

**Original Article**

**“A CASE CONTROL STUDY ON DETERMINANTS OF CHILDHOOD ASTHMA IN SCHOOL CHILDREN OF CHITRADURGA CITY”**

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**ABSTRACT**

**Objective:** Asthma is a chronic airway inflammatory disease in which many cells and cellular elements play a role often arising from allergies, subsequently cause shortness of breath, wheezing and coughing it affects children in different ways. To study the sociodemographic characteristics of asthmatic children and compare the predisposing factors of asthma in children.

**Methods:** A Community based Case control study in selected schools in chitradurga for a period of 6 mo. A total of 90 children, among which 30 asthma children and 60 non asthma children were participated. Odds ratio will be calculated to know the strength of association. chi square test will be calculated to the significance.

**Results:** A total of 90 children aged <14 y data. Female children are more exposed to asthma than male. In childhood asthma age group between 10-14 years the age group of 10 y (26.7%) and 12 y (26.7%) were more exposed to the asthma.

**Conclusion:** In Chitradurga city, the study area, is of no exception with regard to case control. From the total of 90 children selected for the study majority were found risk factors affected. It was due to their family history, exposure to pet animals, allergy, age group, BMI and sex.

**Keywords:** Childhood Asthma, Children of Chitradurga

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**INTRODUCTION**

Asthma is a major public health problem worldwide with wide differences in prevalence and severity throughout the world. Significant increases in the prevalence and the severity have been noticed globally over the past few decades in certain geographical regions [1].

Asthma is a chronic airway inflammatory disease, often arising from allergies, characterized by bronchospasm that subsequently cause shortness of breath, wheezing and coughing. These flare ups are also called asthma attacks or exacerbations. Asthma affects children in different ways. Some children have asthma attacks only during allergy season, when they breathe in cold air, or when they exercise [2].

Early-life experiences and environmental exposures have been associated with childhood asthma. Environmental exposures during the first year of life are associated with childhood asthma risk like breast-feeding, cockroach, day care, farm environment, herbicide, pesticide, sibship size, wood smoke etc [3].

Home environmental factors appear to be strongly associated with asthma in school children in a developing nation. This include concerns regarding the representativeness of the study population, and the lack of objective measures such as fungal or house dust mite antigens or indoor air pollutants [4].

Seasonal Variation in asthma morbidity and health care utilization, such as emergency department or hospitalizations, is well-documented. Various factors, some patients exhibit continuous symptoms throughout the year. Indoor environmental factors, such as tobacco smoke exposure, have been posited as contributing to asthma exacerbations [7].

The role of exposure to traffic related air pollutants, in addition to and in combination with other asthma enhancers or precipitators [8].

Childhood asthma was strongly associated with a family history of asthma and rhinitis, the place of residence, having smokers as parents and early weaning from maternal breast milk. The identification of risk factors is essential for the adaptation of preventive measures and the optimization of asthma patient management [14].

Keeping the above facts in to the consideration I found it is essential to know about the sociodemographic characteristics of asthmatic children and the predisposing factors of childhood asthma.

**MATERIALS AND METHODS**

A Community base Case control Study was approved by the Institutional Ethics Committee, of SJM College of pharmacy, Chitradurga, Karnataka. The study was carried out at higher, primary schools of Chitradurga city. Asthma children (10-15) of the school children of Chitradurga city. Consent and assent should be taken from parents, guardian or teacher for the study. sample is met (1:1) ratio of asthmatic children taken as a case and (1:2) children of preceding and succeeding roll number not suffering from the childhood asthma were taken as controls.

Demographics details of the children was obtained and documented in suitably designed children data collection form. The study was conducted over a period of 6 mo. i.e. November 2016 to April 2017. The children were educated regarding asthma and its prevention measures by means of educational leaflets, charts, and other suitable resources (both in English and Kannada versions).

**Statistical analysis**

The collected data was entered in Microsoft excel 2007 and results are analyzed using Epi info. Odds ratio will be calculated to know the strength of association. chi square test will be calculated to the significance.

**RESULTS**

**Distribution of children according to age**

Out of 30 asthmatic children 8 (26.7%) were in the age group of 10 y, 5 children (16.7%) were in the age group of 11 y, 8 children (26.7%) were 12 y of age group, 7 children (23.3%) were 13 y of age group, 2 children (6.7%) were 14 y of age group. Out of 60 non asthmatic 16 children (26.7%) were 10 y of age group, 10 children (16.7%) were 11 y of age group, 16 children (26.7%) were 12 y of age group, 14 children (23.3%) were 13 y of age group, 4 children

(6.7%) were 14 y of age group. From the analyzed data we found that the age group of 10 y and 12 y were more exposed to the asth-

ma. Table 1 given below show the detail.  
 $\chi^2$  value= 0df=4p value= 1.0, NS

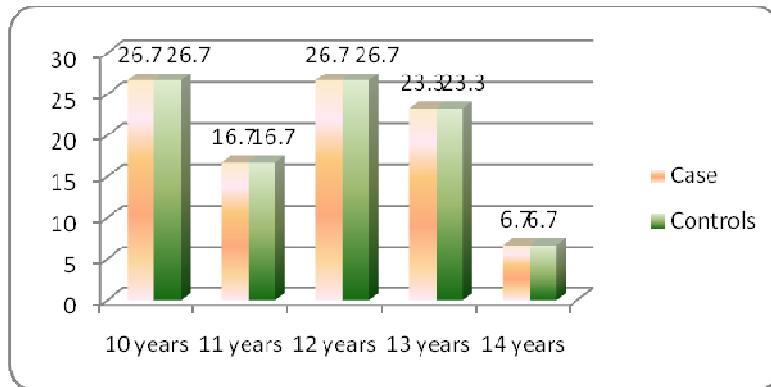


Fig. 1: Distribution of children according to age

**Distribution of children according to sex**

Out of 90 children, asthmatic male were 10(33.3%) and female were 20(66.7%) and among non asthmatic children male were 23(38.3%) and

female were 37(61.3%). From the analyzed data we found that the larger number of asthmatic children were female than male.  
 $\chi^2$  value= 0.215 df=1 p value= 0.643, NS

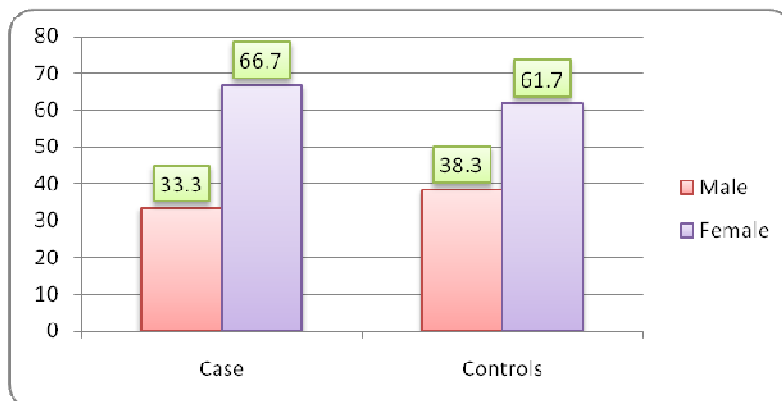


Fig. 2: Distribution of children according to sex

**Distribution of children according to relation**

Out of 30 asthmatic 20 children (66.7%) were not having relation, 1 children (3.3) relation with father, 3 children (10.0) relation with

grandparents, 5 children (16.7) relation with mother, 20 children (66.7) relation with Siblings.  
 $\chi^2$  value= 3.648 df=4 p value= 0.456, NS

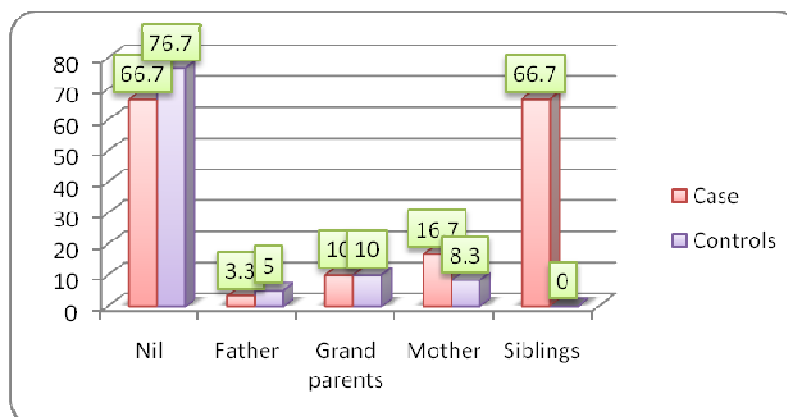


Fig. 3: Distribution of children according to relation

**Distribution of children according to duration of asthma**

Out of 30 asthmatic 23 children (76.7%) were Less than 1 y duration of asthma, 7 children (23.3%) with 1-5 y duration of asthma. out of 60 non asthmatic 60 children(100%) No his-tory of asthma.  $\chi^2$  value= 90.0df=2p value= 0.000, Sig.

**Distribution of children based on allergy**

Out of 30 asthmatic 18 children (60.0%) were exposed to allergy, 12 children (40.0%) were not exposed to allergy. Out of 60 non asthmatic 34 children (56.7%) were exposed to allergy, 26 children (43.3%) were not exposed to allergy.

$\chi^2$  value= 0.091 df=1 pvalue= 0.763, NS Odd's ratio= 1.15

**Distribution of children according to exercise**

Out of 30 asthmatic 9 children (30.0%) were exposed to exercise, 21 children (70.0%) were not exposed to exercise. Out of 60 non asth-

matic 14 children (23.3%) were exposed to exercise, 46 children (76.7%) were not exposed to exercise.

$\chi^2$  value= 0.467df=1p value= 0.494, NS Odd's ratio= 1.41

**Distribution of children based on pollution**

Out of 30 asthmatic 18 children (60.0%) were exposed to pollution, 12 children (40.0%) were not exposed to pollution. Out of 60 non asthmatic 32 children (53.3%) were exposed to pollution, 28 children (46.7%) were not exposed to pollution.

$\chi^2$  value= 0.36df=1p value= 0.549, NS Odd's ratio= 1.31

**Distribution of children based on pet animals**

Out of 30 asthmatic 17 children (56.7%) were exposed to pet animals, 13 children (43.3%) were not exposed to pet animals. Out of 60 non asthmatic 13 children (21.7%) were exposed to animals, 47 children (78.3%) were not exposed to animals.

$\chi^2$  value= 11.025 df=1 p value= 0.001, Sig Odd's ratio= 4.72

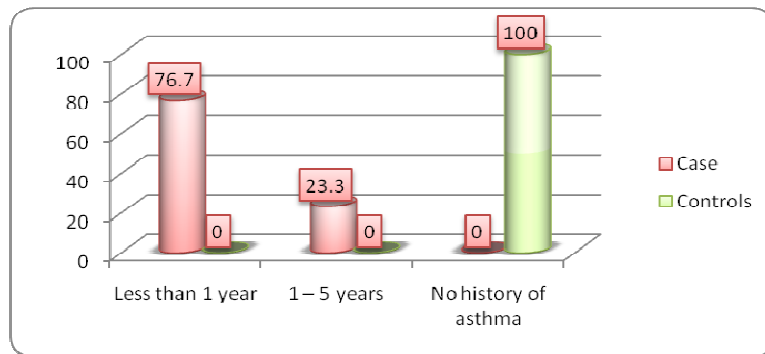


Fig. 4: Distribution of children according to duration of asthma

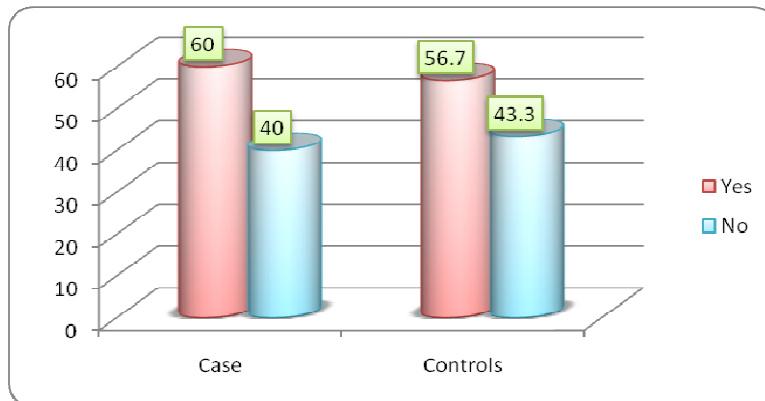


Fig. 5: Distribution of children based on allergy

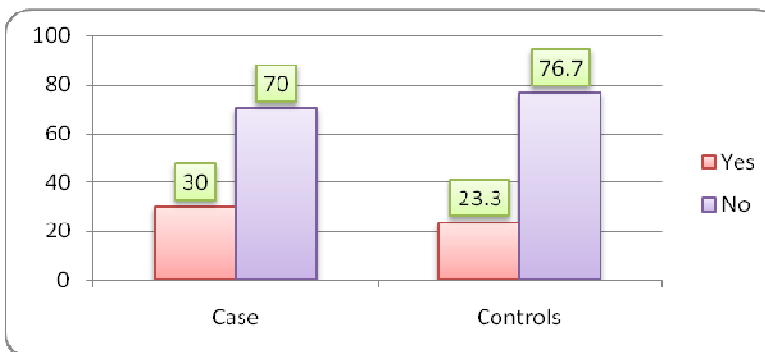
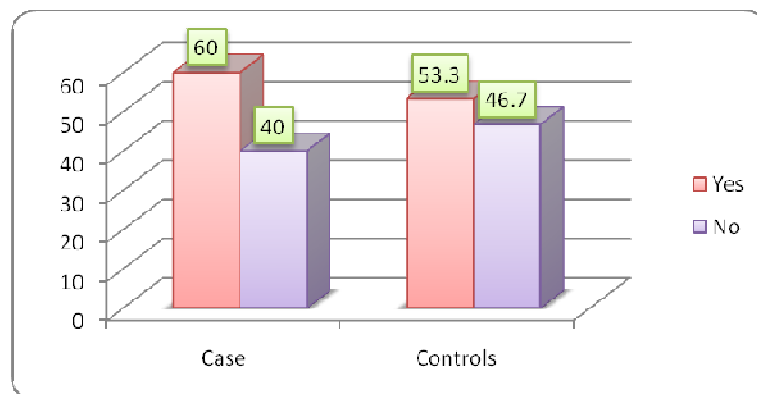
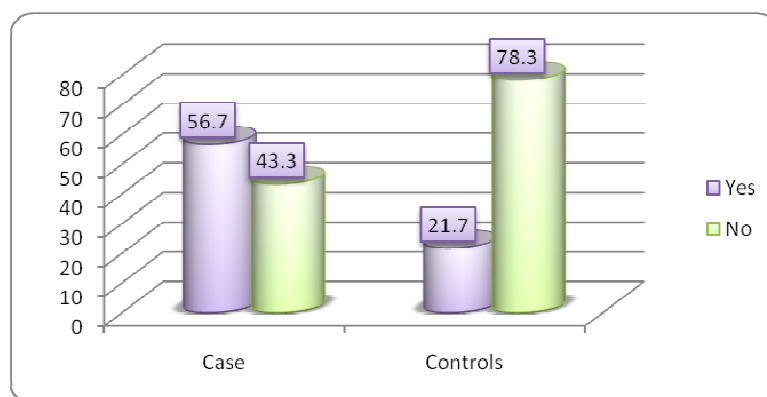


Fig. 6: Distribution of children according to exercise



**Fig. 7: Distribution of children based on pollution**



**Fig. 8: Distribution of children based on pet animals**

## DISCUSSION

From the total of 90 children, among them 30 were asthma affected and 60 were non asthmatic children. They participated in the study from selected schools of Chitradurga city. The case details were collected from the children in a suitably designed data collection form. Children of preceding and succeeding roll numbers not suffering from the asthma were taken as controls.

Hwang BF *et al.*, Conducted a study on Traffic related air pollution as a determinant of asthma among Taiwanese school children were found that 10 y (7.71%) of the case were exposed to asthma and controls were not found [11]. In our study out of 90 children aged of 10 y (26.7%) and 12 y (26.7%) in the case and 10 y (26.7%) and 12 y (26.7%) of controls were found exposed to asthma.

Sharghi N *et al.*, carried out a clinic-based case-control study on environmental exposure to Toxocara as a possible risk factor for asthma were found that female (53.7%) and male (46.3%) were of asthmatic and female (50.2%) male (49.8%) were non asthmatic [13]. In our study out of 90 children there were (66.7%) asthmatic females and (33.3%) males and non asthmatic females (61.7%) and males (38.3%), the females were more exposed to asthma than males

Manuel. SM *et al.*, conducted a case-control study on Risk factors for asthma among children in Maputo were found that 26% as case and 28% as control were exposed to pet animals [12].

In our study 56.7% of children in the case and 21% in the control of asthmatic and non asthmatic children were more exposed to pet animals.

Dan XU *et al.*, conducted a cross-sectional survey study on Prevalence and risk factors for asthma among children aged 0-14 y in Hangzhou, were found that 79% asthmatic and 11.2% non asthmatic children were exposed to allergy [14]. In our study out of 90 chil-

dren 60% asthmatic and 56.7% non asthmatic children were more exposed to allergy.

Takemura Y *et al.*, carried out a study on Many risk factors for asthma have been proposed including age, gender (male), smoking, and family history of asthma were found that 22.6% and 8.8% respectively, case and controls, were exposed through family history.[15] In our study out of 90 children 33.3 % asthmatic and 23.3% non asthmatic. were exposed through the family history.

Zmirou D *et al.*, Traffic related air pollution and incidence of childhood asthma: results of the Vesta case-control study found that asthmatic (48.7%) and (52.8%) non asthmatic children were exposed through siblings [10]. In our study out of 90 children (66.7 %) case and (0 %) control of asthmatic and non asthmatic children were exposed through siblings.

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## CONCLUSION

On the basis of the above discussion, it can be concluded that the asthma is a major health problem across the world in prevalence and severity. Chitradurga city, the study area, is of no exception with regard to case control. From the total of 90 children selected for the study majority were found risk factors affected. It was due to their family history, exposure to pet animals, allergy, age group, BMI and sex.

**AUTHORS CONTRIBUTIONS**

All the author have contributed equally

**CONFLICT OF INTERESTS**

Declared none

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