Asthma Control Among Adult Asthmatic Patient Teaching Hospital Batticaloa

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Abstract:

Objective: *To assess status of asthma control among adult asthmatic patient teaching hospital Batticaloa.*

Method: *A cross sectional descriptive study utilized data collected from a sample of asthmatic adult client (n=207) aged above 18 years who visited a medical clinic teaching hospital, Batticaloa. Modified version of the 2007 NAEPP expert panel report guideline used to classified asthma control as well control and not well control by using four parameters: daytime symptoms, nighttime symptoms, interference with normal activity, and use of short-acting β2-agonists. Data were statistically analyzed using the Statistical Package of Social Science (SPSS v.19) software.*

Result: *Analysis revealed that most of the patients (71.5%) are well controlling their asthma. Age, sex, Ethnicity, Education level, Marital status, Monthly income, Tobacco Smoking, Having pets and cooking stove were considered for analysis of the studied factors. Ethnicity was statistically significant with asthma control.*

Conclusion: *Most of the Adult asthmatic patients control their symptom. Ethnicity plays statistically significant role in asthma control. Age has negative correlation with asthma control. Patients who were visiting regularly they well controlling their asthma.*

Keywords: Asthma, Batticaloa, Adult.

I. INTRODUCTION

Noncommunicable diseases (NCDs) have replaced communicable diseases as the most common causes of morbidity and premature mortality worldwide (1–3). An estimated 80% of the burden occurs in low- or middle-income countries, and 25% is in people younger than 60 years (1). Four NCDs (cardiovascular disease, cancer, diabetes, and chronic respiratory disease) have been prioritized in the Global NCD Action Plan endorsed by the World Health Assembly in 2008 because they share major behavioral risk factors amenable to public-health action and together contribute to a major portion of the global NCD burden.

Asthma is a leading problem worldwide, with an estimated 300 million affected individuals (4). There is a noticeable increase in health care burden from asthma in several areas of the world. There is also a global concern on the change in asthma epidemiology and clinical spectrum. There is not only an apparent increase in general prevalence in several geographic areas, but also in the number of cases of difficult, refractory and fatal (or near fatal) asthma. Moreover, there are complex and confounding associations and relationships with infections and infestations, air pollution, tobacco smoking and environmental tobacco smoke exposure (6,7).

The symptom prevalence in Africa, Latin America, Eastern Europe and Asia continue to rise. The World Health Organization Global Burden of Disease study estimates that 13.8 million disabilities adjusted life years (DALYs) are lost annually due to asthma, representing 1.8% of the total global disease burden (5).

Asthma is a common chronic airway disorder characterized by periods of reversible airflow obstruction known as asthma attacks. Airflow is obstructed by inflammation and airway hyper reactivity (contraction of the small muscles surrounding the airways) in reaction to certain exposures. Exposures include exercise, infection, allergens (e.g., pollen), occupational exposures (e.g., chemicals), and airborne irritants (e.g., environmental tobacco smoke). Symptoms may include wheezing, coughing, shortness of breath, and chest tightness. It is not clear how to prevent asthma from developing and there is no cure. Yet the means to control and prevent exacerbations in persons who have asthma are well established in evidence-based clinical guidelines (8).

Data on prevalence of asthma is now available from several countries. Prevalence varies from region to region depending upon the definition used for diagnosis of asthma (9-18). Current asthma is reported in 1.2 to 6.3% adults in most countries (9-13). Tristan da Cunha is an unique example where more than half the population (56%) is reported to suffer from asthma, supporting a strong genetic link (17).

According to the latest WHO data published in May 2014 Asthma Deaths in Sri Lanka reached 2,953 or 2.33% of total deaths. The age adjusted Death Rate is 13.98 per 100,000 of population ranks Sri Lanka got twentieth place in the world (19). Sri Lanka health at glance 2008 reveal leading causes of hospital admissions due to respiratory system, excluding disease of upper respiratory tract on the year 2007 the rate was 8.7% (20). In Batticaloa district, 19 % of the people are suffering from chronic illnesses. In that, asthma prevalence is 2.8% in total population in Sri Lanka. (21)

There is very limited data on asthma epidemiology from the developing world, including Sri Lanka. The expected outcome will bring out the asthma control in patient attending teaching hospital Batticaloa. It will be helpful to enhance their quality of life and the management who are suffering from asthma. No any studies performed in Batticaloa District, regarding asthma control status.

II.   METHODOLOGY

It is a cross-sectional descriptive study, which was carried out in Teaching hospital, Batticaloa. The study population considered of the asthmatic patients attending the medical clinic during the year of 2017. Asthmatic patient above 18 years old were included for the study, on the other hand asthmatic patients who under 18 years old and not supported to the study were excluded. A structured interviewer administered questionnaire (IAQ) was used to collect information. The data analysis done by using Statistical Package of Social Science (SPSS v.19). Following the guidelines in the NAEPP Expert Panel Report 3 (22), we classified asthma control as well controlled, not well controlled by using four parameters: daytime symptoms, nighttime symptoms, interference with normal activity, and use of short-acting $\beta2$-agonists (SABA) (Table 1). This is a modified version of the 2007 NAEEP guidelines because it does not include very poorly controlled option and pulmonary function measures.

Table 1 - Classification of asthma control modified from the National Asthma Education and Prevention Program Expert Panel Report 3 guidelines.

Impairment	Well controlled	Not well controlled
Symptoms	≤ 2 days/week	> 2 days/week
Nighttime awakenings	≤ 2/month	1–3/week
Interference with normal activity	None	Limitation
Short-acting $\beta2$-agonists	≤ 2 days/week	> 2 days/week

In addition to the asthma control questions, the questionnaire included questions on age, sex, race, area residence, educational level, marital status, employment status, monthly income smoking status, duration of the disease and knowledge on asthma control.

Descriptive statistics were performed to describe the sample variance. Chi-square test were used to evaluate any differences in demographic characteristics (e.g. , age, sex, ethnicity, education, marital status, monthly income), family members having asthma, outpatient department visit in the past year, health education about asthma control, tobacco smoking, having pets in home and methods of cooking.

III.   ETHICAL CONSIDERATION

Ethical clearance for the study was obtained from the Ethical Review Committee of Faculty of Health-Care Sciences, Eastern University, Sri Lanka. Permission for data collection was obtained from director teaching Hospital Batticaloa and relevant medical clinic consultants.

IV.   RESULTS

TABLE 2.SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS AND HEALTH CONDITIONS BY LEVEL

Characteristics Total	Level of asthma control		
	n (%) 207 (100)	Well controlled 148 (71.5%)	Not well controlled 59 (28.5%)
Age (years)			
18-24	6 (2.9)	4 (66.7)	2 (33.3)
25-34	8 (3.9)	7 (87.5)	1(12.5)
35-44	15 (7.2)	8 (53.3)	7 (46.7)
45-54	47 (22.7)	34 (72.3)	13 (27.7)
55-64	69 (33.3)	54 (78.3)	15 (21.7)
>65	62 (30.0)	41 (66.1)	21 (33.9)
Sex			
Male	58 (28.0)	40 (69.0)	18 (31.0)
Female	149 (72.0)	108 (72.5)	41 (27.5)
Ethnicity*			
Tamil	174 (84.0)	130 (74.7)	44 (25.3)
Muslim	31 (15.0)	16 (51.6)	15 (48.4)
Sinhala	2 (1.0)	2 (100)	0
Education			
Less than grade 5	66 (31.9)	47 (71.2)	19 (28.8)
Grade 5 to GCE O/L	105 (50.7)	72 (68.6)	33 (31.4)
Passed GCE A/L	24 (11.6)	17 (70.8)	7 (29.2)
Graduate	12 (5.8)	12 (100)	0
Marital status			
Married	154 (74.4)	110 (71.4)	44 (28.6)
Unmarried	20 (9.7)	14 (70.0)	6 (30.0)
Separated	3 (1.4)	1 (33.3)	2 (66.7)
Divorced	1 (0.5)	1 (100)	0
Widowed	29 (14.0)	22 (75.9)	7 (24.1)
Monthly income			
Less than Rs.5,000.00	53 (25.6)	37 (69.8)	16 (30.2)
Rs.5,001 – Rs.9,999	40 (19.3)	24 (60.0)	16 (40.0)
Rs.10,000 - Rs.14,999	51 (24.6)	36 (70.6)	15 (29.4)
More than Rs.15000	63 (30.4)	51 (81.0)	12 (19.0)

P-value: *p < 0.05

The study consisted of 207 asthmatic patients who attending the medical clinic Teaching hospital Batticaloa. In this sample population 58 (28%) of them were males

and the rest of them [149 (72%)] females. Majority (84.1%) of them were Tamils. The patients who were 55 to 64 years were 33.3% and patients above 65 years were 30% respectively. Most of them (50.7%) of them finished up to ordinary level but 31.9% of them were studied less than grade five only 5.8% of them were graduated in the study population. In asthmatic patients, 74.4% of them were married and 30.4%, they were earning more than 15,000 rupees per month.

In this population 148(71.5%) of them were effectively controlling the asthma rest of them 59(28.5%) were not well control asthma. When considering the sex most of the females (72.5%) well control the asthma where not well control 27.5%. In males, 69% of them were well control. Tamils 74.7% of them were well controlling rest of them (25.3%) not well control. on the other hand 51.6% of the Muslims well control the asthma where 48.4% of them were not well control. Asthmatic patients who were studied less than grade five 71.2% well control asthma where 25.3% of them were not well control. Patients studied between grade five to General certificate examination in ordinary level (GCE O/L) and General certificate examination in advanced level (GCE A/L) were well control asthma 50.7% and 68.6% respectively. However in graduates (100%) of them were well controlling the asthma.

When considering the marital status 71.4% of the married patients well controlling the asthma. In separated patients 66.7% of them were not well control the asthma, rest of them (33.3%) were well control asthma symptoms. In widowed 75.9% of them were well control asthma. Patients who were earning less than 5,000.00 rupees per month (69.8%) of them well control asthma where patients earning more than 15,000 rupees per month 81% of them controlling the asthma.

In Table 3, the study population 97(46.9%) of their family members had been diagnosed as asthmatic patients where else 110 (53.1%) of them did not have any of the members from family suffering from asthma. Considering the outpatient department (OPD) visit in past year 61 (69.3%) of them visited less than three times, 19 (21.6%) of them visited four to six times and rest of them 08 (9.1%) visited more than seven times. Most of the asthmatic patients 139 (67.1%) did not get any health education regarding asthma control rest of them 68 (32.9%) received health education. Among the asthmatic patients 37 (17.9%) of them having active tobacco smoking, passive smoking encounter 50 (24.2%) of the participants. The asthmatic patients having dog and cat in their home respectively 91 (43.9%) and 81 (40.1%). Most of the patients were using liquid petroleum gas (LP Gas) for cooking where firewood used by 87 (42%) of them.

The patient from family members having asthma 71 (48%) of them well control asthma remaining 26 (26.8%) of them not well control. On the other hand, patient did not have any member suffering from asthma 77 (77%) were well control where 33 (33%) of them not well control asthma. In well control asthmatic patient 41 (67.2%) of them visited OPD less than three times in past year where 20 (32.8%) of them were in not well control category. But in not well control category 5 (62.5%) of them visited to OPD more than seven time in past year, where else 3 (37.5%) of them were in well control.

TABLE 3 - STATUS OF ASTHMA, SELF-MANAGEMENT EDUCATION, TRIGGERING FACTORS AND MEDICATION USE

Characteristics Total	Level of asthma control		
	n (%) 207 (100)	Well controlled 148 (71.5%)	Not well controlled 59 (28.5%)
Family members having asthma			
Yes	97 (46.9)	71 (73.2)	26 (26.8)
No	110 (53.1)	77 (70.0)	33 (30.0)
Outpatient department visit in the past year			
1-3	61 (69.3)	41 (67.2)	20 (32.8)
4-6	19 (21.6)	11 (57.9)	08 (42.1)
>7	08 (09.1)	03 (37.5)	05 (62.5)
Health education about asthma control			
Yes	68 (32.9)	52 (76.5)	16 (23.5)
No	139 (67.1)	96 (69.1)	43 (30.9)
Tobacco Smoking			
Active smoking	37 (17.9)	24 (64.9)	13 (35.1)
Passive smoking	50 (24.1)	34 (68.0)	16 (32.0)
No smoking	120 (58.0)	90 (75.0)	30 (25.0)
Having pets			
Dog	91 (43.9)	66 (72.5)	25 (27.5)
Cat	81 (40.1)	53 (65.4)	28 (34.6)
Method of cooking			
Liquid Petroleum gas	103 (49.8)	71 (68.9)	32 (31.1)
Kerosene oil	17 (8.2)	15 (88.2)	2 (11.8)
Fire wood	87 (42.0)	62 (71.3)	25 (28.7)

ACCORDING TO ASTHMA CONTROL.

Patient received health education in well control [52(76.5%)] and rest of them 16 (23.5%) were in not well control category. Patients who were not received health education 96 (69.1) were in well control. Patients who were active smoking 24 (64.9%) of them well control asthma rest of them 13 (35.1%) were not well control. In passive smokers 34 (68%) were well control asthma where others 16 (32%) not well control. In non-smokers 90

(75%) were well control asthma remaining 30 (25%) of them were not well control.

Patients having pets such as dog, cat were well controlling asthma respectively 91 (43.9%), 81 (40.1%). Patient in not well control category 25 (27.5%) having dog and 28 (34.6%) having cat in their home. Most of the patients [71 (68.9%)] under well control category were using LP Gas for cooking and 62 (71.3%) of them were using firewood. Where 25 (28.7%) of them who were using firewood under not well control category.

V. DISCUSSION

The purpose of this cross sectional descriptive study was to assess asthma control status and identify potential risk factors for asthma control among respondents who were following medical clinic teaching hospital Batticaloa. Ethnicity have a statistically significant association (*p* value=0.021) with asthma control where other variables does not show any statistically significant relationship with asthma control.

In our study showed that 28.5% of the patients with asthma had not well-controlled asthma. When the age increase controlling the asthma is decreasing but it is not showing any statistically significant relationship. But study carried out in Europe in 2002 (23) reveal that age significantly associated with treatment and control of asthma. Where sex not associated with the treatment and asthma control, we too find the same finding in our study.

Asthma self-management education is necessary to provide persons with asthma and care givers with the knowledge and skills to control and manage asthma (24,25). In our study respondents reported low self-management education given by health care providers; only 32.9% of the respondents received education in that 76.5% of them were well controlling asthma.

In our study when we consider about the outpatient department visit per year in well control category 67.2% of them visited 1-3 times and received medical care but 32.8% of them encounter under not well control. This brought the finding that when patient Poor attendance to the doctor due to poor symptom perception, failure of the physician to adhere to treatment guidelines, insufficient adherence by children and parents and the presence of extremely severe, therapy-resistant disease have all been proposed as possible reasons for suboptimal asthma control (26, 27–29).

In our study when they were educated, well they control asthma but it is not have statistically significant relationship. Having pets in their homes 72.5% of them having dog but they are well controlling asthma like that 65.4% of them having cats in their homes they also well control asthma. Some other studies reveal that families with allergic members are less likely to keep pets (30, 31), so it may appear that allergic disease is associated with not keeping pets.

Patient who were nonsmokers 58% in that 75% of them well controlling asthma 25% of them were poorly controlling on the other hand patient who were active smokers 17.9% in that 64.9% controlling but 35.1% of them not well controlling, through this we found that tobacco smoking have some impact on controlling asthma. Study done by Megan Stapleton *et al* (32) and Thomson *et al* (33) found that in asthmatic patients who smoke, disease control is poorer than in asthmatic nonsmokers.

In our study, we could not find any statistical association between asthma control and the different cooking stoves same finding was found the study conducted by Eisner and colleagues (34) followed 349 adult asthmatics in northern California for 18 months to assess asthma severity. They found that Woodstove exposure was not associated with any of the health indicators that included asthma severity, general physical health, asthma quality of life and medical care. A survey on 10,667 Finnish university students (35) did not find any association of asthma prevalence with exposure to a woodstove for heating. But Thorn and colleagues (36) reported a positive association (odds ratio [OR] = 1.7, 95% CI 1.2–2.5) this study compared 174 cases of adult-onset asthma (after age 16 years) with 870 controls randomly selected from a population sample in Sweden

VI. CONCLUSION

In this study population 148 (71.5%) of them are well controlling their asthma disease. It indicate that asthmatic patient who were attending medical clinic teaching hospital Batticaloa well controlling asthma. Most of them are non-smokers 120 (58%) and most of them 139 (67.1%) does not received health education from the health care providers.

Ethnicity has statistically significant relationship with asthma control it shows that their cultural pattern and the food habits have impact on asthma control. Other variables such as sex, age, education, family income, marital status, having pet, smoking and using various stove for cooking doesn't have significant relationship on asthma control..

VII. RECOMMENDATION

The health education programme has much effect on the asthma control and symptom management. So we have to provide optimum knowledge not only in health sectors but also in schools. We have to conduct screening programme in annually that is more effective in controlling symptoms and prevent from complications.

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