

**1331 ASTHMA PREDICTABILITY INDEX AMONG CHILDREN OF ATOPIC PARENTS LIVING IN AND AROUND KOLKATA METROPOLIS AND ITS CO-RELATION WITH VARIOUS AIR POLLUTION INDICES**

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**ABSTRACT**

Asthma is not just a public health problem for developed countries. In developing countries, however, the incidence of the disease varies greatly. Although heredity plays a major role in asthma and in other allergic diseases, mechanisms underlying the inheritance of these disorders are poorly understood, as is the relative contribution of maternal and paternal conditions to risk of disease. Asthma attacks all age groups but often starts in childhood. It is a disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. In an individual, they may occur from hour to hour and day to day. This condition is due to inflammation of the air passages in the lungs and affects the sensitivity of the nerve endings in the airways so they become easily irritated. In an attack, the lining of the passages swell causing the airways to narrow and reducing the flow of air in and out of the lungs.

**Objectives:** We tried to evaluate the relationship of new-onset asthma with pollution and an attempt to draw a predictability index for children below 6 years of age with atopic parents.

**Methods:** Children below 6 years of age with atopic parents are the subject of study. Parent-reported physician diagnosis of new-onset asthma ( $n=82$ ) was identified during one year of study. We assessed traffic-related pollution exposure based on automatic data generated by Central Pollution Control Board, Kolkata and local meteorology.

**Results:** The adverse effect of air pollution on respiratory health has been well established in, but our results are not consistent with this evidence. The concentration of pollutants such as PM10 and NO<sub>2</sub> no longer provides a statistical explanation for variations in asthma prevalence across urban units. Interestingly, the relationship between childhood asthma and SO<sub>2</sub> was consistently negative. And surprisingly, these annual mean levels of PM10 (0.091mg/m<sup>3</sup>), NO<sub>2</sub> (0.042mg/m<sup>3</sup>), and SO<sub>2</sub> (0.042mg/m<sup>3</sup>) detected during the sampling period did not conform with. Asthma risk increased with modeled traffic-related pollution exposure from roadways near homes. Traffic-related pollutant levels may also be considerably higher during the morning hours, when children are arriving at school, especially during temperature inversions that occur largely in the winter months when children are attending school (Kim et al. 2002; Ning et al. 2007). The odds of having a child with asthma were three times greater in families with one asthmatic parent and six times greater in families with two asthmatic parents than in families where only one parent had inhalant allergy without asthma; furthermore, inhalant allergy in one parent also conferred additional risk in the presence of asthma in the other parent.

**Conclusions:** Our results indicate that children exposed to higher levels of traffic-related air pollution at school and home are at increased risk of developing asthma. Hereditary factor plays a major in asthma among children.

**Keywords:** air pollution, asthma, child

**INTRODUCTION**

Asthma is one of the most chronic inflammatory disorders characterized by recurrent attacks of wheezing, breathlessness, cough, and/or chest tightness, which vary in severity and frequency from person to person. The prevalence of allergic airway diseases, such as asthma and rhinitis, has been increasingly common to epidemic proportions worldwide. About 334 million people worldwide are now suffering from asthma.

A large number of studies have confirmed that respiratory diseases are related to the physical characteristics of the living area: multiple factors affect asthma including exogenous factors like air pollution and climate. The link between urban air pollution, climatic factors, and asthma is established. However, there are merely a few analyses developing a comparative approach of differences in asthma morbidity among places, such as cities. In addition, levels of outdoor air pollutants have been associated with asthma incidence but not clearly with asthma prevalence at the population level. Under this circumstance, this paper investigated the local disparities' correlation with air pollutants and climatic factors in different areas of Kolkata.

Respiratory viruses and symptoms of early asthma may be hard to tell apart, making diagnosis and treatment tricky. But doctors and parents now have a tool to help them predict with reasonable accuracy if the child will develop asthma or simply outgrow it.

The asthma predictive index (API) is a guide to determining which small children will likely have asthma in later years. Children younger than 3 years who have had 4 or more significant wheezing episodes in the past year are much more likely to have persistent (ie, lifelong) asthma after 5 years if they have either of the following:

- Parent with asthma
- Physician diagnosis of eczema (atopic dermatitis)