ASSESSING SYMPTOMS AND PEAK EXPIRATORY FLOW RATE AS PREDICTORS OF ASTHMA EXACERBATIONS IN PATIENTS ADMITTED TO TERTIARY CARE CENTER KAKINADA.

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ABSTRACT **Background:** The prevalence of asthma varies widely among countries/ geographical regions and also within countries with different geographies and socioeconomic stratas. The Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis in Adults (INSEARCH) estimated the national burden of asthma at 17.23 million with an overall prevalence of 2.05%. The recent Global Burden of Disease (GBD, 1990–2019) estimated the total burden of asthma in India as 34.3 million, accounting for 13.09% of the global burden.It also attributed that 13.2 thousand deaths in India were due to asthma.Asthma accounted for 27.9% of the disability-adjusted life years (DALYs) in Indians.Peak expiratory flow meters are inexpensive and convenient devices that provide reproducible, objective measurement of lung function.While current asthma guidelines recommend routine assessments of peak expiratory flow rate (PEFR) and symptoms for outpatient management of patients with asthma,the ability of these measures to predict asthma exacerbations is unknown. **Objective:** To investigate peak expiratory flow rate (PEFR) and quality of life scores for their ability to predict exacerbations of asthma. **Methods:** Hospital based observational descriptive study conducted in government general hospital kakinada.Data were collected from patients admitted to pulmonary medicine ward during this study period.Study period was from January 2022 to June 2022.Patients included in this study were conformed cases of asthma.A total of 30 patients admitted in this study period.We administered the Mini Asthma Quality of Life Questionnaire (MiniAQLQ) and measured PEFR, defining "red zone" (highest risk) as a PEFR < 50% of each patient's expected value based on gender, age, and height. RESULTS: A red zone PEFR was a significant univariable predictor of exacerbations . However, neither a red zone PEFR, the raw PEFR, or percent of predicted maximal PEFR were significantly predictive when controlling for AQLQ scores, clinical characteristics, or demographic data. **Conclusion:** PEFR added no predictive information to that contained in AQLQ scores and clinical and demographic data.. These results support the National Institutes of Health asthma guidelines' recommendation for routinely assessing symptoms but not PEFR.

KEYWORDS : Asthma, peak expiratory flow rate, symptoms, quality of life.

INTRODUCTION:
The Indian Study on Epidemiology of Asthma, Respiratory Symptoms and Chronic Bronchitis in Adults (INSEARCH) estimated the national burden of asthma at 17.23 million with an overall prevalence of 2.05%. The recent Global Burden of Disease (GBD, 1990–2019) estimated the total burden of asthma in India as 34.3 million, accounting for 13.09% of the global burden.It also attributed that 13.2 thousand deaths in India were due to asthma. Asthma accounted for 27.9% of the disability-adjusted life years (DALYs) in Indians.

Peak expiratory flow meters are inexpensive and convenient devices that provide reproducible, objective measurement of lung function.While current asthma guidelines recommend routine assessments of peak expiratory flow rate (PEFR) and symptoms for outpatient management of patients with asthma, the ability of these measures to predict asthma exacerbations is unknown.

In this study we are going to assess the ability of PEFR and miniAQLQ to detect the acute exacerbations in asthma patients.

AIMS & OBJECTIVES:
Assessment of Peak expiratory flow rate (PEFR) and mini AQLQ for their ability to predict exacerbations of asthma.

MATERIALS AND METHODS:
Study design: Hospital based observational follow-up study.
Study setting: Department of Pulmonary medicine GGH, Kakinada.
Study period: Jan 2022 to June 2022 (6months).
Sample size : 30(conventional sample).
Study tools: Mini Asthma Quality of Life Questionnaire (MiniAQLQ) and Peak expiratory flow rate (PEFR).

Mini Asthma Quality of Life Questionnaire:
This 15-item questionnaire is a short version of the complete 32-item questionnaire, but constitutes the same 4 domains: symptoms, environment, emotions, activities, over a period of 2 weeks.

Scores range from 0-6 (lower is worse).

The mini-AQLQ score is calculated as the average of domain items.

The minimum clinically important difference is 0.5.

This version has been developed to meet the needs of long-term monitoring, where efficiency may take precedent over precision of measurement.

Peak Expiratory Flow Rate (PEFR):
PEFR measurements were taken with subjects standing.The best of 3 separate attempts were recorded.

We divided this value by the maximal expected PEFR to obtain the percent of maximum PEFR, which was further categorized into 3 "zones".

Green Zone: Usually set at 80% to 100% of personal best or normal peak flow.

Yellow Zone: 50% to 80% of personal best.

 Red Zone: 50% or less of personal best.

DATA COLLECTION:
Each patient had a face-to-face interview with a trained interviewer who administered the Mini Asthma- Specific Quality of Life Questionnaire (MiniAQLQ) and measured PEFR.

We enquired about recent emergency department visits and hospitalizations. To the best of their ability, they provided their reasons for making these visits. All patients current PEFR and data from old records were recorded.

The maximum expected PEFR value for each enrolled patient was calculated using curvilinear models based on gender , age and height.

RESULTS:
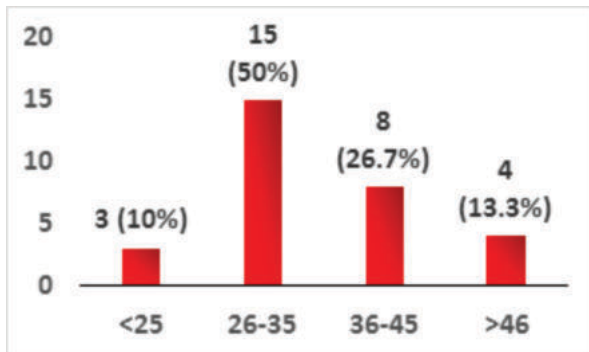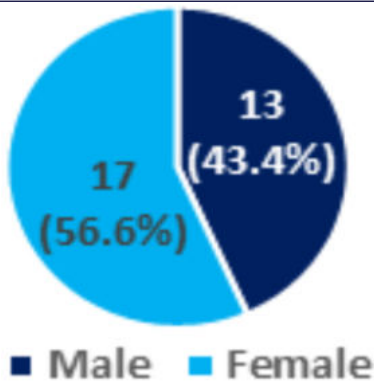**Fig No.1:** Gender wise distribution of study subjects (n=30).
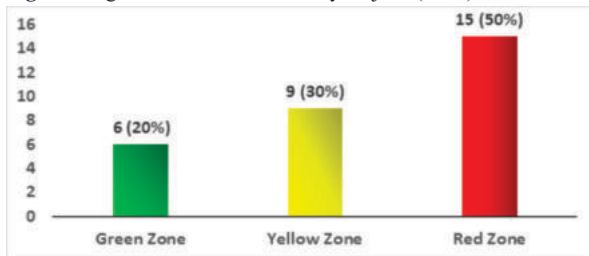
Fig No.2: Age wise distribution of study subjects (n=30).

Fig No.3: Severity wise distribution of study subjects based on their PEFR (n=30)

Item Variable	Mean score
Activity limitations scale	4.6 ± 1.2
Symptoms scale	4.4 ± 1.2
Emotion scale	4.3 ± 1.4
Environment scale	4.3 ± 1.5
Overall scale	4.4 ± 1.2

MINI AQLQ SCORE

RESULTS:

Variables (N=30)	Variables (N=30)	Activity Limitation	Symptoms	Emotional Function	Environmental Stimuli	Overall Quality
Gender	Male (13)	5.34	5.26	5.54	5.41	21.55
	Female (17)	5.05	4.81	5.21	4.56	19.63
Age (Yrs)	<25 (3)	6.5	5.17	5.6	6.25	23.52
	26-35 (15)	5.13	5.08	6.07	4.08	20.37
	36-45 (8)	3.28	2.88	3.55	2.75	12.45
	>46 (4)	5.57	4.39	5.1	4.63	19.68
Cigarette	Yes (5)	5.25	5.04	5.4	5.24	20.92
	No (25)	5.22	5.1	5.42	4.83	20.58
Severity (PEFR)	Green zone (6)	5.3	5.36	6.07	4.83	21.56
	Yellow Zone (9)	5.18	4.93	5.35	4.76	20.22
	Red Zone (15)	5.32	5.36	5.43	5.59	21.7

AQLQ QUESTIONNAIRE:

Questions in AQLQ*	Mean	S.E.
Activity Limitation	5.23	
1.Strenuous activities	5.04	1.68
2.Moderate activities	5.64	1.48
3.Social activities	6.36	1.03
4.Work-related activities	6.08	1.29
Symptoms	5.07	
5. Feel bothered by coughing	4.64	1.72
6. Feel short of breath as a result of your asthma	5.52	1.54
7. Have difficulty getting a good night sleep as a result of your asthma	4.96	1.98
Emotional function	5.04	
8. Feel concerned about having asthma	5.38	1.99
9. Feel frustrated as a result of your asthma	5.42	1.77
10. Concerned re-medications	5.18	1.97
11. Afraid of getting out of breath	5.38	1.89
Environmental stimuli	4.99	
12. Feel bothered by or have to avoid cigarette smoke in the environment	4.76	2.23
13. Feel bothered by or have to avoid dust in the environment	4.94	1.93
14. Feel bothered by or have to avoid going outside because of weather or air pollution	5.10	1.90
2. Feel bothered by or have to avoid going outside because of strong smell	5.18	2.07

		Cronbach α
Reliability by functions	Activity Limitation	0.8222
	Symptoms	0.9296
	Emotional Function	0.8359
	Environmental Stimuli	0.8433
Total reliability	All 15 questions	0.9536

Reliability Test For Internal Consistency
Cronbach Alpha:
<0.35 - low reliability
<0.7 - medium reliability
>0.7 - high reliability

DISCUSSION:
As AQLQ assess all domains like symptoms,activity limitation, emotional functions and environmental stimuli of an asthmatic over a period of time,it is a better predictor of worsening asthma symptoms which leads to exacerbations.

Therefore, the current study supports the clinical use of formal assessments of symptoms and asthma-related quality of life to identify high-risk patients.

Although we did not find PEFR to be predictive of subsequent asthma exacerbations, this does not mean that they have no role in asthma care.Repeated assessments of PEFR may aid patients in self management of their asthma and is a routine part of many self-managementprograms, although evidence in clinical trials of its effectiveness even in self-management programs is lacking for adults.

CONCLUSION:
PEFR added no predictive information to that contained in AQLQ scores and clinical and demographic data. These results support the National Institutes of Health asthma guidelines' recommendation for routinely assessing symptoms but not PEFR.

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