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Epidemiological Study on Bronchial Asthma

KEYWORDS: Bronchial Asthma,Atopic-Dermatitis,Socio-Economic Status ,Occupational Asthma

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ABSTRACT *The overall burden of Asthma in India is estimated at more than 15 million .The present study was conducted to estimate the prevalence of different types of Bronchial Asthma and define their risk with age,gender,type of cooking fuel ,dwelling area,occupation and income,education, dietary habit,family history,Atopic Dermatitis,smoking & alcoholic habit, Diabetes in Visakhapatnam district, North coastal Andhra Pradesh,South India. One hundred and twenty patients from Hospital for Chest and Communicable Diseases were included in this study using a well designed questionnaire, clinical examination by physician which was carried out from August,2008 to March,2009.The key questions were related to the type of Asthma,family history, presence of Atopic Dermatitis and Diabetes , information on smoking and alcoholic habits, domestic cooking fuel used, dwelling area,age,religion,socio-economic status and age of onset of disease.Out of 120 subjects surveyed,34 were females and 86 were males.The type of Asthma is distributed as Cough variant Asthma(50.83%),Nocturnal Asthma(17.5%),Allergic Asthma(20.83%) and Occupational Asthma(10.83%).Regarding family history,59.16% showed genetic predisposition irrespective of sex.Among Asthmatics,20% were having Atopic Dermatitis.25% were smokers,20% were alcoholics and 44.16% were with diabetics.Advancing age, usual residence in urban area,lower socio-economic status were associated with significantly higher odds of having Asthma.The present study shows that Asthma is an important public health issue in urban areas.It showed that Cough Variant Asthma,Diabetes and smoking habit increases the incidence of Asthma attacks. In order to attain a better quality of life in a chronic disease condition like Asthma, one needs to be aware of its aggravating factors.*

INTRODUCTION:

Bronchial Asthma is a chronic inflammatory disorder of the airways associated with airway hyper responsiveness that leads to recurrent episodes of wheezing, breathlessness, chest tightness and coughing particularly at night or in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment[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].While this increase in the prevalence of Asthma is rather global in nature, a difference does exist between the epidemiology, clinical spectrum and the management practices in India and those in west[3].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[4]. 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[5]. 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.

There are only a few studies from India on epidemiology of Asthma. In a study conducted more than 30 years ago, prevalence of Asthma was reported as 2.78% in an urban population aged 30-49 years[6]. In a study done by Aggarwal et al.,2006 the prevalence of Asthma was found to vary from 4.3%–6.9% in the Indian population.Clinically diagnosed Asthma in adults has been reported to be 2.7 to 4.0% in most of the European countries, while in England and US, it amounts to 12% and 7.1 respectively[8] . In Australia, the prevalence is comparatively high (9.5 to 17.9%) [Ortega A N et al.,2002]. Tristan da Cunha is a distinct example where more than half of the population (56%) are asthmatics, thereby supporting a strong genetic association[9]. Asthma continues to place a heavy burden on patients and their families as well as the health-care system. This is the time to establish well-designed clinical trials to allow rapid evaluation of new and existing therapeutic approaches for Asthma.

MATERIAL AND METHODS:

The present study was carried out in one hundred and twenty patients in the Government Hospital for Chest and Communicable Diseases,Visakhapatnam for a period of 8months from August 2008 to March 2009.The patients who visits this Hospital are mostly from low socio-economic status.Consent was obtained from the participating subjects after the purpose of the study was explained to them.The questionnaire was aimed at collecting information of Asthma cases regarding demographical and environmental exposure factors which influence the prevalence of Asthma. Patient data was obtained by interviewing the patient and also by the examination of the patient's medical record. The data of the patient

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includes religion distribution, age, gender, type of cooking fuel ,dwelling area,occupation and income,education dietary habit,family history,Atopic Dermatitis,smoking & alcoholic habit, Diabetes.The data was analyzed using descriptive statistics.

RESULTS

A total of 120 Asthma patients were evaluated by using questionnaire.The demographic profiles of the study group are presented in Table.1

Table 1. Demographic profile of the subjects

Demographic Profile	n (%)
Religion Distribution	
Hindus	112(93.3)
Christians	6(5)
Muslims	2(1.67)
Age(yrs)	
21 – 30	14(11.6)
31 – 40	33(27.5)
41 – 50	38(31.6)
51 – 60	14(11.6)
61 – 70	15(12.5)
71 – 80	04(3.33)
Mean Age	45.47
S.D	13.61
Range	21-80
Sex	
Male	86(71.66)
Female	34(28.33)
Type Of Cooking Fuel	
Biofuel	18(15)
LPG	102(85)
Habitat/Locality	
Urban	97(80.83)
Rural	23(19.16)
Occupation	
Labor	66(55)
House-wife	22(18.33)
Semi-Skilled	14(11.66)
Skilled	09(7.5)
Business	04(3.33)
Education	
Literates	47(39.16)
Illiterates	73(60.83)
Income	
Low(<3000)	97(80.83)
Middle(3000 – 10000)	16(13.33)
High (>10000)	6(5)
Dietary Habits	
Non-Vegetarian	108(90)
Vegetarian	12(10)

Majority of patients (93.3%) belongs to Hindu religion with low socio-economic status whereas Christians and Muslims occupies 5% and 1.67% respectively.More number of subjects (59.16%) were found in between the age group of 31-50years.Males(71.66%) out number the females(28.33%). Majority of study group(85%) utilizing LPG cooking gas. Urban people(80.83%) are more affected than rural people(19.16%).Illitrates(60.83%) are more when compared with literates(39.16%).Majority of people belongs to low income category (80.83%) and the highest percent of Asthma patients are non vegetarians(90%).

Table 2.Inheritance of Bronchial Asthma

Family History Of Bronchial Asthma	
Yes	71(59.16)
No	49(40.83)
Type of marriage	
Affinal marriage	92(76.67)
Consanguineous marriage	28(23.33)

The nature of inheritance of Asthma disease is shown in Table 2.Family history of Bronchial Asthma was observed in 59.16% of patients and 40.83% are not having family history.Only 23.33% of asthmatics were of consanguineous marriage and the remaining 76.67% were of affinal type.A positive association of Bronchial Asthma was found with family history.

Table 3.Distribution of type of Asthma,Atopic Dermatitis and Physical conditions of asthmatics

Type of Asthma	
Cough variant asthma	61(50.83)
Nocturnal asthma	21(17.5)
Allergic asthma	25(20.83)
Occupational asthma	13(10.83)
Atopic Dermatitis	
With Atopic dermatitis	24(20)
Without Atopic dermatitis	96(80)
Physical Conditions	
Wheezing	92(76.6)
Coughing	112(93.3)
Shortness of breath	102(85)
Nasal problems	72(60)

The Table 3 shows majority (50.83%) of the subjects had Cough Variant Asthma.Among the other Asthmatics,20.83% were having Allergic Asthma and 17.5% with Nocturnal Asthma.Very less had Occupational asthma(10.83%).It is observed that the patients with Atopic dermatitis was found to be 20% and 80% are without Atopic dermatitis.Regarding physical conditions of Asthmatics ,all the four symptoms were observed in almost all the Asthma patients with different frequencies.

Table 4. Smokers,Alcoholics and Diabetics in Asthamatics

Age Group	Smokers	Alcoholics	Diabetes
21 – 30	04	03	-
30 – 40	08	07	14
40 – 50	10	08	19
50 – 60	05	04	13
60 – 70	03	02	06
70 – 80	-	-	01
Total	30(25%)	24(20%)	53(44.16%)

The Table 4 exhibits frequency of smokers and alcoholics in Asthma patients was 25% and 20% respectively. Females smokers and alcoholics were not found. The asthamatics suffering from diabetes was 44.16%.

DISCUSSION

Asthma has been recognized lately as a disease which results in increased morbidity and mortality. The magnitude of the problem of Asthma has not been defined with certainity,inspite of several epidemiological studies conducted throughout the world.Indeed,studies on the prevalence of Bronchial Asthma lack consistency,possibly because of ill defined diagnostic criteria,non standardized study protocols,different methodologies,environmental exposures

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and the health care infrastructure.A positive association was seen between Asthma and increasing age in rural and urban areas.The present study shows more number of people within the age group 31-50 in the rural and urban areas. This finding is similar to the result obtained by Sukhpal Kaur etal,2008 and Shivani rao etal.,2011.A gender difference was noticed in this study,with males being affected more than the females.The male predominance may be related to a greater degree of bronchial lability in males.This finding correlates with the finding of Animesh jain etal.,2010 and Shivani rao etal,2011.But according to Sukhpal Kaur etal.,2008 and Mansi etal.,2007,female predominance was found which was attributed to the fact that use of cowdung cakes as fuel for cooking lead to airway inflammation and Asthma

Among 3/4rth of the total subjects in the present study were residing in the urban area.In fact urban subjects were more exposed to various environmental allergens and pollutants. This result is similar to the study of Sukhpal Kaur etal.,2008.A positive association was seen between Asthma and lower socio-economic status people(low income,illetrates and labour) unlike the studies of Animesh Jain eta al.,2010 and Prasad et al.,2007 whereas this study is closely associated with other studies of Shivani rao et al.,2011:Sukhpal Kaur et al.,2008. The findings of our study are concurrent with the well documented strong association of family history with the prevalence of Asthma.This is closely associated with other studies of Prasad et al.,2007,Sukhpal Kaur et al.,2008,Animesh Jain et al.,2010.

The study of Animesh Jain et al.,2010 shows strong association between family history of Atopic disorder and the prevalence of Asthma whereas the present study shows only 20% of Atopic disorder Asthmatics.This may be attributed to the geographical variation or sample size taken.Smoking is emerged as a significant risk factor in Asthma people.Most of the studies shows correlation to this factor.Our study shows only 25% of Asthmatic people were smokers.According to S.K.Jindal & Dheeraj Gupta (2004) smoking as a risk factor of Asthma has remained debatable.In our study 44.16% of Asthma people showing Diabetes which does not shows correlation with the other studies.According to Dhar et al.,1970;Van ufford,1952 and Abrahamson EH,1941,it was shown that attacks of Asthma could be prevented by intake of glucose. According to Gluck J, Rogala B ,1999 a confirmatory finding was reported stating that Asthma and Diabetes rarely occurs showing that in a large series of asthmatics only 0.3%(n=18) were diabetic.Higher percentage of diabetics(24%) occur in the study of Mansi et al.,2007.The present study shows that the higher percentage of diabetics(44.16%) could be due to higher age group.

CONCLUSION

The present study represents the demographic profiles of Asthma people ,physical conditions of Asthma and association of Asthma with smoking,alcohol and Diabetes.The data indicates the urban people,labour,illitrates,low income people are more affected because of their financial status.The increased number of Asthma people are mainly due to the environmental pollution which includes the factors like establishment of more industries,construction of apartments without plantation.The study shows that it is essential to expand health care services and screening programmes for the diagnosis and treatment of Asthma.This study lays foundation for future research in Asthma in the region of North Coastal Andhra Pradesh.

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