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Prevalence of asthma and its associated factors among the undergraduate students of Bangladesh Agricultural University

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ABSTRACT

Asthma is one of the major public health problems worldwide. There are few data available on the prevalence of asthma in adult population in Bangladesh. Despite of these data, prevalence of asthma among the undergraduate students of a specific university in Bangladesh has not been studied before. Students from different geographical location come to study in Bangladesh Agricultural University, Mymensingh. It is noticed that few students are found to be suffering from asthma. Therefore, this survey was planned to estimate the prevalence of asthma and to find out the probable risk factor among the undergraduate students of Bangladesh Agricultural University. This questionnaire-based study was carried out in every residential hall of Bangladesh Agricultural University. A room-to-room visit was performed and relevant information was recorded through questioning the undergraduate students by undergraduate students of Faculty of Veterinary science. Total 1371 students were surveyed. Overall prevalence of asthma was recorded as 10.7% (n= 146/1371). The prevalence of asthma among male was 11.7 % (n= 93/146) and female was 9.2% (n= 53/146). It was seen that a newly admitted student as well as level-1 student is less likely affected by asthma (7.5%) whereas a final year student; level-4 or above is affected in higher percentage (12.2%). A significant association of prevalence of asthma was found with dust allergy, cold allergy, food allergy and asthma patient in family ($p<0.05$).

Keywords: Asthma, Prevalence, Risk factor, Undergraduate students, Bangladesh.

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INTRODUCTION

In a developing country like Bangladesh there are lots of diseases that affect human health. Among them respiratory disease like asthma is very much common. Now asthma in Bangladesh appears to be a substantial public health problem: an estimated 11.6 million people including 4.1 million children suffer from asthma-related symptoms (Khan *et al.* 2010). According to recent estimates, asthma affects 300 million people in the world (Rai *et al.* 2007). Although people of all ages suffer from the disease, it most often starts in childhood. Asthma kills about 255,000 people worldwide every year (medicalnewstoday.com). According to WHO, Asthma attacks all age groups but often starts in childhood. It is a disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. According to its type, asthma has a great health consequence. There are several risk factors responsible for the development of asthma which may be divided into several categories such as allergic sensitization or exacerbation including hereditary allergic disorder, early exposure to protein antigens such as cow's milk or egg white, recurrent respiratory tract infection and indoor and

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outdoor environmental factors (Host A. 2002). There are very few works were done among university students in south-east Asia. Among them in Bangkok, Vichyanond *et al*. 2002 performed a study among university students and reported a significant level of asthma affected students.

Asthma is a common respiratory disease in Bangladesh, it is also found among the students of Bangladesh Agricultural University campus (personal communication). University students are suffering from asthma as they are affected by asthma since their childhood or they acquired recently. Number of asthma affected students is increasing day by day due to several factors but there is no specific data. Therefore the present study was undertaken to know the extent and magnitude of asthma and its associated factors among the undergraduate students of Bangladesh Agricultural University.

MATERIALS AND METHODS

Study design

A cross sectional study was done to find out the prevalence of asthma among the undergraduate students of Bangladesh Agricultural University and then case control study was carried out to determine the risk factors of asthma. The data were collected from 13 residential halls (9 male halls and and 4 female halls). The total number of the population of this study was 1371 and all of these students were enrolled as undergraduate students in Bangladesh Agricultural University. This study was conducted from September 2013 to October 2013.

Data collection

Students from 6 Faculties of Bangladesh Agricultural University (with different ages, different level, and different hall area oriented) were selected for this survey. The survey was conducted by undergraduate students of Faculty of Veterinary Science. Two teams were formed for the data collection. Face to face interview of all the members was performed at a time when all the members of the room in a residential hall were expected to be present. Every students of each residential hall who could be present and interviewed within a time frame was included. This survey was conducted at 10.00 pm and each room was visited more than once in case of necessity. The objective and usefulness of the survey was explained to all participants and verbal consent was taken before data collection.

A pre-structured questionnaire was prepared with help of expert medical doctors was used to collect data from the selected cases and controls. Separate questionnaire was used for individual student. The following symptoms and questions were used in the questionnaire- (1) “Has doctor diagnosed you as asthma patient?” (2) “Are you taking any medication including inhaler or tablet?” (3) “Have you had coughing at anytime in the last three weeks?” (4) “Had a wheezing or asthma attack at any time in last three weeks?” (5) “Have you had phlegm due to any kind of allergy i.e. food allergy, cold allergy or dust allergy?” (6)”Have you been woken by an attack of shortness of breath at any time in the last three weeks?”

Data analysis

Collected data from cross sectional and case control study were placed in Microsoft excel sheet. Prevalence of asthma and its different categories (Odds ratio, ‘p’ value) were estimated with exact binomial 95% confidence interval (CI) to convey stability of the estimates. The χ^2 test was used to reveal the significant differences between proportions. In case of cross sectional study, collected data from case control study was entered into a spread sheet program and transferred into STATA for analysis. Univariate analysis was done to estimate the strength & statistical significance of association between individual risk factors and asthma. The variables having P-value ≤ 0.3 were included in multivariate analysis. Multiple logistic regression analysis was applied to adjust for confounding among risk factors and to determine the most influential factors on asthma prevalence. The adjusted odds ratio was calculated with a model that included smoking, asthma patient in family, damp condition, food allergy, cold allergy, dust allergy and exposed to fog. Required information regarding this survey was taken from student’s affairs division, Dean Office of each respective faculty and residential hall offices. All

analysis was performed using the SPSS v17.0 for Windows OS.

RESULTS AND DISCUSSION

A total of 1371 students were interviewed by questionnaire. Among them 793 were male and 578 were female (Male: Female=137.192:100). Table 1 shows the gender specific asthma prevalence. Total number of asthma suspected patient was 146 and among them 11.7% was male and 9.2% was female. The overall prevalence of asthma was 10.7%.

Table 1
Prevalence of asthma among all surveyed students according to sex.

Gender Specific Asthma Prevalence		
Characteristics	Number	%
Male (n=793)	93	11.7
Female (n=578)	53	9.2
Total (n=1371)	146	10.7

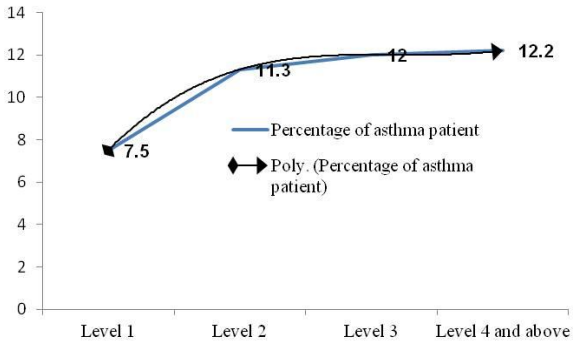

Figure 1
Prevalence of asthma according to level of study.

Figure 1 shows that there is a general trend of increasing the number of asthma affected students from level 1 to level 4 and above. The first year students represent the asthma affected number is 7.2% which is finally increased to 12% in level 4 and above.

Table 2 exhibits frequency of asthma affected students in faculty and residential hall basis. Prevalence of asthma was almost equal in each faculty except Faculty of Agricultural Engineering and Technology (6.2%). The highest percentage is in Shahid Jamal Hossain Hall (18.3%) and lowest percentage is in Isha Khan Hall (2.5%).

Regarding risk factors, only those students responded specifically were evaluated in this survey. The risk factors in association with asthma were shown in Table 3. It has been observed that smoking, asthma patient in family, damp condition, food allergy, cold allergy, dust allergy, exposed to fog were possible factors of asthma (Yeung et al. 2002, Kaur et al. 2008, Behl et al. 2009). Among them, cold allergy and dust allergy were significantly associated with asthma where damp condition of the building is less likely responsible (Table 4). Multiple logistic regressions were done to identify the significantly independent variables associated with asthma. Level of significance was set at $p \leq 0.05$ (Table 5).

This survey is a new study among the university students in Bangladesh. Recent data on asthma shows that, adults are less likely affected by asthma than children (Hassan et al., 2002; Hassan et al., 2005). In the present study it was found that the total prevalence of asthma is 10.7% which is different from the results of Hassan et al. (2002). This variation in results might be due to different geographical location. However the results of the present study is in conformity with the results of Vichyanond et al., 2002.

The students of level 4 (fourth year) and above were more likely to be affected by asthma than level 1 (first year) students which is 12.2% and that is two times greater than level1. The asthma affected students of level 2 (second year) sharply increased to 11.3 and then it rose gradually in level 3 (third year), level 4 and above. The number of asthma patients were significantly increased (Figure 1).

The study relevealed that there might have some factors working behind increasing the number of asthma affected students after staying 1 year in the campus.

Table 2
Prevalence of asthma features according to faculty and residential hall.

Characteristics	Total student	Prevalence	
		Number	%
Faculty			
Faculty of Veterinary Science (FVS)	233	24	10.3
Faculty of Agriculture (FA)	514	53	10.3
Faculty of Animal Husbandry (FAH)	170	21	12.4
Faculty of Agricultural Engineering and Technology (FAET)	195	12	6.2
Faculty of Agricultural Economics and Rural Sociology (FAERS)	143	21	14.7
Faculty of Fisheries (FF)	116	15	12.9
Residential Hall			
Bangabandhu Sheikh Mujib Hall (BSMH)	160	24	15.0
Fazlul Haque Hall (FHH)	110	19	17.3
Hossain Shahid Shohrawardi Hall (HSSH)	116	9	7.8
Ashraful Haque Hall (AHH)	81	7	8.6
Shahid Shamsul Haque Hall (SSHH)	124	11	8.9
Shahid Najmul Ahsan Hall (SNAH)	74	8	10.8
Isha Khan Hall (IKH)	40	1	2.5
Shahid Jamal Hossain Hall (SJHH)	71	13	18.3
Shahjalal Hall (SJH)	17	1	5.9
Tapashi Rabeya Hall (TRH)	226	24	10.6
Sultana Rajia Hall (SRH)	215	24	11.2
Sheikh Fajilatunnesa Mujib Hall (SFMH)	137	5	3.6

Table 3
Univariate analysis for risk factors of asthma among undergraduate students of BAU.

Risk factors	Case n=146, no. (%)	Control n=146, no. (%)	OR (95% CI)	P -values
Smoking	31(23.10)	18(13.43)	5.758	0.005
Asthma patient in family	58(43.28)	12(08.96)	6.388	0.003
Damp condition	35(26.12)	29(21.64)	0.580	0.328
Food allergy	64(47.76)	17(12.69)	4.246	.011
Cold allergy	127(94.78)	33(24.63)	46.223	.000
Dust allergy	125(93.28)	37(27.61)	17.855	.000
Exposed to fog	61(45.52)	11(08.21)	2.746	.085

Table 4
Multivariate analysis for potential risk factors of asthma among undergraduate students of BAU.

Risk factors	Odds Ratio	95% Conf. Interval	P- Value
Smoking	5.75.58	1.673-9.813	0.005
Asthma Patient in family	6.388	1.915-21.306	.003
Damp condition	.580	0.194-1.730	.328
Food allergy	4.246	1.389-12.983	.011
Cold Allergy	46.223	14.082-151.720	.000
Dust Allergy	17.855	6.3667-50.074	.000
Exposed to fog	2.746	0.871-8.661	.085

Among the student, students of Faculty of Agricultural Economics and Rural Sociology were more likely affected by asthma (14.7%) which was two times greater than students of Faculty of Agricultural Engineering and Technology (6.2%).

Student studies in the Faculty of Fisheries and Faculty of Animal Husbandry have had the higher percentage of asthma and which was 12.9% and 12.4% respectively. Although percentage of asthmatics students of each faculty almost similar except Faculty of Agricultural Engineering and Technology but in case of residential hall the number of asthmatics students fluctuate significantly. It is clearly seen in table 2 that, the number of asthma affected students of Shahid Jamal Hossain Hall (18.3%) was seven times greater than Isha Khan Hall (2.5%).

The present study shows that there is significant relationship between prevalence of asthma with cold allergy and dust allergy. No significant association was found between prevalence of asthma with damp condition and exposure to fog. We also found significant relationship between prevalence of asthma with asthma patient in family. Sibbald et al., 1980, showed that when parents had asthma, 80% of children develop the disease.

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REFERENCES

Hassan MR, Bennoor KS, Rahman F, Kabir AL, Mahmud AM, Haque ME and Ahmad MM (2005). Prevalence of asthma in highly polluted Dhaka city and low polluted coastal areas of Bangladesh. Indian Journal of Allergy Asthma Immunology, 19: 85-92.

Hassan MR, Kabir AL, Mahmud AM, Rahman F, Hossain MA, Bennoor KS, Amin MR, and Rahman MM (2002). Self-reported asthma symptoms in children and adults of Bangladesh: findings of the National Asthma Prevalence Study. International Journal of Epidemiology, 31:483-488 doi:10.1093/ije/31.2.483

Host A (2002). Frequency of cow's milk allergy in childhood. Annals of Allergy Asthma Immunology 89:33–37.

Kabir ARMI, Rahman AKM, Mannan MA, Chanda SK and Chowdhury AT (1999). Prevalence of wheeze and asthma in children of a coastal community of Bangladesh. Bangladesh Journal of Child Health, 23:43-47

Kaur S, Behera D, Gupta D and Verma SK (2008). Demographic and Environmental factors in patients of bronchial asthma. Indian Journal of Allergy Asthma Immunology, 22: 85-89

Khan AA, Hassan MR, Hossain MA, Mahmud AM, Bennoor KS, Ahmad MM and Habib GMMM (2010). Trends of Asthma in Bangladesh: Findings of the National Asthma Prevalence Study 1999 and 2010.

Sibbald B, Horn ME, Brain EA and Gregg I (1989). Genetic factors in childhood asthma. Thorax, 35:671-674.

Vichyanond P, Sunthornchart S, Singhirannusorn V, Ruangrat S, Kaewsomboon S and Visitsunthorn N (2002). Prevalence of asthma, allergic rhinitis and eczema among university students in Bangkok. Respiratory Medicine, 96:34-38.