

To Study the Incidence of Asthma among Children in a Rural Block of Haryana (India)

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Abstract

Background: Children represent the largest subgroup of the population susceptible to the adverse health effects of air pollution. Air pollution causes irritation or inflammation that's more likely to obstruct narrower airways.

Material and methods: This study was cross-sectional and was carried out in twenty villages of Beri block of district Jhajjar which is a rural field practice area of department of community medicine Pt. B D Sharma PGIMS, Rohtak (Haryana) India.

Study period: January 2006-June 2006.

Study participants: Pediatric population in the age group of 0-5 years.

Results: A total of 2,250 children between 0-5 years were screened for bronchial asthma. 1150/2250 (633 males and 517 females) had diagnosed of respiratory cases, giving a prevalence rate of 51.1%. The study found the maximum patients 45.2% were of bronchial asthma followed by cough 315 cases (27.3%). The study also depicted that Indoor pollution i.e Smoke produced from cowdung, kerosene, wood, kitchen smoke etc. were in 374 (72.0%) cases, 312 (60%) cases had overcrowded families while 39% cases gave the history of smoking in families.

Conclusions: Air pollution contributes to increase in the number of bronchial asthma cases and asthma aggravation in the world. The study concluded that reduction in the indoor smoke can decrease the incidence of bronchial asthma in children.

Introduction

In children, bronchial asthma is a common disease and an important cause of morbidity and this disease is on increasing trend in developing countries like India. Smoke produced whether from tobacco or by fuels has got important effects on asthma. Children represent the largest subgroup of the population susceptible to the adverse health effects of air pollution. Air pollution causes irritation or inflammation that's more likely to obstruct narrower airways. Further more exposure to a pollutant, trigger's an asthma attack due to the sensitivity of a child's developing respiratory system. In India, pediatricians face a common problem of bronchial asthma among children. Globally, many studies have been conducted but no epidemiological study defined the magnitude of the problem of asthma among children. The present study on rural children of district Jhajjar was conducted to determine the incidence, age distribution and epidemiological factors associated with asthma in children aged 0-5 years.

Material and Methods

This study was carried out during the year January 2006-June 2006 on the pediatric population in the age group of 0-5 years residing in twenty villages of Beri block of district Jhajjar which is a rural field practice area of department of community medicine Pt. B D Sharma PGIMS, Rohtak (Haryana), India. These villages are situated about 25-35 kms from District Rohtak. The main source of income in these villages is related to agricultural practices. The study population were consisted of 2,250 children; 1,200 males and 1050 females. The oral interviewing technique was used. All informations of study subjects like age, sex, socioeconomic class, symptoms, environmental factors, family history of allergy and asthma, history of smoking in the family were collected on a pre tested semistructured questionnaire. The socioeconomic status of the study subject was also calculated using Modified Udai Pareek Scale for rural area [1].

Results

A total of 2,250 children between 0-5 years were screened for bronchial asthma. There were 1,200 boys and 1050 girls. Out of 2,250 children in the study group, 1150/2250 (633 males and 517 females) had diagnosed of respiratory cases, giving a prevalence rate of 51.1%. This table depicted that maximum children (45%) were diagnosed in the age group 1-3 years (Table 1).

The present study found the maximum patients 45.2%, i.e. 520/1150 cases were of bronchial asthma followed by cough 315 cases (27.3%), 175 (14.0%) cases of cough with cold and 40 cases (3.5%) being diagnosed of pneumonia (Table 2).

In the present study, Indoor pollution, i.e Smoke produced from cowdung, kerosene, wood, kitchen smoke etc., were in 374 (72.0%) cases; 312 (60%) cases had overcrowded families while 39% cases gave

Age group (yrs)	Male	Female	Total	%
0-1	141	100	241	(21.0)
1-3	275	242	517	(45.0)
3-5	217	175	392	(34.0)
Total	633	517	1150	100

Table 1: Age and sex distribution of cases (n=1150).

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Symptoms	Cases (n=1150)	
Bronchial asthma	520	(45.2)
Cough	315	(27.3)
Cough with cold	175	(14.0)
Pneumonia	40	(3.5)

Figures in parentheses indicate percentages

Table 2: Symptom wise distribution of cases (n=1150).

Environmental Factors*	Cases	%
Indoor pollution	374	(72.0)
Overcrowded family	312	(60.0)
Smoking in the family	203	(39.0)
Animals in household	182	(35.0)
Family history of allergy/asthma	145	(28.0)

*Multiple responses

Table 3: Association of environmental factors with bronchial asthma (n=520).

Socio-economic status	Cases (%)
Upper Lower	16 (3)
Lower	20 (4)
Upper Middle	105 (20)
Lower Middle	300 (58)
Upper	79 (15)

Figures in parentheses indicate percentages

Table 4: Association of bronchial asthma with socio-economic status (n=520).

the history of smoking in families. This study also revealed that animals were found in 182 houses (35.0%) and family history of allergy/asthma was noted in 145 (28.0%) among bronchial asthma cases (Table 3).

Out of 520 cases, maximum number i.e. 405 (78.0%) belonged to middle socio-economic class while 79 (15%) belonged to upper class (Table 4). School absenteeism was observed in 65% patients with asthma. Mean loss of school days over one year was 16.5 ± 8.45 days.

Discussion

The present study revealed that the prevalence of asthma in rural area among children was 520 (45.2%). In India, the data about the prevalence of bronchial asthma is paucity. In a study carried out by Chhabra et al. they reported the prevalence of bronchial asthma 11.9% among Delhi school children [2]. They quoted the reasons of higher prevalence in their study could be due to allergens or environmental pollution that precipitating development of asthma among susceptible children.

The study also found the significant association between family history of allergy/asthma and bronchial asthma cases i.e. the bronchial asthma was found higher in those having family history of allergy/asthma. In India, this association has also been documented in various other studies. Vishwanathan et al. also depicted that strong association between family history of allergy/asthma and bronchial asthma and they reported that the family history of asthma was 42% among asthmatic subjects [3]. Gerrard et al. revealed that the relationship between bronchial asthma with hay fever and recurrent rhinitis in parents and children was statistically significant [4]. Chhabra et al. reported in their study that family history of atopic disorders and the prevalence of asthma was significantly associated [2].

The present study showed that 374 (72.0%) bronchial asthma cases were seen where indoor pollution i.e smoke produced from cowdung, kerosene, wood, kitchen smoke etc. were produced in the families. This study also reported that animals were found in 182 houses (35.0%).

Bener et al. observed increased prevalence rate of bronchial asthma among study subjects belonging to families having animals [4]. More than two third i.e. (78%) of bronchial asthmatic patients belonged to middle socio-economic class. However, other studies also showed no association between bronchial asthmatic patients and socio-economic class [5,6].

Conclusions and Recommendations

There is a widespread concern that the prevalence and incidence of asthma is still rising in developed countries, but the economic and humanitarian effects of asthma are greater in the developing world, where the prevalence is also rising. Usually the children of low socioeconomic status family are the worst sufferers from indoor pollution. The asthmatic children were not only absent from school, they affects their families in terms of work and also decreases their quality of life. This is fact that the air pollution contributes to increase in number of bronchial asthma cases and asthma aggravation in the world. In India, main problem in the treatment of bronchial asthma in children are cultural beliefs, poor socio-economic condition families, and use of alternate medicine. The study concluded that reduction in the indoor smoke can decrease the incidence of bronchial asthma in children.

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