



ORIGINAL ARTICLE

## Pattern of childhood asthma, and factors affecting its occurrence in children having age up to 12 years.

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**Article Citation:** Sami ul Haq, Zahoor ul Haq, Hayat M, Ali S, Shah MB, Khan J. Pattern of childhood asthma, and factors affecting its occurrence in children having age up to 12 years. Professional Med J 2022; 29(6):829-833. <https://doi.org/10.29309/TPMJ/2022.29.06.6899>

**ABSTRACT... Objective:** To find the pattern of childhood asthma, and factors affecting its occurrence in children having age up to 12 years. **Study Design:** Cross-Sectional Study. **Setting:** Pediatric Department, Women & Children Hospital MTI Bannu. **Period:** November 2018 to May 2019. **Material & Methods:** A sample of 100 subjects was selected by consecutive nonprobability technique. 1 Children having age up to 12 years. 2. Children having Asthma symptoms. 1. Children having age > 12 years. 2. Children not having Asthma symptoms. 3. Refusal. **Results:** Out of 100 patients, 73% were male patients and 27% were female patients; indicating increased prevalence of childhood asthma in males. 58% of children were Pre-School children indicating higher frequency of childhood asthma in younger children. Many children reported worsening of symptoms at night especially shortness of breath at night. Major factor was Aspirin because mothers of 34% of affected children were using aspirin during pregnancy. **Conclusion:** Frequency of childhood asthma is more in males as compared to females. Exercise, cigarette smoke and environmental allergens like dust and animals are the chief precipitating factors. Younger children are affected more frequently than older children.

**Key words:** Allergens, Asthma, Children, Factors, Frequency.

### INTRODUCTION

Asthma is a chronic disease with frequent spells of breathlessness and wheezing, in which intensity and rate of occurrence varies greatly from person to person.<sup>1</sup> In asthma, there is reversible bronchial compression, alternating air flow obstruction and hypersensitivity of the bronchial wall to either internal or external allergen. Chief Symptoms are cough, wheeze and shortness of breath often worsened at night. At early stages of disease, airway obstruction sometimes gets better on its own however in later stages patient have to take medication for it.

A study carried out in UK by Murray describes a mechanism that direct infection of virus causes inflammatory response, increases the bronchial spasm and up regulation of intercellular adhesion molecule-1 expression in the bronchial epithelium which often act as triggering agent for increase in these symptoms.<sup>2-4</sup> Airway hyper responsiveness

can be defined as the narrowing of the airways in response to a variety of stimuli such as, allergens like pollens, animal dander, dust and certain foods and nonspecific triggers and infections. Frequent sign and symptoms of asthma include coughing, recurrent wheezing, chest tightness, dyspnea, with nightly or early morning symptoms being more dominant, leading to reduced quality of life.<sup>5</sup> On histopathology, Asthma is chronic inflammatory process in the conducting airways that includes shedding of the epithelial layer with edema and inflammation of the airway wall together with the WBCs infiltration, mediated mainly by Eosinophils. Genetics as well as environmental factors such as allergens and viral infections also play a role in development of asthma. As a result of this inflammatory process, there is thickening of the basement membrane as well as hyperplasia of the goblet cells and smooth muscles of the airway. This process is called airway remodeling.

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**Article received on:** 11/11/2021  
**Accepted for publication:** 19/01/2022

Lung biopsy of young wheezing children shows similar pattern on histopathology, knowledge is limited about the histopathology in young wheezing children.<sup>6</sup> Exercise induced airway obstruction (EIAO) is also common in children with asthma that may precipitate an asthmatic attack and together with the frequent nocturnal awakenings due to dyspnea, may hamper social contact of the child.<sup>7</sup>

According to GINA (Global Initiative for Asthma) guidelines, prevalence of asthma is about 300 million individuals affected, worldwide.<sup>7</sup> The prevalence of asthma has increased in the last decades, especially so in children.<sup>8</sup> Symptoms of asthma may occur already in early life with wheezing appearing in every third child in their first three years of life.<sup>9</sup> EIAO occurs in about 23 percent of school going children leading to severe limitations of their ability to participate in sports and play. 70% of children experience EIAO as the most troublesome for their asthma.<sup>10</sup> In Pakistan, 15 million children and about 7.5 million adults are affected by asthma.<sup>11</sup>

Limited studies have reported data in this geographical region of Pakistan, regarding asthma and its risk factors in children under 12 years. While understanding of asthma has increased in recent years, the morbidity and mortality associated with this chronic condition continue to comprise a major health dilemma. The objective of this study was to find the risk factors of asthma and their frequency and distribution in children of under 12 years in District Bannu.

## MATERIAL & METHODS

This Cross-Sectional study was conducted in Pediatric Department of Women & Children Teaching Hospital, Bannu KPK, Pakistan for 6 months duration from November 2, 2018 to May1, 2019.

A sample of 100 subjects was selected by consecutive nonprobability technique. The selection was through non- probability consecutive sampling.

## Inclusion Criteria

- Children having age up to 12 years
- Children having Asthma symptoms

## Exclusion Criteria

- Children having age > 12 years
- Children not having Asthma symptoms
- Refusal

## Data Collection Procedure

This study was conducted after approval from ethical and research committee (No.277-A DiR&MJ/BMC/2018). The data collection was done between November 02, 2018 and May 01, 2019. A sample of 100 subjects was selected by consecutive non probability technique. Data was collected from patients that presented in Department of Pediatrics of Public Sector Hospital of Bannu i.e. The Women and Children Hospital, Bannu. Refusal as well as children over 12 year age was the main exclusion criteria. All these patients underwent complete general physical and systematic examination. Routine investigations like blood complete with ESR, urinalysis and x-ray chest were carried out. Study instrument was a structured proforma. Consent was taken from the respondents for the study, and confidentiality of the data was ensured. Research members were present with the patients in case of any questions or if they were not able to fill questionnaire on their own.

Data analysis was done via SPSS version. 20, Microsoft word and Microsoft excel.

## RESULTS

100 children with age ranges up to 12 year with sign and symptoms of airway obstruction were studied. Out of 100 patients, 27 were females while 73 were males. 54% patients were below 5 years of age, 42% were above 5 years but below 10 years and 4% were above 10 years but below 12 years. 58% of children were pre-school, 11% were studying in Kindergarten, and 27% were studying in Class 1-3 while 4% were in class 4 or above.

Ninety three percent patient had cough mostly without sputum. 82% patients had dyspnea with only 20% of patients having grade IV dyspnea

i.e. patients stops for breathing after walking 100 yards. In 29%, year of onset of asthma was less than one year while in 49%, year of onset was by first year of life and above. In 66% patients, disease was progressive. 43% patients had episodes of asthma 2-3 times a day while 32% patients experienced a single episode a day. 25% had a single episode in a week. Seventy eight percent patients reported that the disease got worse at night while 59% patients said their symptoms would aggravate with exercise. In 49% patients asthmatic attacks relieved spontaneously while 51% patients showed improvement only upon taking medication. Thirty percent patients had a smoker in their family while the mother of not a single child had a history of smoking

either during pregnancy or after giving birth to the baby. An astonishing 34% mother reported to have used Aspirin during pregnancy. Fifty four percent patients had a positive family history of asthma. Forty six percent patients had a history of childhood respiratory tract infection with bacteria, 5% patients with viral infection while 31% had no respiratory tract infection history. Fifty eight percent patients said their attack would start spontaneously. 32% patients showed association with dust while 10% patients had an association with animals like dogs and cats. Sixty three percent patients reported increase in the incidence of asthmatic attacks in the winter, 28% in the summer, 7% in the spring while 2% in the autumn.

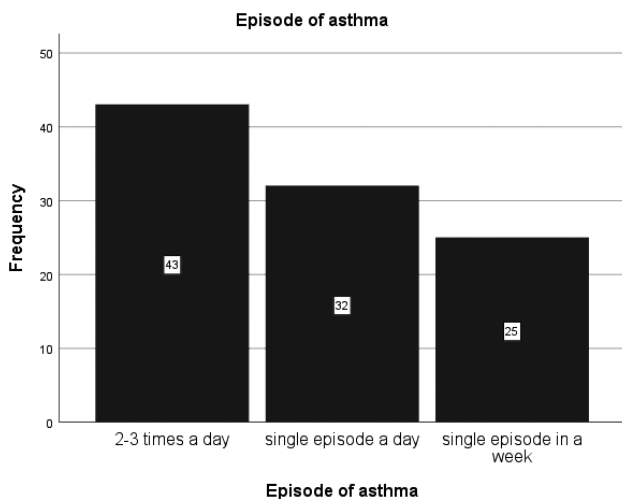


Figure-1

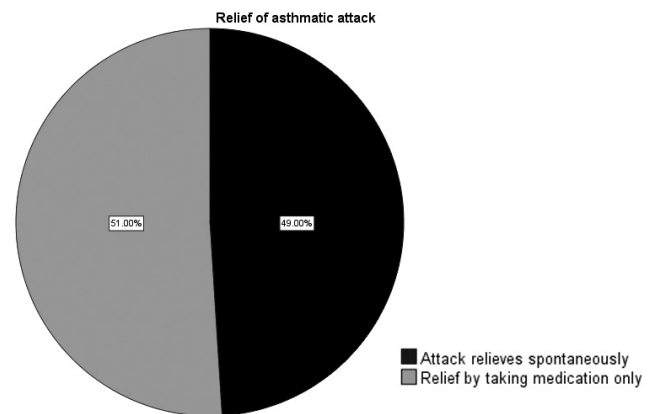


Figure-2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spontaneous	58	58.0	58.0	58.0
	Starts with dust	32	32.0	32.0	90.0
	Starts with animals	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

Table-I. Start of attack in asthmatic patients.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Asthmatic attack in winter	63	63.0	63.0	63.0
	Asthmatic attack in summer	28	28.0	28.0	91.0
	Asthmatic attack in spring	7	7.0	7.0	98.0
	Asthmatic attack in autumn	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

Table-II. Increased incidence of asthmatic attacks in patients in relation with weather.

## DISCUSSION

Previously there has been no known research done on our topic in district Bannu. Out of 100 patients, 27 were females while 73 were males. A similar study in Hong Kong showed a frequency of male to female as 64.5% male patients while 35.5% female patients.<sup>12</sup> In our study we found that 54% patients were below 5 years of age, 42% were above 5 years but below 10 years and 4% were above 10 years but below 12 years. 58% of children were pre-school, 11% were studying in Kindergarten, and 27% were studying in Class 1-3 while 4% were in class 4 or above. 93% patient had cough mostly without sputum. Results were somehow slight different from a similar study done in Hong Kong where 79% of asthma patient were pre-school while in our study about 54% were preschool children.<sup>12</sup>

Ninety three percent patient had cough mostly without sputum. Eighty two percent patients had dyspnea with only 20% of patients having grade IV dyspnea i.e. patients stop for breathing after walking 100 yards.<sup>13</sup>

In 49% patients asthmatic attack relieved spontaneously while 51% patients showed improvement only upon taking medication. A similar study by BMJ shows that about the 33% of the patients that were presented were given medications for their symptoms and 66% received no medication and were relieve spontaneously. 30% patients had a smoker in their family while the mother of not a single child had a history of smoking either during pregnancy or after giving birth to the baby. A case-control study shows odds ratio of 2.1 of children with smoker relative that roughly translates to 44% is somehow higher than our study.<sup>14</sup>

An astonishing 34% mother reported to have used Aspirin during pregnancy. A similar study by BMJ shows that about 1% of children developed asthma subsequently in life of all pregnancies that were reported with aspirin and acetaminophen used in prenatal life.<sup>15</sup>

Fifty two percent patients having asthma showed

association with dust, multifactorial exposure to the dust and other allergens have shown to increased incidence of asthma in children, in our study the allergens like dust etc. prevalence was about 52%, a similar study shows that about 10.3% developed asthma when patients were exposed to allergens.<sup>16</sup>

Forty three percent children with asthma had at least one pet in house like dogs and cats, a similar study shows that about 8.2 % of school going children were exposed to pets out of which 4.2% of children have developed asthma in subsequent age.<sup>17</sup>

Seventy five percent patients had a history of childhood respiratory tract while 25% had no respiratory tract infection history. A similar study shows that about 53% of school going children who had respiratory tract infection previously had developed asthma with 40% developing asthma up to 9 years of life.<sup>18</sup>

Seventy eight percent patients reported that the disease got worse at night while 59% patients said their symptoms would aggravate with exercise. Nocturnal exacerbation requiring medication was reported to be 73% by a similar study.<sup>19</sup>

## CONCLUSION

Frequency of childhood asthma is more in males as compared to females. Exercise, cigarette smoke and environmental allergens like dust and animals are the chief precipitating factors. Younger children are affected more frequently than older children.






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#### AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Sami ul Haq	Concept & Design of study, Final approval of version.	
2	Zahoor ul Haq	Data Analysis.	
3	Mohsin Hayat	Data Analysis.	
4	Sadaqat Ali	Revising Critically.	
5	Muhammad Bilal Shah	Drafting.	
6	Jalil Khan	Drafting.	