

A CROSS SECTIONAL OBSERVATIONAL STUDY OF PREVALENCE AND RISK FACTORS OF UNCONTROLLED ASTHMA AMONG ADULTS IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction: Asthma is a heterogeneous disease characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheezing, shortness of breath, chest tightness, and cough that vary over time and intensity together with variable expiratory airflow limitation. An estimated 300 million people suffer from asthma worldwide and an additional 100 million new cases will be added by the year 2025. According to the World Health Organization (WHO), India has the largest number of asthma deaths in the world, contributing to 22.3% of all global asthma deaths (WHO, 2004).

Materials and methods: The study design was cross sectional observational conducted in the Department of Respiratory medicine, Dr Vithalrao Vikhe Patil Medical College, Ahmednagar which is a tertiary care health care facility. The study period was from March 2022 to February 2023. All adults >18 years of age of both genders with a diagnosis of asthma according to GINA guidelines for a duration of at least one year were included. Other causes of obstructive airway disease like bronchiectasis, post TB Obstructive airway disease were excluded.

Results: A total of 220 subjects completed the questionnaire satisfactorily. The male: female ratio was 59:51 and mean age of subjects was 35.25±12.34 years with majority of them (59.1%) belonging to the 26-45-year age group. The mean body mass index (BMI) was 25.75±3.80 and 62.8% were overweight and obese. The level of asthma control as assessed by the GINA questionnaire showed that out of the total of 220 subjects, the number of well, partly and uncontrolled asthma subjects were 26 (11.8%), 86 (39.1%) and 108 (49.1%) respectively. Hence, 49.1% of subjects had uncontrolled asthma. Poorly controlled asthma (Partly and uncontrolled) constituted 88.2%.

Conclusion: Uncontrolled asthma is still widely prevalent in India. The major risk factors associated with poor control were elderly, obesity, OSA, GERD, smoking and pollution. Hence,

achievement of optimum asthma control needs to address several factors including sociodemographic and modifiable risk factors in addition to ensuring education regarding medication compliance and proper inhalational techniques.

Key Words: Asthma, World Health Organization, obesity, GERD, smoking and pollution.

INTRODUCTION

Asthma is a heterogeneous disease characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheezing, shortness of breath, chest tightness, and cough that vary over time and intensity together with variable expiratory airflow limitation.¹ An estimated 300 million people suffer from asthma worldwide and an additional 100 million new cases will be added by the year 2025. According to the World Health Organization (WHO), India has the largest number of asthma deaths in the world, contributing to 22.3% of all global asthma deaths (WHO, 2004).²

Asthma is a chronic inflammatory disease of the airways causing episodes of airflow obstruction. This chronic inflammation increases airways hyper responsiveness (AHR) to stimulants.¹ In general, Asthma has become an important public health problem. Asthma is not only a leading cause of hospitalization in children, but also an important chronic condition causing school absenteeism.³ There is also increase in hospital admissions and emergency department visits to a greater degree worldwide which has led to changes in medical practice. Childhood asthma is mostly under diagnosed and also undertreated, owing to various factors like ignorance, misconceptions and lack of awareness. Prevalence of bronchial asthma varies from place to place due to changes in environmental factors. The genetic profile and viral infections also predispose to asthma. Increase in exposure to environmental smoke and air pollution has led to increase in prevalence of asthma in urban areas.⁴ Asthma is generally considered a disease of developed countries and affluent societies in developing countries. There is little information about epidemiological trends of asthma in Urban India especially in lower income groups.

Very few Indian studies especially in the south are available on the prevalence and risk factors for uncontrolled asthma in adults.⁵ Hence the current study was undertaken to enable us to identify the burden of uncontrolled asthma and region specific risk factors, if any in order to plan appropriate strategies with the ultimate goal of achieving the maximum level of asthma control.

MATERIALS AND METHODS

Study design: A cross sectional observational study.

Study location: Department of Respiratory Medicine, Dr Vithalrao Vikhe Patil Medical College, Ahmednagar.

Study Duration: March 2022 to February 2023.

Sample Size: 220

The study design was cross sectional observational conducted in the Department of Respiratory medicine, Dr Vithalrao Vikhe Patil Medical College, Ahmednagar which is a tertiary care health care facility. The study period was from March 2022 to February 2023.

Inclusion criteria: all adults >18 years of age of both genders with a diagnosis of asthma according to GINA guidelines for a duration of at least one year.

Exclusion criteria:

Other causes of obstructive airway disease like bronchiectasis, post TB Obstructive airway disease were excluded.

Informed consent was obtained from all the participants.

The subjects were then administered a structured, validated and piloted questionnaire regarding demographic information like age, gender, occupation, educational status, BMI and presence or exposure to specific risk factors like smoking, pollution, reflux disease and comorbidities like diabetes, thyroid disorders and exacerbations. The level of control of their asthma was assessed by the GINA endorsed asthma control questionnaire whose scores classified subjects as well, partly and uncontrolled asthma. Questionnaire administration was done either by telephonic interview or on physical visit by trained personnel.

Statistical Analysis

Data was analyzed by SPSS 20.0 software. Quantitative data was expressed in mean and standard deviation. Unpaired T test and Chi square test were used to assess association of continuous and dichotomous variables with uncontrolled asthma respectively.

RESULTS

A total of 220 subjects completed the questionnaire satisfactorily. The male: female ratio was 59:51 and mean age of subjects was 35.25±12.34 years with majority of them (59.1%) belonging to the 26-45-year age group. The mean body mass index (BMI) was 25.75±3.80 and 62.8% were overweight and obese.

Age group	Partly Controlled N=86	Uncontrolled N=108	P Value
<50 years	84 (97)	86 (79)	0.001
>50 years	2 (2.3)	22 (20.4)	

Table 1: Age distribution

Gender	Partly Controlled N=86	Uncontrolled N=108	P Value
Male	44 (51.2)	68 (63)	0.243
Female	42 (48.8)	40 (37)	

Table 2: Gender Distribution

BMI	Partly Controlled N=86	Uncontrolled N=108	P Value
Normal Weight (18.5 – 24.9)	44 (51)	26 (24)	0.001
Over Weight (25.0 – 29.9)	41 (48)	46 (42)	
Obese (≥ 30.00)	0 (0)	36 (33)	

Table 3: BMI distribution

Smoking Habit	Partly Controlled N=86	Uncontrolled N=108	P Value
Non smokers	74 (86)	52 (48%)	0.001
Smokers	2 (2.3)	26 (24%)	
Passive Smokers	10 (11.6)	30 (27%)	

Table 4: Smoking Habit

Pollution	Partly Controlled N=86	Uncontrolled N=108	P Value
Absent	32 (37)	18 (16.7)	0.001
Present	54 (62)	90 (83)	

Table 5: Pollution

Diabetes Mellitus	Partly Controlled N=86	Uncontrolled N=108	P Value
Absent	86 (100)	62 (57)	0.001
Present	0 (0)	46 (43)	

Table 6: Diabetes Mellitus

Hypertension	Partly	Uncontrolled	P Value
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	Controlled N=86	N=108	
Absent	86 (100)	84 (78)	0.001
Present	0 (0)	24 (22)	

Table 7: Hypertension

GERD	Partly Controlled N=86	Uncontrolled N=108	P Value
Absent	62 (72)	28 (25.9)	0.001
Present	24 (28)	80 (74.1)	

Table 8: GERD

Asthma Control	Percentage
Well controlled	12%
Partly Controlled	39%
Uncontrolled	49%

Table 4: Asthma Control

The level of asthma control as assessed by the GINA questionnaire showed that out of the total of 220 subjects, the number of well, partly and uncontrolled asthma subjects were 26 (11.8%), 86 (39.1%) and 108 (49.1%) respectively. Hence, 49.1% of subjects had uncontrolled asthma. Poorly controlled asthma (Partly and uncontrolled) constituted 88.2%.

DISCUSSION

Our study included 220 patients with a male to female ratio of 59:51. Majority of them (59.1%) belonged to the 26-45 yr., age group. According to their BMI distribution, 62.8% were overweight and obese.⁶

The level of control as assessed by the validated GINA questionnaire showed that out of 110 subjects, 49.1% and 39.1% had uncontrolled and partly controlled asthma contributing to a total of 88.2% of poor asthma control. Only 11.8% were well controlled. Western studies show the prevalence of uncontrolled asthma ranging from 34.3% in a Latin American country to 53.2% in a study in Spain.⁷ An Italian study however, showed a reasonably proportion with good control(64.4%)and 19.8% who were uncontrolled A study on the Asthma Insights and Reality in Asia Pacific region (ARIAP), found that in both adults and children, asthma control was way far from optimum. 51.4% and 44.3% reported daytime and nocturnal symptoms with 44.7% having limitations in daily activities.⁸

However, asthma control according to GINA was not evaluated. The Asthma Insights and Management study in the Asia Pacific region (AP-AIM) reports Indian data showing that though 91% of asthmatics perceived good control, none of them had optimum control by objective

criteria. The International Asthma Patient Insight Research (INSPIRE) study which was a multinational study reported prevalence of 51% and 28% for uncontrolled and well controlled asthma. Compared to developed nations, studies in developing countries show a higher proportion of poorly controlled asthma as in a Chinese study showing more than 80% with poor control and Indian studies reporting 30-35% as well controlled. Hence our study shows a high percentage of subjects (88.2%) with poorly controlled asthma.⁹

Lower educational status was a risk factor for poorly controlled asthma in our study. The study by Agrawal et al which included subjects from the National Family Health Survey reported that uncontrolled asthma was associated with illiteracy as also the Asia pacific-Asthma Insights & Management AP-AIM study though the association in the latter was not statistically significant. Other studies also report lower educational status with poor asthma control.¹⁰

CONCLUSION

Uncontrolled asthma is still widely prevalent in India. The major risk factors associated with poor control were elderly, obesity, OSA, GERD, smoking and pollution. Hence, achievement of optimum asthma control needs to address several factors including sociodemographic and modifiable risk factors in addition to ensuring education regarding medication compliance and proper inhalational techniques.

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