma in girls, needless to say, special attention should be paid to asthma-related symptoms among girls.

Asthma is recognized as a nonprogressive disease and patients can be expected to experience improvement, as they grow older. We found opposite results, as reported by prior Iranian investigators (13).This means that either improvement has not occurred or number of new diagnosed cases is more than improved patients.

Each factor, mentioned below has a significant relation with asthma: Low-educated parents (particularly fathers), densely populated family (29,30), history of similar disease in family (19), paternal smoking (32) and the history of sever

respiratory infection in early childhood.The determined relationship between early respiratory infection and prevalence of asthma is not a reliable finding because different physicians might have interpreted it differently. Meanwhile, new data disproved the protective effect of infection against asthma(31).

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