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PREVALENCE OF ASTHMA IN SCHOOL GOING CHILDREN OF URBAN AND SEMI-URBAN AREA

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Abstract:

Introduction: A common chronic illness in school going children is asthma and it's been reported that this illness goes mostly under-diagnosed and sometimes untreated.

Objectives: It is estimated that among children that are school going under 8th standard in Punjab's urban areas asthma is prevailing. There are various factors that are associated to the illness in the study subjects.

Material and methods: a cross sectional study was done among middle school children mostly between 7th and 8th standard in urban and semi urban areas. The questionnaire this study is based on was also used by ISAAC (International study of asthma and allergies in childhood).

Results: Asthma diagnosed among 331 children and the questionnaire found it to be 13.9% in the study population. 87% of the patients was recently diagnosed with asthma. Various factors were found to be associated with the disease including allergy, family history of asthma, cough without cold and other significant factors. The prevalence ratio of both females and males was 1 male: 1.5 female.

Conclusions: The results of this study are consistent with other studies which confirms that the prevalence of the disease is higher.

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INTRODUCTION:

Childhood asthma is the common chronic illness among school going children and is reportedly under diagnosed and undertreated.1 Increase in the rates of hospital admission and primary care contacts for asthma in childhood has led to concern regarding prevalence or severity of increasing wheezing illness in children. Rise in prevalence of childhood asthma is a matter of concern worldwide and in Pakistan as well.2-5 The steady rise in prevalence is correlated with demographic changes in city like increase in number of industries, increased density of population from migration of rural population and increased number of automobiles to commute resulting in air pollution.5 Data on prevalence of asthma is now available from several countries. There is very limited data on asthma epidemiology from the developing countries including Pakistan.

Diagnosis of asthma is often missed or delayed due to the dynamic nature of the disease, unreliable past history or poor documentation of past episodes or lack of specific and relative diagnostic investiga-tion.**6** Children with poorly controlled, untreated or under diagnosed asthma can have problems, as exercise induced bronco spasm (EIB) can leave them breathless and unable to participate or sometimes it could be dangerous.3 In this regard training of the school teachers with health guides may be one of the most important strategies for promotion of school health.**7** There is no data available regarding prevalence of asthma in school children.

Objectives:

Main objectives of the study included the estimation and prevalence and prevalence among middle school children of 7th and 8th class in urban and semi urban areas. The second objective was to determine the association of various factors in prevalence of the illness in study population.

METHODOLOGY:

Study design & sample size:

It is a cross-sectional study which was done in all five higher secondary schools in Rawalpindi District of punjab

All the 7th & 8th class students of the schools were the participants for the study. Out of total 367 students, 331 children participated and 36 were absent on the day of data collection.

Study Period:

The data collection was done in the month Of Agust-Septemeber 2017.

Variables:

Allergies, area of residence, childhood asthma, cooking fuel, cough at night, diet, living in farm, medication, playing, pets, school children, sex of the child, smoking, wheezing and whistling.

Study Tools:

Study participants were asked to fill up the structured questionnaire as scheduled. Questionnaire was based on that used by International Study of Asthma and Allergies in Childhood (ISSAC).22 The final questionnaire was a modified version of this questionnaire with addition of questions related to environmental, lifestyle factors and questions regarding sever-ity of asthma based on relevant literature search. The developed questionnaire was translated into local language and pilot tested on a sample of school children. The questionnaire consisted of a total of 24 items. The children were considered to have questionnaire diagnosed asthma if the answer to any of the following question was "yes" viz. Item 3: Has a doctor ever told you that you have asthma?; Item 5: Have you had any wheezing or whistling in the chest in the past 12 months? and Item 7: Have you used medication for the wheezing in last 12 month?

Study population:

The study included 331 school going children with boys -163 (49.2%) and girls -168 (50.8%).
The mean age of study subjects was 13.2 years with a range of 12-17years.

Statistical Analysis:

Entry of all the data was done on Microsoft office Excel 2007 and was analyzed on statistical package for Social Sciences (SPSS V.S 20.0).

Table 1:

Characteristics of study population	
Variable	**School children (n=331) n (%)**
Place of residence:	
Rural area/village-	13 (3.9)
City-	318 (96.1)
Farm-	22 (6.6)
Smoking history of household members:	
Present-	196(59.2)
Present and inside the house or close to children-	164(49.5)
Present but never inside the house or close to children-	32(9.7)
Absent-	135(40.8)
Household pets:	
Present-	113 (34.1)
Absent-	218 (65.9)
Type of cooking fuel used at home:*	
Gas-	286 (86.4)
Stove/kerosene-	40 (12.1)
Firewood-	79 (23.86)
Allergy:	
Present-	48 (14.5)
Absent-	283 (85.5)
Diet:	
Vegetarian-	148 (44.7)
Mixed(vegetarian + non-vegetarian)-	183 (54.3)
Family history of asthma:	
Yes	56 (16.9)
No	275 (83.1)

*Total percentage does not equal 100

RESULTS:

Characteristics of study population:
Table-1 shows the characteristics of the study population. Of 331 children, 96.1% of the children live in city (urban area), while only 6.6% lived in farms; 59.2% had smoking household members, of whom an alarming 49.5% were exposed to passive smoke at home. 34.1% children were having pets (dog, cat, goat, cow /buffalo) at home. Majority of households (N=331, 86.4%) used gas for cooking, with or without other types of fuel. 23.86% used firewood for cooking.

14.5% children were allergic to one or other substances. 44.7% children were vegetarian and 54.3% (rest all) were having a mixed diet (i.e. vegetarian + non-vegetarian diet). 16.9% children reported history of asthma in the family members.

Prevalence of asthma:
Table 2 depicts prevalence of asthma among school children by various criteria viz. already diagnosed by the physician, asthma like symptoms (wheezing and whistling) and use of asthma medication in last 12 months. There were 46 students out of the total who answered "yes" to any of the above criteria based questions. Thus, the prevalence of questionnaire diagnosed asthma came out to be 13.9%. Out of these 40 (87%) were newly detected asthmatics by the study questionnaire, excluding those already diagnosed by the physician viz. 6(1.8%). Out of the total asthmatics 44 (13.3%) children reported wheezing and/or whistling in past 12 months and 9 (2.7%) children used medication for wheezing and/or whistling in past 12 months. The prevalence ratio of Male: Female came out to be 1:1.55.

Severity of symptoms among asthma patients:
Table-3 shows the analysis of severity of symptoms among asthmatic children 11 children (23.9%) had experienced 4 or more asthma attacks in past 12 months; 25 children (54.37%) suffered limitation of sporting activities at school and same proportion shows limitation of activities at home; 6 children (13.04%) had visited an emergency department in the past 12 months.

Risk factors associated with asthma:
Table-4 shows the association of risk factors with asthma. With univariate-ate and multivariate analysis, following variables were tested for association with asthma: sex, place of residence, history of asthma, smoking members in household, history of allergy, pets in household and type of diet. With univariate as well as multivariate analysis, out of these variables family history of asthma, history of allergy and presence of cough without cold showed a statistically significant association. Multivariate analysis shows significant association of asthma with family history of asthma, history of allergy.

Table 2: Prevalence of asthma		
Variable	**School children with asthma (N=331) n (%)**	
Physician diagnosed asthma-	6	(1.8)
Wheezing or whistling in past 12 months-	44	(13.3)
Medication taken for wheezing and whistling in past 12 months-	9	(2.7)
Answer "yes" to any of the above variable (prevalence of questionnaire	46(13.9)	
diagnosed asthma)		

Table 3: Severity of symptoms among asthmatic children	
Variable	Questionnaire diagnosed asthma patients (N1=46) n (%)
Four or more asthma attacks in past 12 months-	11(23.9)
Limitation of sporting activities at school-	25(54.37)
Limitation of activities at home-	25(54.37)
Visits to emergency department in past 12 months-	6(13.04)

Table 4: Association of various risk factors with asthma by univariate and multivariate analysis in the study population

Variable	Univariate analysis		Multivariate analysis	
	p value	OR (95% CI)	p value	aOR (95% CI)
Sex	0.139	1.611(0.8529-3.043)	.977	1.011(0.497-2.056)
Place of residence	0.5706	0.5212(0.1379-1.97)	.225	0.424(0.106-1.697)
Residence in farm	0.7777	1.413(0.4558-4.378)	.499	1.542(0.439-5.419)
Passive smoking at home	0.6888	0.8794(0.4688-1.65)	.523	1.249(0.631-2.472)
Family history of asthma	0.00009362	3.698(1.86-7.353)	.001	3.740(1.755-7.972)
History of allergy	0.0009416	3.23(1.567-6.655)	.005	3.054(1.397-6.675)
Pets in household	0.3649	0.7288(0.3669-1.448)	.568	0.568(0.270-1.193)
Type of diet	0.1568	0.6378(0.3411-1.192)	.323	1.407(0.715-2.769)
Cough without cold	0.000000603	5(2.544-9.826)	0.000	5(2.544-9.826)

DISCUSSION:

The prevalence of asthma in present study was found to be 13.9% among school children. The prevalence of asthma as found in various studies ranges from 3.5% to 29.5%.1-21 Similar are the prevalence rates of asthma in school children in the study quoted by Chhabra *et al*11 (15.7%) and in an another study by Mistry**17** (12.5%). Various studies on asthma in school children show variation in prevalence in rural and urban ar-eas,4,6,10,14,15,18,19 the prevalence being higher in urban children. This may be due to urban air pollution because of industries, automobiles,

aller-gens etc. Some of the studies have shown prevalence lower than the pres-ent study in urban setting.4,15,17,20 The possible reason for the lower prev-alence could be use of different definition for defining the prevalence, random selection of the samples, different sample size, different age group, different year of study, urbanization which could mean a number of lifestyle changes such as dietary habits, pollution, crowding etc.

In contrast to other studies,16,18,19,20 the present study shows female pre-dominance (male: female asthma ratio- 1:1.5) for the prevalence of asth-ma. This fact needs to be investigated with further studies.

A statistically significant association found between asthma and family history of asthma has also been documented by other studies.11,14,16,18,20,21 A significant association was found between history of allergy and asth-ma in the present study. Similar findings has been reported in the study by Dhabadi *et al*.6 History of cough without cold was strongly associated with asthma by both multivariate and univariate analysis, which shows similarities with other studies.4,16,19 Other studies have also shown asso-ciation of asthma with passive smoking, pets at home, environmental tobacco smoke, absence of smoke outlet10,13,16,21 which has not been found statistically significant in this study.

Around 50% of the asthmatics have limited sporting activity as well as activity at home, this shows poor control of asthma incapacitating to children. The poor control of asthma may be due to poor access to health services, lack of awareness or inadequate training in diagnosing asthma by the physician.\

CONCLUSION:

With prevalence of 13.9% of asthma in school children, in the present study around 87% remained undetected. This confirms to the higher trend of asthma prevalence as depicted by various studies. Multivariate analysis shows significant association of asthma with family history of asthma, history of allergy and cough without cold. Prevalence of asthma was seen more among the girls as compared to boys. This study also demonstrated need to control asthma in order to improve quality of life in children. Thus, the study underscores need for screening of asthma in school for early diagnosis and better asthma management. Moreover, Children and parents need to be educated about asthma symptoms and its care.

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