"A CROSS SECTIONAL STUDY ON BODY MASS INDEX AND ITS EFFECTS ON SEVERITY OF BRONCHIAL ASTHMA IN A TERTIARY CARE HOSPITAL"

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ABSTRACT

BACKGROUND: Obesity is a serious public health problem .It is both a disease modifier and risk factor for asthma in children and adults. Obese individual are at higher risk of developing asthma. Obese individuals who already have asthma experience greater symptoms, more frequent and severe exacerbations and lower quality of life.

AIM: To study the severity of bronchial asthma with increasing Body mass index.

OBJECTIVE:

1. To assess the association between Body mass index and severity of asthma.
2. To assess the morbidity of bronchial asthma patient with increasing weight.

METHODS: This is the cross sectional study of 116 known asthma patients ,who are above 18 years of age and who are on controller or reliever therapy, attended Respiratory medicine out patient department.

RESULTS: Among 116 patients ,44% were obese and 14% were overweight. Results of the study showed that ,statistically significant association between obesity and severity of asthma. The presence of day time symptoms, night time symptoms, missed working days and severe exacerbations were significantly higher in obese asthmatics when compared with asthmatics with normal body mass index with p value < 0.001.Severity of obstruction in spirometry is higher in obese asthmatics with normal BMI asthmatics with stasistically significant p value of < 0.025

CONCLUSION: Obesity is a modifiable risk factor for asthma or for asthma related morbidities. So weight reduction measures will improve the quality of life and disease control in obese asthma patients.

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INTRODUCTION:

In India, the prevalence of Obesity and Asthma has been increasing for more than a decade. There are 17.23 million people in India who suffer from asthma,with prevalence rate of 2.05% nationwide[1].Prevalence of overweight or obese women who has BMI>= 25 kg/m^2 is 33.2 %in urban and 19.7% in rural. Prevalence of overweight or obese men who has BMI >= 25 kg/m^2 is 29.8% in urban and19.3% in rural[2].

Patients with asthma have obesity as common comorbidity[3]. Obesity may raise the

level of pro inflammatory mediators in the body which worsens airway inflammation and lead to airway hyper reactivity. Obese asthmatics experience worse symptom control, more frequent and severe exacerbation and poor quality of life. Association between severe asthma and obesity is well demonstrated.

Pulmonary function declines in obese patients due to fatty thorax and the resulting reduction in diaphragmatic motion .These effects are further amplified and made more difficult to regulate in obese patients by the systemic and local inflammation brought on by fat tissue[4].

Purpose of this study is to determine whether the severity and morbidity of asthma worsen with increase in body mass index.

AIM

- To study the severity of bronchial asthma risk with increasing body mass index.

OBJECTIVE

- To assess the association between body mass index and severity of asthma.
- To assess the morbidity of bronchial asthma patients with increasing weight.

MATERIALS AND METHODS

The present study was conducted in the department of Respiratory medicine, Chengalpattu medical college and hospital, Chengalpattu. After getting approval from Chengalpattu medical college Institutional Ethical Committee.

STUDY DESIGN:

Observational -Cross Sectional Study

STUDY POPULATION:

Known case of Bronchial Asthma patients who are on Controller therapy and/or Reliever therapy, attending Respiratory Medicine opd.

STUDY DURATION: May 2022 to May 2023

SAMPLE SIZE:116

INCLUSION CRITERIA:

- Bronchial asthma patients on Controller therapy and /or Reliever therapy.
- More than 18 years of age group.

- Patients who are diagnosed clinically and confirmed by Spirometry.

EXCLUSION CRITERIA:

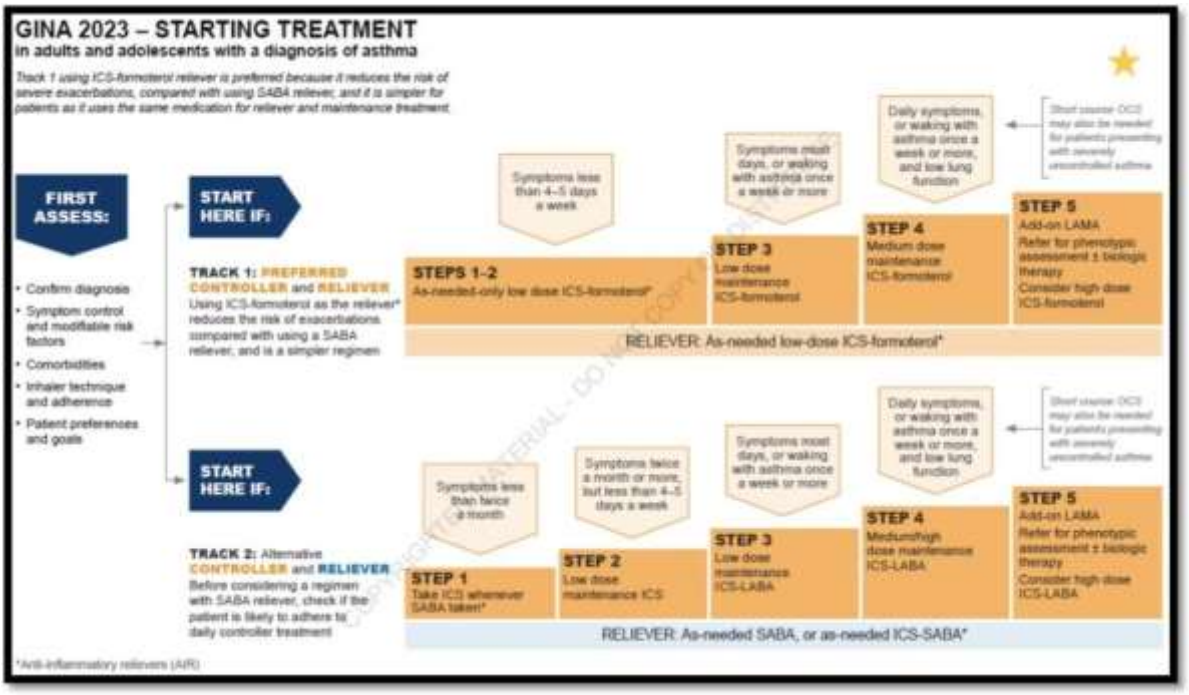
- Less than 18 years of age group.
- Smoker.
- Chronic obstructive pulmonary disease
- Poor compliance to MDI
- Current lower respiratory tract infection
- Hypothyroid

DATA COLLECTION METHOD:

By using Clinical history, examination and confirmation by Spirometry.

METHODOLOGY:

- All known bronchial asthma patients are selected under inclusion and exclusion criteria.
- According to GINA guidelines asthma severity were assessed.



Mild asthma –well controlled with step1 or step 2 treatment.
Moderate asthma –well controlled with step 3or step 4 treatment.
Severe asthma –uncontrolled with step 5 treatment

- Body mass index will be calculated according to **QUETELET INDEX** by formula

BMI=Weight (kg) /Height (meter^2)

- **Classification of BMI by WHO and NIH for Asian population**

- Normal weight = BMI<= 18.5 to 22.9 kg/m2
- Overweight = BMI 23to 24.9 kg / m2
- Obese =BMI > 25 kg /m2

DATA NALYSIS;

The data will be entered in Microsoft excel and will be analysed by using SPSS 23 software. Appropriate tests of significance will be done.

SPIROMETRY:

To investigate various facets of pulmonary functions, several tests are employed. Spirometry is the simplest and most practical of these. Spirometry is used to calculate FVC, FEV1.

OBSERVATION AND RESULTS

Table-1. showing the BMI Distribution of the study participants among 116 patients ,we observed minimum BMI =18.7 kg/m^2 and maximum BMI =48 kg/m^2.

TABLE – 1

		Minimum	Maximum		
		18.7	48		

BODY MASS INDEX:

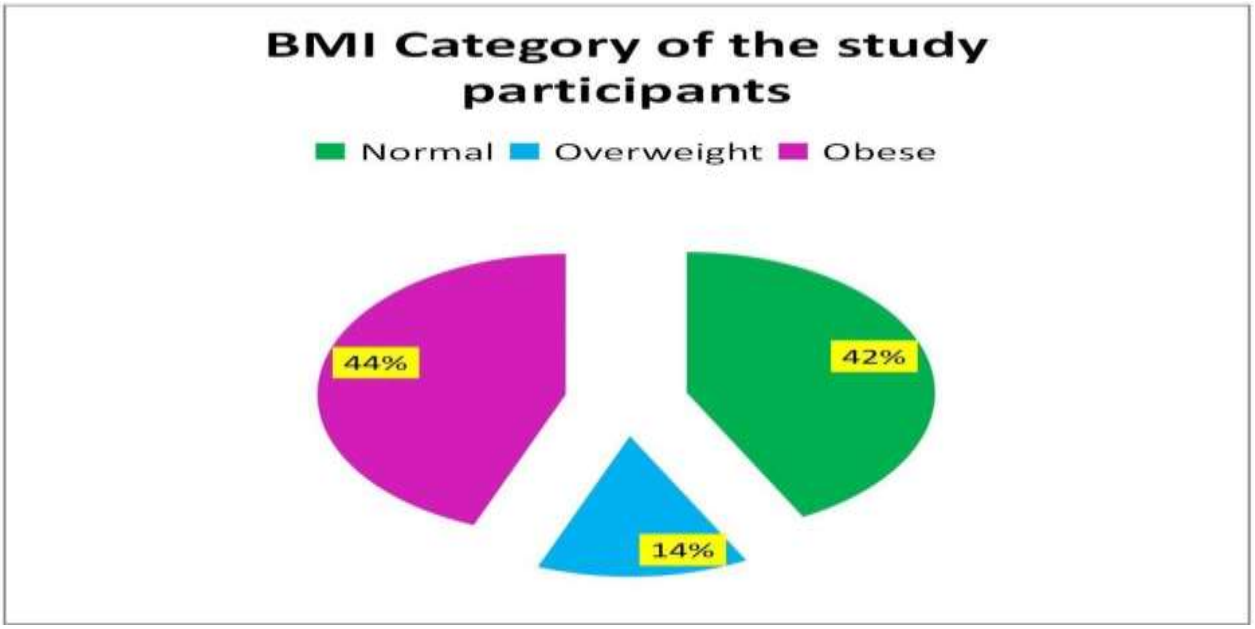


Table shows out of 116 asthmatics,51 patients were in obese category and 16 patients were in overweight category.

BMI VERSUS SEVERITY OF ASTHMA

Table -11 most of the severe asthma patients are obese.

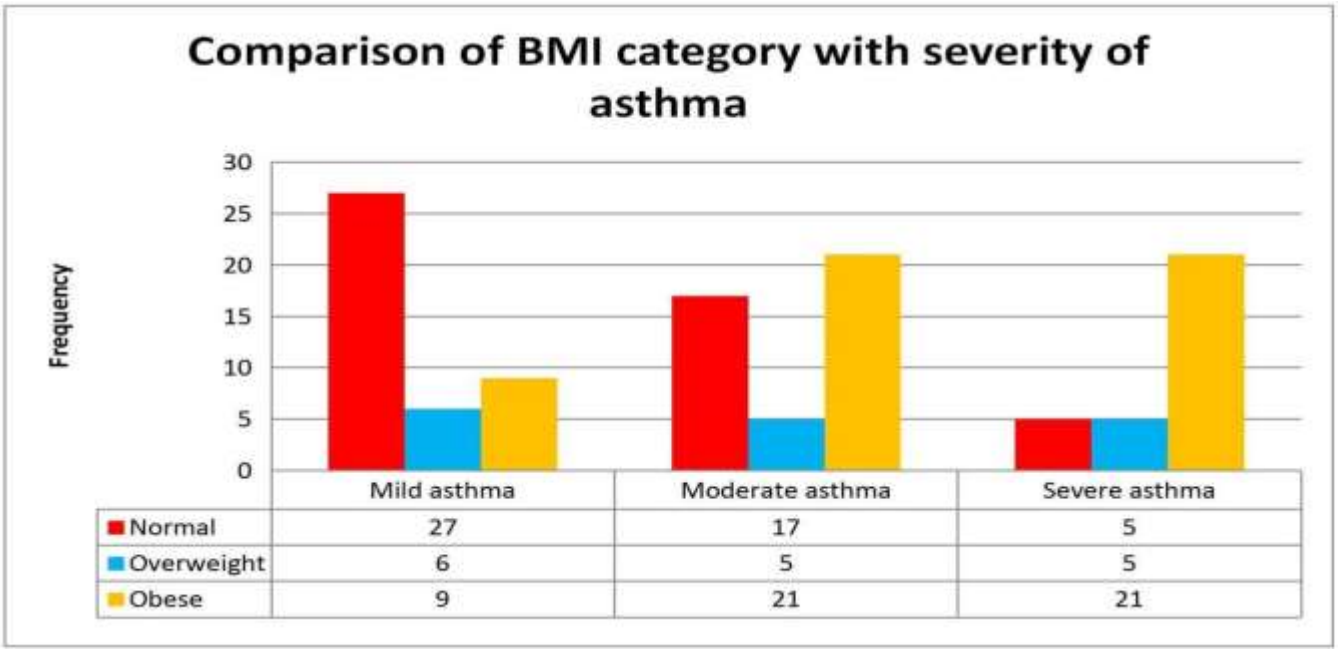
TALBE – 11

COMPARISION OF BMI VERSUS SEVERITY OF ASTHMA

BMI category vs severity of asthma	Mild asthma		Moderate asthma		Severe asthma		Total	P value
	Freq	Percent	Freq	Percent	Freq	Percent		
Normal	27	55.1	17	34.7	5	10.2	49	
Overweight	6	37.5	5	31.2	5	31.2	16	**0.001**
Obese	9	17.6	21	41.2	21	41.2	51	

Total	42	36.2	43	37.1	31	26.7	**116**	

CHART



DISCUSSION

By analysing 116 patients from the asthma clinic out patient department, we had observed the following results, In our study more asthma symptoms were present in obese patients than normal BMI patients and this similar result was also seen in another study[7].

Previous life-threatening events are more in obese asthmatics in our study with significant p value <0.001 and FEV1/FVC was decreased in obese asthmatics, with p value 0.025. Similarly Sarah et al[6] studied 72086 asthmatics and also found the same ie life threatening events were worse in obese with p value <0.001.

In our study, overweight and obese asthmatics had increased severity of asthma with statistically significant p value <0.001. And similarly Taylor et al[5] ,observed in his sudy done on 3095 asthmatics ,that strong association between obesity and severity of asthma and with p value < 0.01.

LIMITATIONS

- The present study was a single centre study,thus results of which cannot be generalized.
- Weight gain in asthmatic patients may be caused by medications like steroids, which could not be ruled out in this study

- Sample size is limited, need to study in large cohart.

CONCLUSION

Asthma severity increases with increase in body mass index ,with obese asthmatics having more number of life threatening events.

Therefore, obesity may is a modifiable risk factor for asthma or for asthma related morbidities, so weight reduction measures will improve the quality of life and disease control in obese asthmatic patients.

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