

# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## Assessment Of Socio-Economic Status And Correlate The Causative Factor For Asthma In Children.

Priti Singh<sup>1\*</sup>, Brij Kishore Mangal<sup>2</sup>, and Rajesh Kumar Suman<sup>3</sup>.

<sup>1</sup>Associate Professor, Department of Pharmacology, Hind Institute of Medical Sciences, Sitapur, Uttar Pradesh, India.

<sup>2</sup>Associate Professor, Department of Pharmacology, FH Medical College, Agra, Uttar Pradesh, India.

<sup>3</sup>Professor, Department of Pharmacology, Hind Institute of Medical Sciences, Sitapur, Uttar Pradesh, India.

### ABSTRACT

The present study evaluated the assessment of socio-economic status and association between environmental factor and severity of asthma in children. Questionnaires was specifically designed factoring patients' demographical profile, Socio-economic status data and causative factor for asthma patients. A total 100 patients were interviewed who were visited our pediatric department complaining of asthma problem. Complaining of fever was analyzed. Maximum children were of the age group between 6 –103 yr (29%) . The ratio of male (64%) is more than female (36%). Maximum patients belong to middle class family (33%) and lower middle class (29%). 87 % of patient were had cold and respiratory illness and 70 of patients showed that exercise and sports induced asthma very frequently. Patients were mostly from poor economic of society and among children, having a cold and respiratory illness followed by exercise and sports were the most common environmental triggers for asthma.

**Keywords:** socio-economic status, Bronchial Asthma, environmental factor, severity of asthma.

<https://doi.org/10.33887/rjpbcs/2025.16.4.12>

*\*Corresponding author*

## INTRODUCTION

Asthma is a chronic inflammatory disorder of airways characterized by an obstruction to airflow which completely or partially reversed with or without specific therapy. Airway inflammation is the result of interaction between various cells, cellular elements and cytokines. In susceptible individuals airway inflammation may cause recurrent and persistent bronchospasm which causes symptoms that includes wheezing, breathlessness, chest tightness and cough particularly at night, early morning or after exercise [1]. There has been a noticeable increase in the healthcare burden due to asthma globally. The prevalence and mortality from asthma have shown an upward trend during an era when quality medications are easily available for asthma [2].

Bronchial asthma is a recurrent but reversible obstruction of the airways. Epidemiological studies carried out in different countries indicate the prevalence of asthma is in the range of 3.5-20 per cent of the population in any country [3]. The documented increase in asthma prevalence over the last 25 years is likely due to changes in our environment or lifestyle because changes in our genetic makeup would take more than several generations to occur [4]. Worldwide, asthma cases are increasing at a rate of 50 per cent every decade, and according to the World Health Organization, by the year 2020, asthma, along with chronic obstructive pulmonary disease (COPD) will become the third leading cause of death. An estimated 300 million people in the world currently have asthma and there may be an additional 100 million persons with asthma by 2025 [5]. It has been reported that India has approximately 15-20 million asthmatics and 10 to 15 per cent of Indian children between the ages of 5 and 11 yr show symptoms of asthma. In India, there is a median prevalence of about 2.4 per cent in adults of over 15 yr of age [6]. In one of the largest epidemiological multi-centric studies on the prevalence of asthma in Indian adults using a uniform, validated and standardized methodology, a prevalence of 1.69-3.47 per cent was observed [7]. Female gender, increasing age, family history of asthma, history suggestive of atopy, lower socio-economic status and urban residence were significantly associated with asthma [7]. In a study in Mumbai, the prevalence of asthma in adults was 3.5 and 17 per cent when broad definitions including asymptomatic bronchial hyperresponsiveness were used [8]. In rural children in Delhi, parental smoking, paracetamol intake, current exposure to cat, exposure to traffic pollution were found to be significantly associated with current wheezing [9]. Whereas in children aged 4- 20 15 yr in Chandigarh, a prevalence of 7 per cent was observed [10]. India accounts for a third of the world's asthma patients.

The risks for developing asthma depend on a complex interaction of hereditary and environmental factors. Risk factors are genetic predisposition (family history of atopy or asthma); perinatal factors (low birth weight, prematurity); exposure to allergens; infections (respiratory infections, especially those caused by respiratory syncytial virus); environmental air pollution; tobacco smoke; diet and obesity [11]. Some of the differences are attributable to differences in the environmental exposures and health care infrastructure in India while others could be truly genetic or ethnic in origin. The review of literature shows a large variation in data with respect to the prevalence of asthma [12]. Exposure to indoor pollutants represents a potentially modifiable cause of allergic sensitization and asthma. So, it becomes important to establish which environmental factors might influence the development of asthma in predisposed individuals. Primary prevention includes creation of a productive environmental situation, leading healthy life-style, elimination of environmental factors or pollution.

### Aim And Objective

#### Aim

To assess Socio-economic Status and correlate the causative factor for asthma in children

#### Objective

- To study the Socio-economic Status of Patients
- To study the correlation between environmental factors and severity of Asthma

## MATERIAL AND METHODS

### Study Design

The study was a Prospective, Open Labelled and Descriptive Survey conducted using a specifically designed questionnaire. Necessary approval from the Institutional Ethics Committee was obtained before initiating the study.

### Place of Study

The study was conducted in GSVM, Kanpur

### Study Duration

The study was conducted between February 2016 to September 2017.

### Patient Selection

Patients, aged 1–14 years, diagnosed as patients of asthma were selected for this study. Informed consent was obtained from each patient's parent/guardian.

### Sample Size

The study included 100 patients who confirmed to the following predetermined inclusion and exclusion criteria.

### Inclusion Criteria

- Patients of either sex
- Within the age limit 1-14yrs
- Patients who are known case of asthma and already on treatment
- Willing to enroll in a study with consent

### Exclusion Criteria

- Patients who are >14years and <1years
- Patients who are suffering from other systemic disorders (heart disease etc)
- Patient not willing and not giving consent

### Case Report Form

It included the OPD number, demographical details and patients name, age, sex. A brief questionnaire was designed specifically for the study is attached with case report form which contained chief complaints, and history of asthma, socioeconomic status of patients, severity and the current status of asthma.

### Method

Once their consultation with the General Physician / Resident was over, the prescriptions were collected and necessary details were noted on the questionnaire. The patient's parents were also interviewed on the predesigned questionnaire. The details of the patients profile were noted down.

### Statistical Analysis

Statistical Analysis was performed using Statistical Software SPSS 17.0. The Data was entered into SPSS sheet and analyzed. The data was presented using frequencies, percentages along with appropriate graphs and charts. The quantitative variables were presented using descriptive statistics such as mean, and Standard deviation. The Association between variables was tested using chi-square test. The level of significance was set at 0.05. All p-values less than 0.05 are considered as significant.

## RESULTS

During the study, 100 paediatric asthma patients' prescriptions were included for data analysis as per inclusion & exclusion criteria. The various parameters analysed are as follows-

### Age and Sex

The paediatric group patients were divided into three classes as per the age-group. Most of the paediatric patients suffering from asthma were found in the age group of 1-5 years (Table 1, Fig 1). 64% of the patients were male and 36% were female (Table 1, Fig. 2).

**Table 1 shows: Age Sex Distribution of Pediatric Patients**

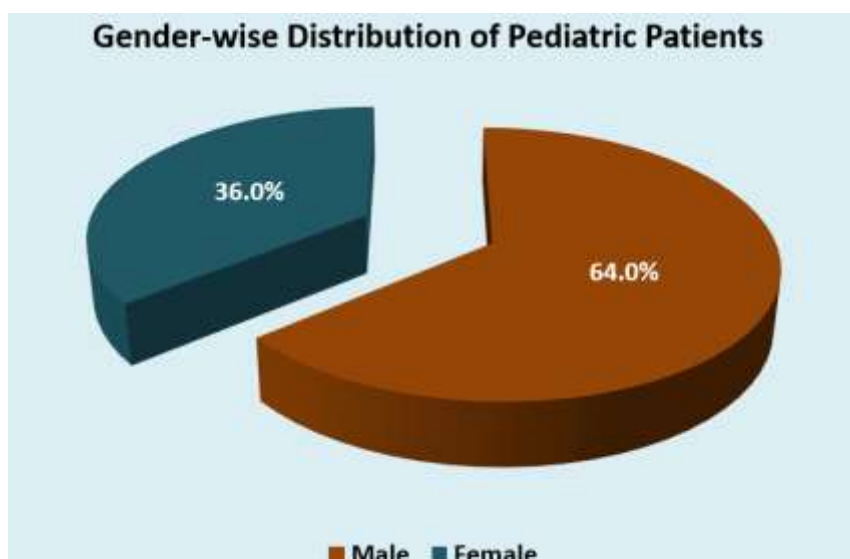
Age	Sex		Total
	Male	Female	
1--5	24	21	45
	24.0%	21.0%	45.0%
6--10	29	15	44
	29.0%	14.0%	43.0%
11--15	11	0	11
	11.0%	.0%	11.0%
<b>Total</b>	<b>64</b>	<b>36</b>	<b>100</b>
	<b>64%</b>	<b>36%</b>	<b>100.0%</b>

**Table 2: Age wise Distribution of Pediatric Patients**

Age (in Years)	No. of Patients	Percent
1--5	45	45.0%
6--10	44	44.0%
11--15	11	11.0%
<b>Total</b>	<b>100</b>	<b>100.0</b>

**Table 3: Gender wise Distribution of Pediatric Patients**

Gender	No. of Patients	Percent
Male	64	64.0%
Female	36	36.0%
<b>Total</b>	<b>100</b>	<b>100.0</b>



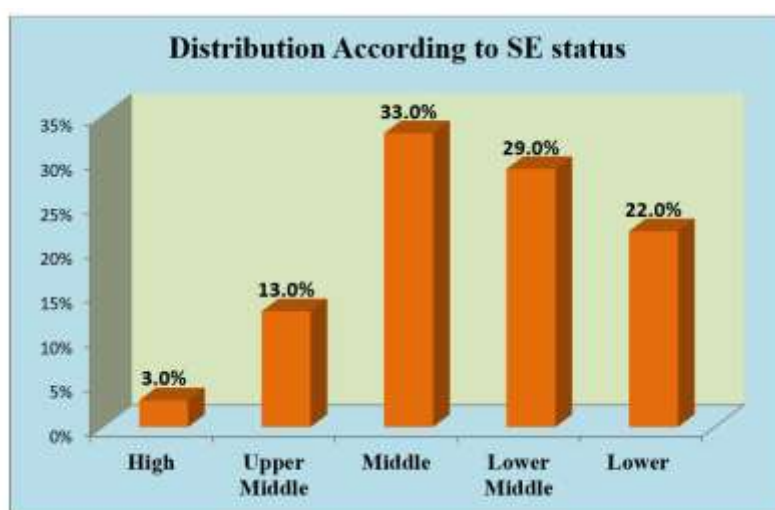
**Figure 1 shows: Gender wise distribution of pediatric patients**

### Distribution according to socio-economic status

Out of 100 patients 33% patients were from Middle class. 51% (29% lower middle, 22% lower) were from lower socio-economic status. 16% (13% upper middle, 3%high) were from upper strata of society

**Table 4 shows: Distribution According to socio-economic status**

Socio- economic Status	Frequency	Percent
High	3	3.0%
Upper Middle	13	13.0%
Middle	33	33.0%
Lower Middle	29	29.0%
Lower	22	22.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>



**Figure 2 Shows: Distribution according to Socio-economic status**

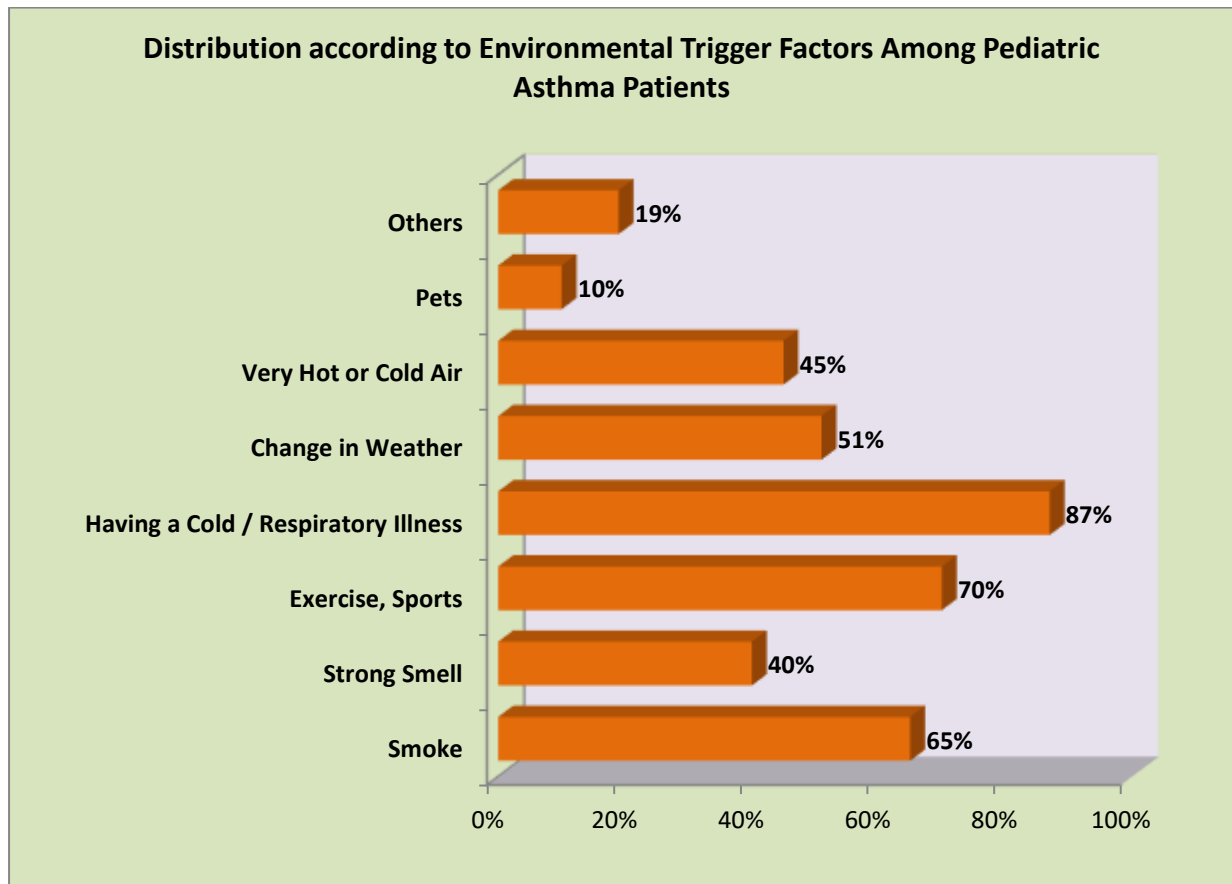
### Environmental and Seasonal determinants of Asthma

21% of children suffering from asthma had a family history of asthma. Among children cold/respiratory illness (87%) followed by exercise and sports (70%) was the most common environmental trigger for asthma. Asthma symptoms worsened during day time and winter season in this group (Table 4, Fig. 6).

**Table 5: Environmental factors and Asthma**

PARAMETERS		Patients	
		Total	Percentage (%)
Family History		21	21
Asthma Triggers	Smoke	65	65
	Strong Smell	40	40
	Exercise, Sports	70	70
	Having a Cold / Respiratory Illness	87	87
	Change in Weather	51	51
	Very Hot or Cold Air	45	45
	Pets	10	10
	Others	19	19

<b>Asthma Symptoms</b>	<b>Daytime</b>	72	<b>72</b>
	<b>Night time</b>	55	<b>55</b>
	<b>Winter Season</b>	94	<b>94</b>
	<b>Fall Season</b>	62	<b>62</b>
	<b>Summer Season</b>	42	<b>42</b>
	<b>Spring Season</b>	19	<b>19</b>



**Figure 3 shows: Distribution according to environmental trigger factor among pediatric patients**

#### **Association between environmental factors and severity of asthma**

A significant positive association between environmental asthma triggers: smoke ( $p=0.035$ ), strong smell ( $p=.008$ ), cold/respiratory illness ( $p=0.035$ ), hot/cold air ( $p=0.03$ ) and severity of asthma in children was observed. Winter season worsened the asthma symptoms ( $p=0.047$ ) in children.

#### **DISCUSSION**

Bronchial Asthma is a disease of airway inflammation and airflow obstruction leading to bronchospasm characterized by the presence of intermittent symptoms including wheezing, chest tightness, dyspnoea and cough together with bronchial hyper-responsiveness. It is a serious public health problem affecting both children and adults. In India, 3-5% pediatric population is affected by asthma whereas in adults the prevalence ranges from 3-11%. Asthma affects an estimated 300 million individual's world wide the prevalence of asthma is increasing specially in children's Asthma is a chronic disease resulting in high mortality and morbidity worldwide.

Long-term treatment is generally required for an effective management, which has an effect on the cost of the therapy and patient's compliance. When uncontrolled, asthma can place severe limits on daily life and is sometimes fatal. So, proper prescribing patterns need to be followed in order to reduce

the burden of disease in terms of morbidity, mortality and betterment in the quality of life. In addition to that, it also ensures the reduction of economic burden in the patients.

Drug utilization study helps to generate data on the drug usage pattern, quantifying various facts of drug therapy and evaluate the cost of therapy. The present study was aimed to assess the drug utilization in asthma therapy with special focus on Inhalational corticosteroid and beta-2 agonist drugs as a quantitative type of prescription auditing to generate data with respect to the extent of variability of drug usage as well as the cost, among pediatric groups.. Our objective was study correlation of asthma with socioeconomic status & environmental triggers. In present study; prescriptions of 100 pediatric patients were studied. On analysis of the prescriptions, it was found that asthma was reported more in male 77 patients (64%) as compared to females (36%). Majority of the prescriptions of the pediatric patients analysed were in the age group 1-5 (45%) years. Out of total, 74 % of the cases were suffering from moderate persistent asthma and 26% from mild persistent asthma. There were no cases of severe persistent asthma encountered in the study.

The risks for developing asthma depend on a complex interaction of hereditary and environmental factors. Risk factors that the patients were screened for included: genetic predisposition (family history of asthma); allergen exposures (sensitization and exposure to cockroaches, house dust mites, rodents, furry animals and molds); infections (respiratory infections, especially those caused by respiratory syncytial virus); environmental air pollution; tobacco smoke; diet and obesity [13]. Sharma et al reported that in children, asthma attacks were increased during a particular season (86%), after exertional work (70%). The risk of asthma was more in children where smoke producing fuel was used (70%), presence of insects/pets/domestic animals (70%) and moisture, mold (42%) in the home, born prematurely/LBW (56%), with family history of atopy (44%), one smoker in family (38%), and who belonged to poor socio-economic status (44%). No relationship was found with consumption of junk food and emotional factors [14]. In the present study, 51 % ( 29% lower middle, 22% lower) patients family was belonging to lower socioeconomic status. Family history of asthma was positive in 21 % of children suffering from asthma. Among children, cold/respiratory illness (87%) followed by exercise/sports (70%) were the most common environmental trigger for asthma. Asthma symptoms worsened during day time and winter season in this group.

Exposure to indoor pollutants such as pets, dust, mites as determined in the present study represents a potentially modifiable cause of asthma. So, it becomes important to establish which environmental factors might influence the development of asthma in predisposed individuals. A significant positive association between environmental asthma triggers: smoke ( $p=0.035$ ), strong smell ( $p=0.008$ ), cold/respiratory illness ( $p=0.035$ ), hot/cold air ( $p=0.033$ ) and severity of asthma in children was observed. Winter season worsened the asthma symptoms ( $p=0.047$ ) in children. Change in weather, exposure to hot, cold air and smoke makes the pediatric group more susceptible to have exacerbations of asthma signs and symptoms. Primary prevention includes creation of a productive environmental situation, leading healthy life-style, elimination of environmental factors. Early detection of atopy and the causal allergens, including food, prevention of the development of viral infections, treatment of atopic dermatitis, allergic rhinitis, etc. are important components of primary prevention. Reduction of allergen exposure, leading to subsidence of inflammation and hyperactivity in bronchi belongs to secondary prevention. Since the quality of indoor environment is potentially modifiable there might be opportunities for intervention to reduce asthma symptoms. In order to counteract the increasing prevalence in asthma, the significance of the indoor environment where children spend most of their time need to be given greater attention.

However, most patients were unaware of the asthma control action plan. Thus our study highlights that certain steps towards patient education need to be taken in order to improve the awareness among the patients regarding medication and management of asthma for better prognosis. In future, informative leaflets may be prepared and distributed among the patients based upon their awareness.

### CONCLUSION

- Patients were mostly from poor economic strata of society (23% lower, 29% lower middle).
- Among children, having a cold and respiratory illness followed by exercise
- and sports were the most common environmental triggers for asthma. Asthma

- symptoms worsened during day time and winter season.

#### REFERENCES

- [1] National heart lung and blood institute, Global institute for Asthma. National institute for health publication 1995; 953-659
- [2] Alderson M. Trends in morbidity and mortality from asthma. *Population Trends* 1987; 49: 18-23.
- [3] Lundback B; Epidemiology of rhinitis and asthma; *Clin Exp Allergy* 1998; 2( 2):3-10.
- [4] Yeatts K, Sly P, Shore S, Weiss S, Martinez F, Geller A, et al; A brief targeted review of susceptibility factors, environmental exposures, asthma incidence, and recommendations for future asthma; *Environ Health Perspect* 2006; 114: 634-40
- [5] Masoli M, Fabian D, Holt S, Beasley R; Global burden of asthma; Southmpton: Medical Research Institute of New Zealand and University of Southampton; 2004. World map of prevalence of clinical asthma; 12-5.
- [6] Jindal SK; Asthma control in the first decade of 21 century; *Indian J Med Res* 2007; 125: 604-788.
- [7] Aggarwal AN, Chaudhry K, Chhabra SK, D'Souza GA, Gupta D, Jindal SK, et al.; Prevalence and risk factors for bronchial asthma in Indian adults: A multicentre study; *Indian J Chest Dis Allied Sci* 2006; 48:13-22.
- [8] Chowgule RV, Shetye VM, Parmar JR, Bhosale AM, Khandagale MR, Phalnitkar SV, et al; Prevalence of respiratory symptoms, bronchial hyperreactivity, and asthma in a megacity: results of the European Community Respiratory Health Survey in Mumbai (Bombay); *Am J Respir Crit Care Med* 1998; 158:547-54.
- [9] Sharma SK, Banga A.; Prevalence and risk factors for wheezing in children from rural areas of north India. *Allergy Asthma Proc* 2007; 28:647-53.
- [10] Jaiswal A. Pets can cause asthma. *Chandigarh Tribune*. May 1-2, Available from:<http://www.tribuneindia.com/2008/20080507/cth1.htm> .
- [11] Bracken MB, Belanger K, Cookson WO, Triche E, Christiani DC, Leaderer BP . Genetic and perinatal risk factors for asthma onset and severity: a review and theoretical analysis. *Epidemiol Rev* 2002; 24: 176-189.
- [12] Finkelstein JA, Barton, MB, Donahue JG, et al Compar-ing asthma care for Medicaid and non-Medicaid children in a health maintenance organization. *Arch Pediatr Adolesc Med* 2000; 154: 563-568.
- [13] Robert F, Lemanske, and William W. Busse; Asthma: Clinical Expression and Molecular Mechanisms; *J Allergy Clin Immunol* 2010 February; 125(2): S95-102.
- [14] Seema Sharma, Mangla Sood, Ashwani Sood; Environmental Risk Factors in Relation to Childhood Asthma in Rural Area; *Curr Pediatr Res* 2011; 15 (1):29-32.