

# Assessment of Risk Factors Associated with Bronchial Asthma: A Hospital Based Study

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## ABSTRACT

**Background:** Asthma is a heterogeneous entity that is the result of complex interactions between environmental and genetic factors. The expression of the disease can vary with age, sex, airway inflammation patterns or severity, association with atopy or other triggering factors.

**Aim of the Study:** To assess risk factors associated with bronchial asthma.

**Materials and Methods:** The study was conducted in the department of general medicine of the PDDU Government Hospital, Sagwara, Dungarpur, Rajasthan. For the study we selected asthmatic patients reporting to the department OPD. A total of 80 patients were included in the study. A detailed clinical and medical history was taken for each patient. A questionnaire was used for asking the questions to the patients. The history from each patient was taken by trained professionals.

**Results:** A total of 80 patients were included in the study. Number of male subjects was 34 and female subjects were 46. The mean age of the subjects in study group was 42.21 years.

**Conclusion:** There are number of risk factors for bronchial asthma in patients. If these risk factors are avoided from an early age, we can significantly improve prevalence of bronchial asthma.

**Keywords:** Bronchial Asthma, Smoking, Respiratory.


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## INTRODUCTION

Asthma is a heterogeneous entity that is the result of complex interactions between environmental and genetic factors.<sup>1</sup> The expression of the disease can vary with age, sex, airway inflammation patterns or severity, association with atopy or other triggering factors. In recent years, various clinical subtypes of asthma have been described and to date it is still unknown whether they are variations of a same disease or whether, contrarily, they are different diseases that run their course with similar symptoms.<sup>2</sup> Although genetic predisposition is clearly evident, gene-by-environment interaction probably explains much of the international variation in prevalence rates for allergy and asthma.<sup>3</sup> Environmental factors such as infections and exposure to endotoxins may be protective or may act as risk factors, depending in part on the timing of exposure in infancy and childhood.<sup>4</sup> Some prenatal risk factors, including maternal smoking, have been firmly established, but diet and nutrition, stress, use of antibiotics and mode of delivery may also affect the early development of allergy and asthma.<sup>5</sup> Later in childhood, putative risk factors include exposure to allergens, breastfeeding (which may initially protect and then increase the risk of sensitization), family size and structure, and sex and gender. In adulthood, recurrence of childhood asthma may be just as

common as new-onset asthma, which may have an occupational basis.<sup>6</sup> Hence, we planned the study to assess risk factors associated with bronchial asthma.

## MATERIALS AND METHODS

The study was conducted in the department of general medicine of the PDDU Government Hospital, Sagwara, Dungarpur, Rajasthan. For the study we selected asthmatic patients reporting to the department OPD.

### Inclusion Criteria

- Age ranging from 18-65 years
- History of asthma not less than 3 years
- Absence of any other systemic condition such as diabetes, leukemia

A total of 80 patients were included in the study. A detailed clinical and medical history was taken for each patient. A questionnaire was used for asking the questions to the patients. The history from each patient was taken by trained professionals. The information taken was history of irritants exposed as a child, history of asthma in parents, smoking status of patients and his/her patients, allergic rhinitis as child, respiratory infections, pollution level in city etc. The collected data was tabulated and statistically analyzed.

The statistical analysis of the data was done using SPSS version 20.0 for windows. The Student's t-test and Chi-square test were used to check the significance of the data. The p-value less than 0.05 was predetermined as statistically significant.

**RESULTS**

We planned the study to assess the risk factors associated with bronchial asthma.

Table 1 shows the demographic data of the patients. A total of 80

patients were included in the study. Number of male subjects was 34 and female subjects were 46. The mean age of the subjects in study group was 42.21 years.

Table 2 shows the frequency of patients as per risk factors of bronchial asthma. We observed that 21 patients were smokers, 8 patients were exposed to irritants at occupation, 12 patients were living in industrial area, 29 patients lived a sedentary lifestyle with minimal physical activity and 18 patients had history of asthma in 18 patients [Fig 1].

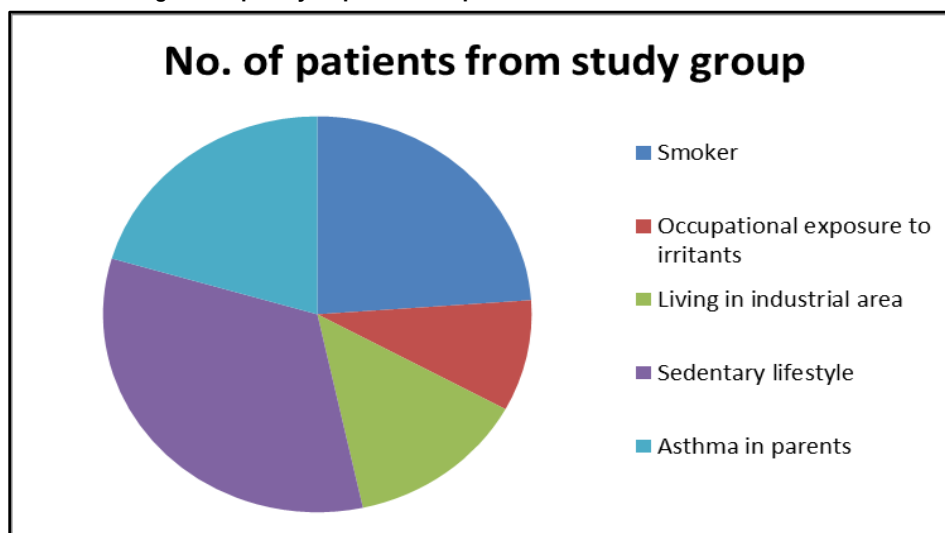
**Table 1: Demographic variables of the patients**

Variables	Mean values
Total no. of subjects in population	80
No. of male subjects	34
No. of female subjects	46
Mean age of the subjects (years)	42.21

**Table 2: Frequency of patients as per risk factors of bronchial asthma**

Risk factors	No. of patients from study group	p-value
Smoker	21	0.001
Occupational exposure to irritants	08	
Living in industrial area	12	
Sedentary lifestyle	29	
Asthma in parents	18	

**Fig 1: Frequency of patients as per risk factors of bronchial asthma**



**DISCUSSION**

The WHO recognizes asthma as a major health problem. Still, there is paucity of data on the prevalence of bronchial asthma among adolescents in India. Residing in a rural area, exposed to cigarette smoke from friends, and family history of asthma were associated with the bronchial asthma. In the present study we assessed risk factors associated with bronchial asthma. We observed that maximum risk factor in study population for bronchial asthma was sedentary lifestyle followed by positive smoking status. The results were statistically significant. The results were compared with previous studies and results were consistent with previous studies. Boneberger A et al assessed the impact of environmental factors in the first year of life on asthma. A case-control study including 188 asthmatics and 294 hospital-based controls aged 6-15 years was carried out in the Central

South of Chile. Parents of study participants completed a computer-assisted interview on environmental factors (such as birth order, day-care attendance, pneumonia infection, regular animal and furry pet contact, and environmental tobacco smoke exposure) in the first year of life and potential confounders. Atopy was assessed using skin prick tests. Multivariate logistic regression models were calculated to assess the association between exposures and asthma, adjusting for potential confounders. Day-care attendance and regular farm animal contact were inversely related to childhood asthma in the logistic regression models. Pneumonia infection and mold or dampness in the home in the first year of life was positively associated with asthma. Their results suggested that the hygiene hypothesis is also applicable in the Chilean setting, a South American country in epidemiological transition. Al-Mazam A et al determined the risk

factors of asthma in Bahrah. The study was comprised of 110 cases of bronchial asthma resident in Bahrah who were diagnosed by the treating physicians and 110 healthy controls matched in age and sex. A questionnaire was completed from cases and controls, consisting of data regarding personal, familial, indoor and outdoor environmental factors that may be potential risk factors to asthma. Bivariate and multivariate logistic regression analyses were done to assess risk factors. The mean ages of cases and controls were 22.4 ( $\pm$  16.7) and 22.8 ( $\pm$  16.1) years, respectively. Each group consisted of 64 males (58%) and 46 (42%) females. There was a significant association between distance from houses to brick factories and bronchial asthma. Multivariate logistic regression analysis showed that living within one kilometer of a brick factory, family history, allergic rhinitis, skin atopy and recurrent respiratory tract infections were independent risk factors for asthma in Bahrah. It was concluded that brick factories, family history and history of rhinitis, skin atopy, or recurrent respiratory tract infections are risk factors of bronchial asthma.<sup>9, 10</sup> Lalu JS et al estimated the prevalence of bronchial asthma among higher secondary school children and to identify various factors associated with it in Ernakulam district, Kerala, Southern India. The study was conducted in Ernakulam district, the industrial capital of Kerala. A school-based cross-sectional study was conducted. Data were collected from 629 students from 4 randomly selected higher secondary schools using a structured questionnaire. Section on details of respiratory symptoms was adapted from International Union against Tuberculosis and Lung Disease bronchial symptoms questionnaire. A total of 629 students participated in this study. The prevalence of bronchial asthma was estimated to be 9.9%. Students residing in a rural area having family history of bronchial asthma and usual exposure to friend's smoke were significantly associated with bronchial asthma. They concluded that the prevalence of bronchial asthma was higher among higher secondary school students of Ernakulam district. Kumar GS et al assessed the prevalence and associated factors of bronchial asthma among school children. A cross-sectional study was conducted among 263 children studying in the 8th, 9th, and 10th standard using the modified International Study on Allergy and Asthma in Childhood questionnaire in Urban Puducherry. Data on associated factors that include family history of asthma, type of fuel used for cooking, placement of kitchen in the house, number of windows in sleeping room, pet animals, smoking among family members, birth order, and smoke outlet were collected. Data were analyzed by univariate analysis and expressed in proportion or percentages. Prevalence of ever bronchial asthma was found to be 5.3%, of which 4.2% had current episode of asthma during the last 1-year period. About 72.7% of the current asthmatics had cold or rhinitis and 54.5% each had itching or rashes and nocturnal dry cough. Prevalence is more among the 12-13 years age group (6.5%) compared to the 14-16 years age group (3.6%). Boys (5.4%) and girls (5.2%) had comparable prevalence rates. The prevalence was significantly more among those with a family history of asthma, having smoking habits in any of the family members, and the absence of smoke outlet in the house. They concluded that bronchial asthma is an important health problem among children in urban Puducherry. Intervention on exposure to passive smoking and provision of smoke outlets may help to reduce the burden of disease at the community level.<sup>11, 12</sup>

## CONCLUSION

Within the limitations of the study we conclude that there are number of risk factors for bronchial asthma in patients. If these risk factors are avoided from an early age, we can significantly improve prevalence of bronchial asthma.

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