

## ORIGINAL RESEARCH

# Association between Dietary Habits and Asthma Severity in Children

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### ABSTRACT

**Background:** Assessment of association between Dietary Habits and Asthma Severity in Children.

**Materials & methods:** A total of 100 children with persistent asthma and 100 children with intermittent asthma were enrolled. Complete demographic details of all the subjects were obtained. A questionnaire was framed and dietary habits of all the subjects was recorded separately. The questionnaire was filled under the direct supervision of their parents/guardians. All the results were recorded and analysed using SPSS software.

**Results:** 62 percent of the subjects of persistent asthma group and 60 percent of the subjects of the intermittent asthma group were boys. Positive family history of asthma was seen in 65 percent of the subjects of the persistent asthma group and 69 percent of the intermittent asthma group. While comparing the association between Dietary Habits and Asthma Severity in Children, non-significant results were obtained.

**Conclusion:** While evaluating the association between the dietary habits and severity of asthma, it can be concluded that dietary habits does not affect the severity of asthma among children.

**Key words:** Asthma, Children, Dietary

### INTRODUCTION

Asthma is a chronic inflammatory disease of the airways, characterized by recurrent episodes of airflow obstruction resulting from edema, bronchospasm, and increased mucus production. Commonly associated with seasonal allergies (allergic rhinitis) and eczema (atopic dermatitis), these three conditions form what is known as the atopic triad.<sup>1, 2</sup> Patients who have asthma may experience a range of respiratory symptoms, such as wheezing, shortness of breath, cough, and chest tightness. There is a wide range in the frequency and severity of the symptoms, but uncontrolled asthma and acute exacerbations can lead to respiratory failure and death.<sup>3</sup>

Childhood asthma is not a singular disease, but rather a uniquely diverse disorder with variable presentation throughout childhood. Asthma affects 8.3% of children in the United States and is the most common chronic disease of childhood. Childhood asthma is responsible for 50 billion dollars in annual healthcare expenditures and is a major cause of emergency room visits, hospital admissions, school absences, and loss of parental workdays.<sup>4, 5</sup>

The pharmacological options for treatment of asthma include, according to their use, reliever medications, which are drugs that allow relief of symptoms within few minutes, during worsening asthma or exacerbations, also used for prevention of exercise-induced bronchoconstriction; controller medications, that are used for maintenance treatment: they control symptoms and reduce airway inflammation and future risks of exacerbations; add-on therapies, proposed for patients with severe persistent asthma symptoms and exacerbations, despite treatment with high dose controller medications.<sup>6, 7</sup> While intake of nutrient dense foods such as fruits, vegetables, and fish were found to be inversely associated with asthma symptoms and atopy among children and adolescents; other caloric dense foods that are high in sugar and fat were associated with an increased prevalence of asthma symptoms.<sup>4-6</sup> Hence; the present study was conducted for assessing the association between Dietary Habits and Asthma Severity in Children.

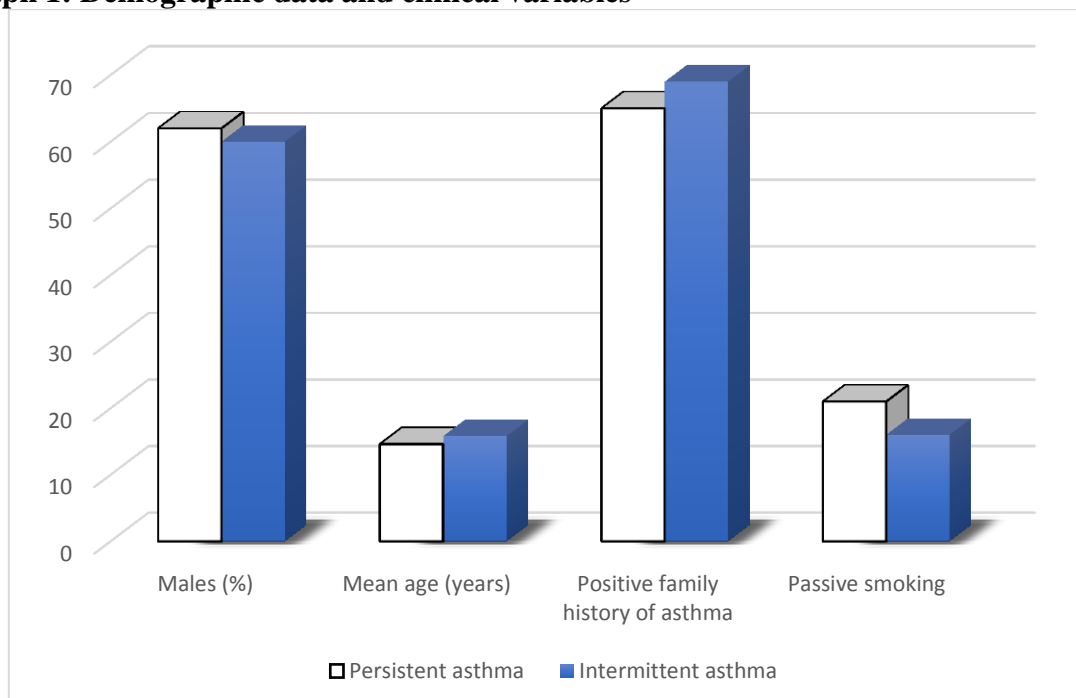
## MATERIALS & METHODS

The present study was conducted for assessing the association between Dietary Habits and Asthma Severity in Children. A total of 100 children with persistent asthma and 100 children with intermittent asthma were enrolled. Complete demographic details of all the subjects were obtained. A questionnaire was framed and dietary habits of all the subjects was recorded separately. The questionnaire was filled under the direct supervision of their parents/guardians. All the results were recorded and analysed using SPSS software.

## RESULTS

In the present study, a total of 100 children with persistent asthma and 100 children with intermittent asthma were enrolled. Mean age of the subjects with persistent asthma and intermittent asthma was 14.6 years and 15.8 years respectively. 62 percent of the subjects of persistent asthma group and 60 percent of the subjects of the intermittent asthma group were boys. Positive family history of asthma was seen in 65 percent of the subjects of the persistent asthma group and 69 percent of the intermittent asthma group. While comparing the association between Dietary Habits and Asthma Severity in Children, non-significant results were obtained.

**Graph 1: Demographic data and clinical variables**



**Table 1: Association of dietary habits and asthma severity**

Food consumption $\geq$ 3 times/week	Persistent asthma, %	Intermittent asthma, %	p- value
Milk	92	90	0.12
Vegetables	72	68	0.25
Meat	83	85	0.23
Fish	22	23	0.84
Eggs	51	55	0.53
Pulses	81	78	0.41
Roots	53	61	0.39
Cereals	98	97	0.52
Fruits	78	81	0.47
Soft drinks	43	48	0.53
Butter	83	89	0.29

## DISCUSSION

Asthma is a chronic disorder of the bronchial tree, characterized by completely or partially reversible airway obstruction, which may improve spontaneously or may subside only after specific therapy. Airway hyperresponsiveness is defined as the narrowing of the airways as response to a variety of stimuli, such as allergens and nonspecific triggers and infections. Asthma is a chronic disorder of both children and adults, with 300 million individuals afflicted worldwide (Global Initiative for Asthma (GINA) guidelines). Although the prevalence of asthma has increased over the last decades, especially so in children, there is still no sound explanation for this increase. Asthma symptoms include recurrent wheezing, coughing, chest tightness, and dyspnea, with nightly and early morning symptoms being more prevalent, whereby quality of life is often reduced.<sup>8-10</sup>

Although contributory, genetic factors alone cannot account for the rapid increase in the prevalence of asthma. It has been hypothesized this increase is largely caused by environmental changes (eg, urbanization) and modification of lifestyle behaviors (eg, dietary transition). Notably, the transition from a traditional to a modern diet is characterized by an increased intake of preserved foods, salt, refined sugar, and saturated fat, and a decreased intake of fruit, vegetables, milk, and dietary fiber.<sup>11,12</sup> Hence; the present study was conducted for assessing the association between Dietary Habits and Asthma Severity in Children.

In the present study, a total of 100 children with persistent asthma and 100 children with intermittent asthma were enrolled. Mean age of the subjects with persistent asthma and intermittent asthma was 14.6 years and 15.8 years respectively. 62 percent of the subjects of persistent asthma group and 60 percent of the subjects of the intermittent asthma group were boys. Positive family history of asthma was seen in 65 percent of the subjects of the persistent asthma group and 69 percent of the intermittent asthma group. Lv N et al, in a previous study searched Medline, Scopus, and ISI Web of Knowledge. Thirty-one studies were identified (16 cross-sectional, one case-control, 13 cohort, and one randomized controlled trial), including 12 in adults, 13 in children, five in pregnant woman-child pairs, and one in both children and pregnant woman-child pairs. The meta-analysis including six adult studies, the primary outcome of which was the prevalence of current or ever asthma, showed no association with healthy, unhealthy, or neutral dietary patterns. The evidence suggested no association of dietary patterns with asthma prevalence in adults or of maternal diet with child asthma or wheeze.<sup>13</sup> There are several mechanisms which have been proposed through which diet could play a role in asthma development. A low antioxidant dietary

intake, indicated by low intake of fruits and vegetables, can increase oxidative damage of airways by reactive oxygen species generation. Oxidative stress plays a role in the pathogenesis of asthma, and dietary intake of anti-oxidants improves anti-oxidant defenses. Diets low in polyunsaturated fatty acids and omega-3 fatty acids have been linked to asthma as well, possibly due to the anti-inflammatory role of omega-3 fatty acids.<sup>5,9,12</sup>

In the present study, while comparing the association between Dietary Habits and Asthma Severity in Children, non-significant results were obtained. Our results were in concordance with the results obtained by Silveira DH et al, who investigated the association between dietary habits and asthma severity in children. Cases (n=268) were children (3-12yr) with persistent asthma and age-matched controls (n=126) were those with intermittent asthma were enrolled. After adjusting for confounding factors, maternal smoking during pregnancy, preterm birth and obesity were significantly associated with persistent asthma. No significant association was observed between frequency of consumption of specific foods, food groups, or dietary pattern (pro- or contra-Mediterranean diet) and the severity of asthma.<sup>14</sup>

## CONCLUSION

While evaluating the association between the dietary habits and severity of asthma, it can be concluded that dietary habits does not affect the severity of asthma among children.

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