

# ORIGINAL ARTICLE

## Severity of Asthma and Association with Dietary Habits in Children

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### ABSTRACT:

**Background:** Childhood asthma is the most common chronic disease in childhood. The prevalence and severity of asthma in children has increased over the last few decades. The present study was conducted to determine the cases of asthma in children. **Materials & Methods:** This study was conducted on 160 children having asthma. Age matched 160 children with intermittent asthma was considered as control. The severity of asthma was assessed based on the clinical criteria recommended by the National Heart, Lung, and Blood Institute (NHLBI), and was classified as intermittent asthma or persistent asthma (mild, moderate or severe). **Results:** Group I had 90 boys and 70 girls whereas group II had 110 boys and 50 girls. Allergens in home were seen in 146 in group I and 140 in group II. Maternal smoking was observed in 42 in group I and 16 in group II. The difference was significant (P- 0.01). Gestational age (<37 weeks) was seen in 32 in group I and 20 in group II. Birth weight (<2.5 Kg) was 42 in group I and 56 in group II. Family history was positive in 96 and 102 in both groups. Family history of allergic rhinitis was seen in 132 in group I and 148 in group II. Passive smoking was seen in 75 in group I and 86 in group II. Maternal education (<10 years) was 84 in group I and 92 in group II. The difference was non- significant (P> 0.05). The consumption of dietary items (>3 times/week) was seen. Following items such as milk in group I (152) and group II (154), vegetables in group I (148) and group II (142), meat in group I (130) and group II (152), fish in group I (132) and group II (27), eggs in group I (81) and group II (76), soft drinks in group I (75) and group II (80), pulses in group I (144) and group II (136), butter in group I (126) and group II (134) and fruits in group I (112) and group II (137). The difference was non- significant (P> 0.05). **Conclusion:** Asthma in children is quite common. There was no significant role of diet in asthma. Potential allergens are indoor allergens such as dust. Maternal smoking found to be one of causative factor.

**Key words:** Allergen, Asthma, Maternal smoking.

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### INTRODUCTION

Childhood asthma is a major cause of morbidity affecting activities of daily living and leading to missed school or classroom time. It is also the chronic childhood asthma is the most common chronic disease in childhood. In spite of advances in the knowledge of pathophysiology and treatment of the disease, the prevalence and severity of asthma in children has increased over the last few decades. Administration of the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire in some Brazilian municipalities in 1995 showed that Salvador, state of Bahia, had one of the highest prevalence rates of wheezing among children aged 13 to 14 years.<sup>1</sup> Asthma is a inflammatory disease of the airways of the lungs. It is characterized by reversible airflow obstruction and bronchospasm. Symptoms include episodes of wheezing, coughing, chest tightness, and shortness of breath. These episodes may occur a few times a day or a few times per week. Depending on the person, they may become worse at night or with exercise. Asthma is classified according to the frequency of symptoms, forced expiratory volume in one second (FEV1), and peak expiratory flow rate. It may also be classified as atopic or

non-atopic, where atopy refers to a predisposition toward developing a type 1 hypersensitivity reaction.<sup>2</sup>

It has been proposed that changes in dietary habits may be one of the factors responsible for this increase. Numerous epidemiological studies have been conducted to investigate the association between dietary habits and the risk of asthma in children. The prevalence of asthma has been on the rise in recent decades, and the disease is now considered one of the foremost chronic illnesses worldwide. Studies on dietary habits and severity of asthma are few and show inconsistent results.<sup>3</sup> The present study was conducted to determine the cases of asthma in children.

### MATERIALS & METHODS

This study was conducted in the department of Pediatrics. It included 160 children having asthma. Age matched 160 children with intermittent asthma was considered as control. Parents were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the start of study. Children with recurrent episodes wheeze, cough, breathing difficulties and chest tightness, particularly at night or in the early hours of the morning and presence of triggers or aggravating factors such as

exposure to allergens or irritants, physical exercise were considered positive for asthmatic cases. General information such as name, age, gender etc, was recorded. Other parameters such as dietary habits, demographic and socioeconomic data was obtained from all children. The severity of asthma was assessed based on

the clinical criteria recommended by the National Heart, Lung, and Blood Institute (NHLBI), and was classified as intermittent asthma or persistent asthma (mild, moderate or severe). Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

**RESULTS**

**Table I** Distribution of subjects

Group I (Persistent asthma)		Group II (Intermittent asthma)		P value
Boys	Girls	Boys	Girls	
90	70	110	50	0.01

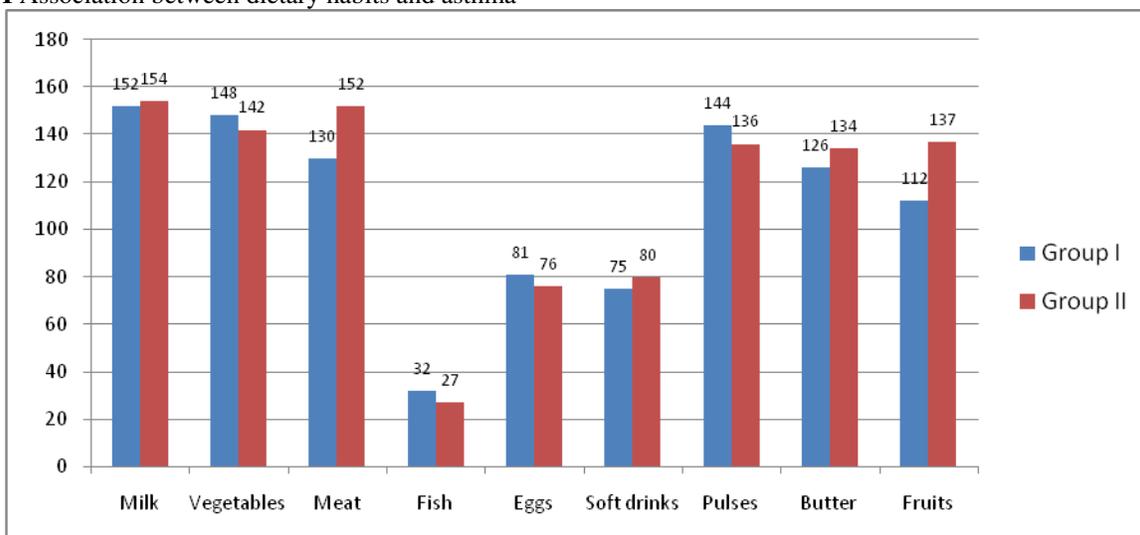
Table I shows that group I had 90 boys and 70 girls whereas group II had 110 boys and 50 girls. The difference was significant (P- 0.01).

**Table II** Characteristics in both groups

Parameters	Group I	Group II	P value
Allergen in home	146	140	1
Maternal smoking	42	16	0.01
Gestational age (<37 weeks)	32	20	0.5
Birth weight (<2.5 Kg)	42	56	0.31
Family history	96	102	0.7
Family history of allergic rhinitis	132	148	0.1
Passive smoking	75	86	0.23
Maternal education (<10 years)	84	92	0.1

Table II shows that allergens in home were seen in 146 in group I and 140 in group II. Maternal smoking was observed in 42 in group I and 16 in group II. The difference was significant (P- 0.01). Gestational age (<37 weeks) was seen in 32 in group I and 20 in group II. Birth weight (<2.5 Kg) was 42 in group I and 56 in group II. Family history was positive in 96 and 102 in both groups. Family history of allergic rhinitis was seen in 132 in group I and 148 in group II. Passive smoking was seen in 75 in group I and 86 in group II. Maternal education (<10 years) was 84 in group I and 92 in group II. The difference was non-significant (P> 0.05).

**Graph I** Association between dietary habits and asthma



Graph I shows that consumption of dietary items (>3 times/week) was seen. Following items such as milk in group I (152) and group II (154), vegetables in group I (148) and group II (142), meat in group I (130) and group II (152), fish in group I (32) and group II (27), eggs in group I (81) and group II (76), soft drinks in group I (75) and group II (80), pulses in group I (144) and group II (136), butter in group I (126) and group II (134) and fruits in group I (112) and group II (137). The difference was non-significant (P> 0.05).

## DISCUSSION

Asthma is thought to be caused by a combination of genetic and environmental factors. Environmental factors include exposure to air pollution and allergens. Other potential triggers are aspirin and beta blockers. Symptoms can be prevented by avoiding triggers, such as allergens and irritants, and by the use of inhaled corticosteroids. Long-acting beta agonists (LABA) or antileukotriene agents may be used in addition to inhaled corticosteroids if asthma symptoms remain uncontrolled. Asthma is recognized by recurrent episodes of wheezing, shortness of breath, chest tightness, and coughing. Sputum may be produced from the lung by coughing. Symptoms are usually worse at night and in the early morning or in response to exercise or cold air. Some people with asthma rarely experience symptoms, usually in response to triggers, whereas others may have marked and persistent symptoms.<sup>4</sup>

Children may have exercise-induced asthma or may simply have dyspnea on exertion revealed by physical exercise. It is believed that 50 to 60% of asthmatics have transient obstruction of the airways triggered by vigorous exercise. A higher frequency of exercise limitation is to be expected in patients with more severe asthma. Exercise can trigger bronchoconstriction both in people with or without asthma. It occurs in most people with asthma and up to 20% of people without asthma. The highest rates are among cyclists (up to 45%), swimmers, and cross-country skiers. While it may occur with any weather conditions, it is more common when it is dry and cold.<sup>5</sup>

We found that group I had 90 boys and 70 girls whereas group II had 110 boys and 50 girls. Allergens in home were seen in most of the children in both groups. Maternal smoking was significantly (P- 0.01) higher (42) in group I than (16) in group II. Gestational age (<37 weeks) was seen in 32 in group I and 20 in group II. This is similar to Phelan et al.<sup>6</sup>

We found that family history was positive in 96 and 102 in both groups. Family history of allergic rhinitis, passive smoking was seen almost equal number of children in both groups. Maternal education (<10 years) was 84 in group I and 92 in group II. This is in accordance to Gilliland.<sup>7</sup>

We found that most of dietary items (>3 times/week) was used such as milk, vegetables, meat, fish, eggs, soft drinks, pulses, butter and fruits. The difference was statistical non-significant among both groups. This is similar to Goyal et al.<sup>8</sup> The hygiene hypothesis attempts to explain the increased rates of asthma worldwide as a direct and unintended result of reduced exposure, during childhood, to non-pathogenic bacteria and viruses.

It has been proposed that the reduced exposure to bacteria and viruses is due, in part, to increased cleanliness and decreased family size in modern societies. Exposure to bacterial endotoxin in early childhood may prevent the development of asthma, but exposure at an older age may provoke bronchoconstriction.<sup>9</sup>

## CONCLUSION

Asthma in children is quite common. Potential allergens are indoor allergens such as dust. Maternal smoking found to be one of causative factor. There was no significant role of diet in asthma.

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