

Prevalence of Allergic Diseases among Children in SLBS GMCH, A Retrospective Observational Study Over A Period of Two Years

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ABSTRACT:

Purpose: The aim of the study is to determine the prevalence of allergic diseases in children coming a tertiary care centre in HP, over a period of 2 years. **Patients and Methods:** A retrospective observational study was conducted using medical records of all patients aged less than 18 years. Data was presented descriptively. Association between variables was explored by χ^2 -test. Results: Two hundred and one patients' records were included in the analysis; 118 (59.2%) were males and 83(40.8%) were females with a mean age of 7.8 years (SD 4.4). The majority of patients were of 2– 9 years of age (56.6%). Majority of the patients resided in rural areas, 128 (63.6%), whereas only 73 (36.4%) dwelled in suburban and urban areas (Table 1). The disease with highest prevalence was asthma of different grades 113 (56.2%), second most prevalent allergic disease was Allergic rhinitis 50 (25.36%) followed by AD 30 (14.9%), Conclusion: The most common conditions seen in our allergic disease study were asthma, allergic rhinitis and atopic dermatitis.

Keywords: *pediatric allergy, asthma, allergic rhinitis, atopic dermatitis*

INTRODUCTION:

Asthma and other Allergic disorders, are chronic diseases with an onset very early in life. And there has been a rampant increase in the number of cases of asthma and allergic disorders in both indoor and outdoor patients respectively in the past decade. Their burden is growing, especially in under developed and developing countries where allergic rhinitis (AR) and asthma are the most prevalent chronic diseases seen in childhood (1). Globally, 300 million people at all ages are diagnosed with asthma, (2). Asthma and allergic diseases were considered to be less prevalent in children of underdeveloped and developing countries, but studies indicate that the burden of childhood asthma in these areas is larger as compared to those in high income countries (3). Moreover, the prevalence of childhood asthma and allergic diseases is higher, in contrast to developed nations where it has stabilized or is decreasing(4). In a Danish cohort study the prevalence of atopic diseases, from birth to 14 years of age. At 14 years, the prevalence of asthma, atopic dermatitis (AD), allergic rhinoconjunctivitis (ARC) and any atopic

diseases was 12.9% , 8.1% , 32.8% , and 40.3% , respectively, with no gender differences.

Atopic dermatitis is another very common and debilitating allergic disorder leading to compromise of quality of life for both the child and parent. It is associated with elevated serum immuno-globulin (IgE) levels and a family history of type I allergies.(5,6). Onset of atopic dermatitis is commonly between 3 and 6 months of age, with 60% of patients developing the eruption in the first year of life and 90% by the age of 5 years. Worldwide prevalence of AD is about 17% to 24% in the pediatric population.(6) Food allergy is another new area in the world of allergic diseases. There has been a substantial increase in number of cases of food allergy because of early exposure to a large variety of food allergens in form of preservatives, artificial colours, artificial sweeteners, and increased consumption of packaged food. There has been a big boom in food industry in terms of junk food, packaged food alluring customers and more so children. The prevalence of food allergy in the developed world where food allergy affects up to 6% of children (7). Symptoms of different allergies include cough, breathlessness, chest tightness, urticarial, rashes,

gastrointestinal distress, failure to thrive, anaphylaxis, and even death.(8)The diagnosis of allergic disease remains a challenge because of lack of robust diagnostic backup and awareness among the society for the same . There are very few studies on allergies and its prevalence in children. So we retrospectively collected the data from medical records of the hospital indoor n outdoor in pediatric and dermatology departments and asthma and allergy clinic, over period of two years period. Therefore, this study is primarily aimed at describing the demographic and clinical characteristics of the patients with asthma and allergic diseases.

MATERIALS AND METHODS:

A retrospective cross-sectional study was conducted at tertiary care hospital SLBS GMCH NERCHOWK HIMACHAL PRADESH. The patients coming as outpatient, inpatient and those attending the Asthma and Allergy Clinic having symptoms of allergic disease like allergic rhinitis, allergic dermatitis , allergic asthma, food allergy or any type of atopy were enrolled. The diagnoses of allergic disorders and asthma were made based on detailed history and physical examination and investigations were carried out when and where required. Asthma was diagnosed by pulmonary function test with a suggestive history and examination which included wheezing, coughing, shortness of breath or chest tightness. Pattern of symptoms was thoroughly evaluated, with particular attention to triggers such as viral infections and exercise, as well as time of day or night. And all patients of cough of more than fifteen days were also screened for pulmonary tuberculosis (by history, examination ,X ray chest, sputum and Mantoux test). Features of other atopic diseases if present were also noted. Treatment was given after diagnosing asthma and determing its severity in terms if intermittent ,persistent(mild, moderate or severe) based on standard GINA guidelines. Atopic Dermatitis (AD) Atopic dermatitis (AD) was defined by at least three of the following features: pruritis, characteristic distribution, chronic/relapsing course, and personal or family history of atopy. Distribution of skin lesions and on examination, there had to be evidence of erythema, excoriations, dyspigmentation or lichenification. Other skin disorders were clinically excluded. Allergic Rhinitis (AR) Rhinitis was diagnosed by inflammation of the nasal epithelium, presenting with two or more of the following features: rhinorrhea, nasal obstruction, Atopic dermatitis (AD) was defined by at least three of the following features: pruritis, characteristic distribution of rash in the body. chronic/relapsing and remtting course, with supportive evidence of family history of atopy. Distribution of skin lesions were predominantly along the flexural surfaces, but some had extensor surface and/ or cheek and scalp involvement also. Along with

presence of erythema, papules, excoriations, erosions, depigmentation and lichenification of skin Allergic Rhinitis (AR) Rhinitis was diagnosed by inflammation of the nasal epithelium, presenting with two or more of the following features: rhinorrhea, nasal obstruction, sneezing or nasal pruritis. On examination, face and nasopharynx were carefully examined for signs of AR. Other pathology was excluded (such as foreign body, infection, polyps).Food Allergy -all the children were carefully screened for reactions to foods. Symptoms sought included: nausea, vomiting, abdominal pain, diarrhea, pruritis, urticaria, swelling, cough, wheeze, dizziness or syncope .Detailed history was taken regarding food consumption its amount ,resurgences of symptoms after reintroduction of food etc..

Data Collection:

Medical records of all pediatric patients who were diagnosed with asthma or an allergic disease seen at the OPD,IPD, Asthma and Allergy Clinic at SLBSGMCH Nerchowk mandi Himachal Pradesh) from June 2021, to June 30, 2023 were included in the analysis. Medical records of patients who did not fulfil the inclusion criteria or had a diagnosis other than this or if there was, gross missing or inadequate data, patients older than 18 years and those with diagnosis other than allergic disease or asthma were excluded from the study.)

Statistical Methods and Data Analysis:

The data was analyzed using authorized computer software version SPSS version 23.Data was consolidated as Continuous variables by means and standard deviations (SD), while frequencies and percentages were used for categorical variables. χ^2 -test was used to assess the associations . Results with p-value of less than 0.05 were considered statistically significant.

RESULTS:

A total of 201 children and adolescent patients were admitted as cases of different types of allergic diseases or asthma to OPD, IPD and asthma and allergy clinic of pediatric department SLBS GMCH Nerchowk mandi HP during the period of 2 years.). Two hundred and one patients' records were included in the analysis; 118 (59.2%) were males and 83(40.8%) were females with a mean age of 7.8 years (SD 4.4). The majority of patients were of 2– 9 years of age (56.6%). Majority of the patients resided in rural areas, 128 (63.6%), whereas only 73 (36.4%) dwelled in suburban and urban areas (Table 1). The disease with highest prevalence was asthma of different grades 113 (56.2%), second most prevalent allergic disease was Allergic rhinitis 50 (25.36%) followed by AD 30 (14.9%), presenting alone or along with other allergic disorders (Table 2.)

Table:1. Demographic Characteristics of Patients with Allergic Diseases

Variable n-201	n%
Age at Presentation	
Less than 1yr	20
1-3yrs	32
4-6yrs	41
7-9yrs	52
10-12yrs	30
13-15yrs	16
15-18yrs	10
Gender	
Male	118
Female	83
Residence	
Urban	73
Rural	128

Table: 2. Frequency of Various Allergic Disease in Children

VARIABLE	N (%)
Asthma	113(56.2)
Allergic rhinitis	50 (25.36)
Atopic dermatitis	30 (14.9)
Food Allergy	5 (2.3)
Drug Allergy	3 (1.3)

DISCUSSION:

This retrospective study was carried in the pediatric department of SLBSGMCH nerchowk at mandi for a period of two years .It shows the demographic and clinical characteristics of pediatric and adolescent patients with allergic disorders and/or asthma . The presentation of allergic diseases and asthma was at age groups similar to the past studies (9,10,11). About half of the patients coming to hospital for allergic diseases and/or asthma were between the age of 1–6 years. The presentation of allergic diseases varies with age, and the symptoms may improve, evolve or replaced by other symptoms over period of time(11,12).During infancy, the common manifestations are atopic dermatitis, food allergies and early onset recurrent wheezing, whereas asthma and allergic rhinitis manifest later in the childhood(13). Hill et al19 reported the age distribution for different allergic diseases in children. The incidence of atopic dermatitis (AD) was 15.3% with peak age at diagnosis before 5 months of age. The incidence of asthma was 52.4%. IN our study had a similar age distribution of allergic manifestations as described by Hill et al.19 The most common allergic diseases was

asthma (56.2%), AR (25.36%), AD (14.9), food allergy (2.3%) and drug allergy3(1.3%). However, unlike in our study, more children were suffering from allergic rhinitis than asthma. One of the reasons could be the differential referral pattern of the patients. Our study shows co-existence of allergic diseases, like food allergy, atopic dermatitis, allergic rhinitis, and asthma. A number of studies examines the proportion of individuals with co-existence of AR and it is probably due to the genetic predisposition and mechanism for development of these diseases including an immunological response to environmental allergens(14). The coexistence of AD, asthma and AR may be part of the manifestation of allergic march, but the risk of developing allergic disease is complex (12,13,14). However the study has its own limitations. Firstly, it was conducted in a single tertiary care center, and may only reflect patients with more severe disease or those who are referred to the hospital. Secondly, this is a retrospective study, with all of the inherent flaws, including missing data for some patients and lack of proper referral and central atopy register. Thirdly the diagnosis of allergic disease was predominantly on history, clinical diagnosis and not on

very robust diagnostic system, because of resource constraints. Despite these limitations, our data provides a large sized sample of patients attending the hospital providing insights on allergy diagnoses and comorbidities.

CONCLUSION:

This study showed different types of presentation of common pediatric allergic diseases in a single tertiary level center in himachal pradesh. The findings of this study will help design further studies on the prevalence of allergic diseases in HP. Such studies and strategies will improve the quality of life in children and adolescents suffering from various types of atopic diseases. However, further studies are required to examine the role of different factors ,triggers ,allergens and identify various modifiable risk factors.

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