



UNLOCKING WHEEZING'S TALE: A SYSTEMATIC OBSERVATIONAL STUDY ON INSIGHTS OF ASTHMA AND IT'S MANAGEMENT

Community Medicine

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ABSTRACT

Introduction: Asthma is a chronic inflammatory condition of airways which is characterized by the episodic difficulty in breathing. During an asthmatic episode, the airway lining becomes swollen and gets inflamed along with the increased mucus production in the airways which leads to the bronchoconstriction and results in reduced airflow to the lungs. It is a globally leading disease with poor control despite of having effective treatments. **Materials and methods:** This study was conducted in and around Guntur region for a period of 5 months from 1st MAY 2022 to 1st SEPTEMBER 2022 involving 500 subjects by obtaining informed consent from the subjects or their attenders. Subjects were screened based on the Inclusion and Exclusion criteria. The data was collected with the help of Data Collection Form that is validated by Professor & HOD, Department of Pharmacy Practice, Government General Hospital – Chalapathi Institute of Pharmaceutical Sciences, Guntur. After collection of Data, The subjects were educated regarding precautions to be taken in Asthma condition and also about the Lifestyle and Dietary Modifications that are required in Asthma diagnosed patients. **Data analysis:** The collected data was analysed statistically by using MS ADVANCED EXCEL 2010, Graph Pad Prism (Ver 5.0). **Results & discussion:** Through this Observational study, A total of 572 subjects were screened. Based on the Eligibility Criteria, 72 subjects were excluded from the study and 500 subjects were included in the study. The data was collected from a total of 500 asthmatic patients and the obtained data was tabulated. **Conclusion:** From our study, we concluded that the incidence of Asthma is higher in female gender than males. Asthma slightly interrupting the sleep patterns and Majority of the Asthmatic patients are on only corticosteroid therapy which increasing the economic burden on patients followed by combination therapy showing better outcomes with low costs. The study also concluded that, there is a poor literacy about Asthma treatment and their preventive measures among public which emerges an overwhelming need for patient education to increase the therapeutic outcomes and quality of life in Asthma diagnosed patients.

KEYWORDS

Asthma, Sleep Patterns, Economic Burden, Preventive Measures, Quality of Life.

INTRODUCTION:

Asthma is a chronic inflammatory condition of airways which is characterized by the episodic difficulty in breathing. During an asthmatic episode, the airway lining becomes swollen and gets inflamed along with the increased mucus production in the airways which leads to the bronchoconstriction and results in reduced airflow to the lungs^[1]. Asthma is derived from Greek, which means “laboured breathing or panting”. More than 2000 years ago Hippocrates used the word asthma to denote episodic shortness of breath. Later the detailed clinical description was given by 'Aretaeus'^[2]. It is a globally leading disease with poor control despite of having effective treatments^[3].

Signs And Symptoms of Asthma:^[4]

- Coughing (mostly at nights)
- Wheezing
- Shortness of breath
- Chest tightness, pain or pressure
- Fatigue
- Tachycardia

“All Wheezes Are Not The Asthmatic Patients – All Asthmatic Patients Do Not Wheeze”

Epidemiology:^[5,6,7]

Currently, 235 million people were affected by asthma world wide, where approximately 25 million people die per year and both numbers are on the rise. The prevalence of asthma is more common in developed than developing countries. While asthma is twice as common in boys as girls. The numbers of asthmatic patients have increased significantly in between the 1960's and 2008. 9% of US children had asthma in 2001, compared with 3.6% in 1980. Despite the relatively low number of asthma deaths 80-90% are preventable.

United States: Asthma affects approximately 7% of population and causes approximately 4210 deaths per year. In 2005, asthma affected more than 22 million people including 6 million children and

accounted for nearly 5 lakh hospitalizations in the same year. In 2010, asthma accounted for more than one quarter of admitted emergency department visits in the US, among children aged 1 to 9 years; it was a frequent diagnosis among children aged 10-17 years. Asthma prevalence in US is higher than the other countries in the world.

United kingdom's: Asthma affects approximately 5% of the UK population. In England an estimated 261,400 people were newly diagnosed with asthma in 2005, 5.7 million people had an asthma diagnosis and were prescribed 32.6 million asthma related prescriptions.

Canada: Asthma prevalence among Canada's population is an increasing trend. In 2000-2001 the prevalence of asthma was accounted as 6.5%, while it shows an increase of 4.3% (ie.,10.8%) in 2010-2011. The highest prevalence of asthma is at Ontario of Canada by 12.1% and the lowest is at Nunavut by 3.8%. Though there is an overall decrease in incidence of new asthma cases in Canada, prevalence's is raising.

India: Asthma was majorly reported in Chandigarh, Delhi, Kanpur and Bangalore of India by 2.28%, 1.69%, 2.05% and 3.47% respectively with an overall prevalence of 2.38%. Among 1.3 billion people about 6% of children and 2% of adults have asthma. In 2015, about 0.40 million people died from asthma in India where the prevalence was increased by 12.6%.

Triggering Factors of Asthma:^[8]

- Allergens like pollens, moulds, pet (dander, saliva and urine).
- Industrial chemicals such as Isocyanate containing paints, hair sprays, Penicillin and Cimetidine.
- Drugs like Ibuprofen, Aspirin, β -blockers and prostaglandin synthetase inhibitors.
- Foods like fish, nuts, sea food, diary products etc.,
- Environmental pollutants such as cigarette smoke, traffic fumes and sulphurdioxide.

- Others includes cold air, exercise, hyperventilation, emotions and stress.

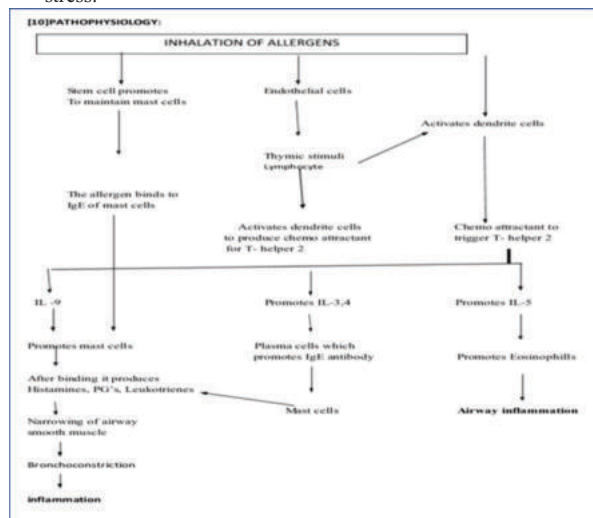


Figure-1: Pathophysiology of Asthma

Treatment : [8,9]

The pharmacological management of asthma depends on the severity of the symptoms. The most preferable route of administration to treat asthma is by inhalation due to faster onset of action. Two types of pharmacological agents are available in the management of asthma ;

1. Reliever Medication : the agents that provides immediate relief from the symptoms. Ex; Short acting β 2-agonist's – Salbutamol, Terbutaline, Remiterol etc.

2. Controller or Preventer Medication : the agents that provides bronchodilation for long period of time and reduces inflammation.

Examples:

- Corticosteroid's–Budesonide, Beclomethasone, dipropionate, Fluticasone etc,
- Long acting β 2-agonist's - Salmeterol, Formoterol, Bambuterol etc.
- Leukotriene receptor antagonist's-Montelukast, Zafirlukast, Iralukast etc.
- Anti - cholinergic's –Ipratropium bromide, Tiotropium bromide.
- Anti-IgE monoclonal antibodies –Omalizumab .

In severe cases for quick relief of symptoms nebulization will also be given. Inhalers are generally referred as boon to the asthmatic patients.

Home Remedies: [10]

- Deep breathing reduces effect of congestion created by asthma.
- Indian goose berry is an effective home remedy.
- Roots of bitter guard aid in providing relief from asthma.
- Ginger helps to clear the excess mucus and reduces swelling of airways.
- Drinking of Tea and coffee relieves from asthmatic symptoms.
- Mustard oil and fig subsides the symptoms of asthma.
- Consume honey and cinnamon powder mixture before bedtime to treat asthma symptoms.
- Red onions are also useful to relieve from asthmatic symptoms.

MATERIALS AND METHODS:

Study Design: A Prospective Observational Study conducted for a period of 5 months from 1st MAY 2022 to 1st SEPTEMBER 2022.

Study Materials: A validated Data Collection Form, Subject Consent Form.

Study Procedure: This study was conducted in and around Guntur region for a period of 5 months involving 500 subjects by obtaining informed consent from the subjects or their attenders. Subjects were screened based on the Inclusion and Exclusion criteria. The data was collected with the help of Data Collection Form that is validated by Professor & HOD, Department of Pharmacy Practice, Government

General Hospital – Chalapathi Institute of Pharmaceutical Sciences, Guntur. After collection of Data, The subjects were educated regarding precautions to be taken in Asthma condition and also about the Lifestyle and Dietary Modifications that are required in Asthma diagnosed patients.

Eligibility Criteria:

Inclusion Criteria-

- All Asthma diagnosed Patients who are willing to participate in the study by providing informed consent were included in the study.
- Patients of all age groups were Included.

Exclusion Criteria-

- Subjects who are Healthcare Professionals.
- Female Subjects who are pregnant.
- Subjects who are not able to provide Consent.

Data Analysis:

The collected data was analysed statistically by using MS ADVANCED EXCEL 2010, Graph Pad Prism (Ver 5.0).

RESULTS & DISCUSSION:

Through this Observational study, A total of 572 subjects were screened. Based on the Eligibility Criteria, 72 subjects were excluded from the study and 500 subjects were included in the study. The data was collected from a total of 500 asthmatic patients and the obtained data was tabulated.

Table – 1: Demographic data of the subjects

Parameter	Category	Subjects (%)
Age	<19 years	8%
	20 – 29 years	11%
	30 - 39 years	16%
	40 – 49 years	24%
	50 – 59 years	12%
	60 – 69 years	18%
	>70 years	11%
Gender	Males	42%
	Females	58%
Social Habits	Yes	22%
	No	78%
Family History	Positive	44%
	Negative	56%
Profession	Working	52%
	Non-working	48%

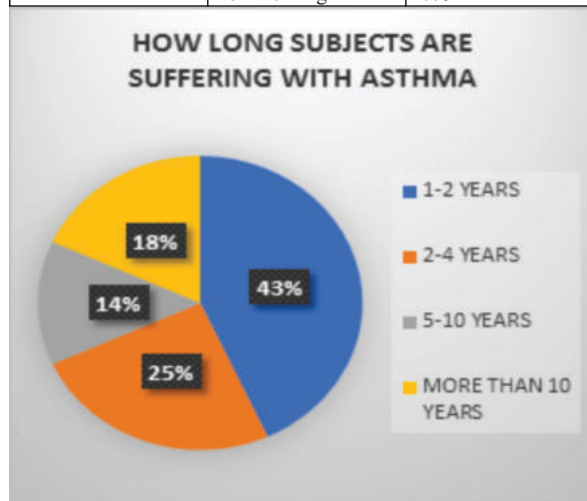


Figure – 2: In our study, most of the subjects are newly diagnosed with asthma (43%), 25% of subjects are suffering from 2-4 years, 14 & 18% of subjects are suffering from 5-10 years and more than 10 years respectively.

Table – 2: Affect of Asthma on sleep patterns

Affect of Asthma on Sleep	
Not Interrupting	60
Lightly Interrupting	390
Couldn't even fall a sleep	50

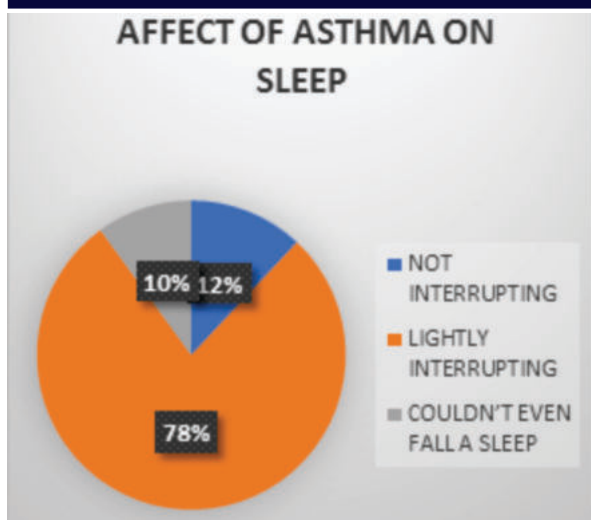


Figure – 3: Based on the data obtained, Asthma lightly interrupting the sleep patterns and also 10% of the diagnosed patients also not even falling a sleep at the night times.

Table – 3: Time of Asthmatic Effect

Morning	100
Afternoon	0
Evening	80
Midnight's	140
Multi times in a day	180

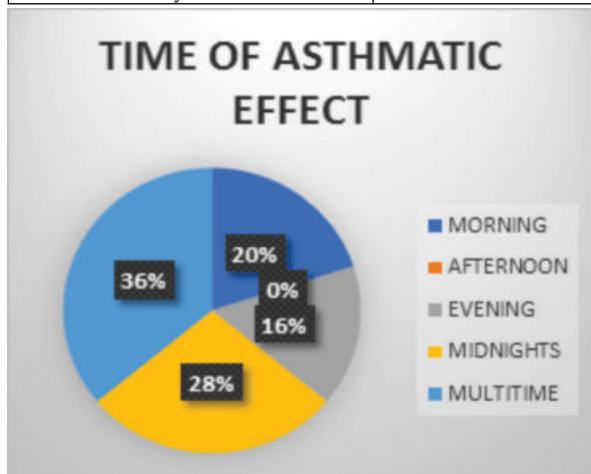


Figure – 4: The Asthmatic symptoms mostly occurring in the early morning in majority of the patients(36%) followed by Multi-times in a day i.e., approximately in 28% of total subjects.

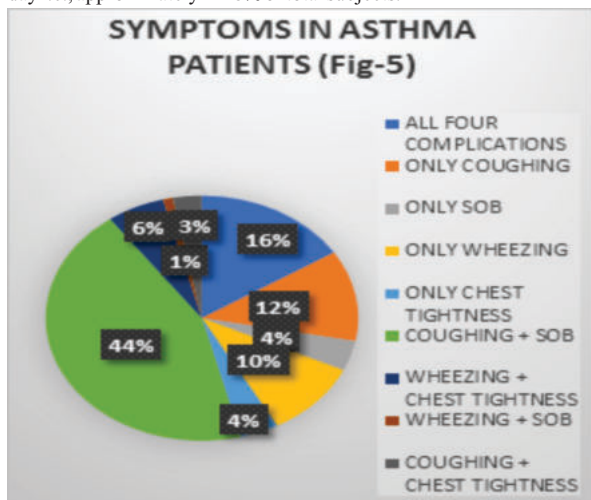


Figure – 5: Based on the analysis of collected data, Majority of the

Asthma diagnosed patients are suffering with Coughing and Shortness of Breath with 44%, 16% of the subjects are encountering all the four symptoms like coughing, wheezing, SOB and Chest tightness. In individual symptoms more number of subjects are suffering with Coughing (60 subjects) and Wheezing (50 subjects).

Table – 4: Occurrence of symptoms

All Four Symptoms	80
Only Coughing	60
Only SOB	20
Only Wheezing	50
Only Chest tightness	20
Coughing + SOB	220
Wheezing + Chest tightness	30
Wheezing + SOB	5
Coughing + Chest tightness	15

Table – 5: Medication usage in Asthma

Only Bronchodilators	127
Only Corticosteroids	172
Only Leukotriene Antagonists	40
Only Mast cell Stabilizers	13
Combination of these drugs	148

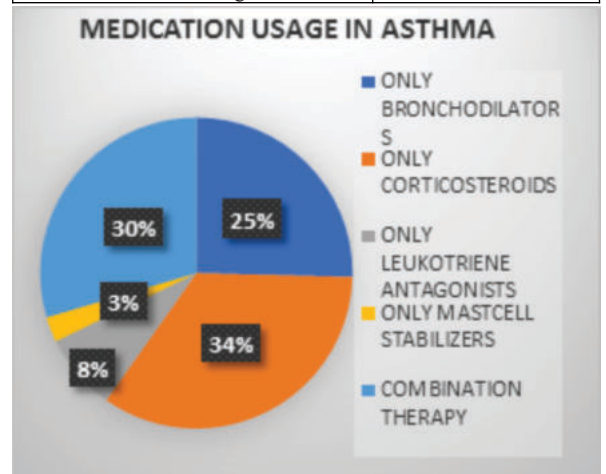


Figure – 6: Most of the subjects are using Corticosteroid only therapy to reduce their symptoms of Asthma (34%), while 30% of the Asthma patients are prescribed with the Combination therapy of Anti-Asthmatic drugs followed by Bronchodilators (25%), Leukotriene antagonists(8%) and Mast cell Stabilizers (3%).

Table – 6: Precautions taken by Asthma patients

One Precaution	205
Two Precautions	80
Three Precautions	200
Four Precautions	15
Five Precautions	0

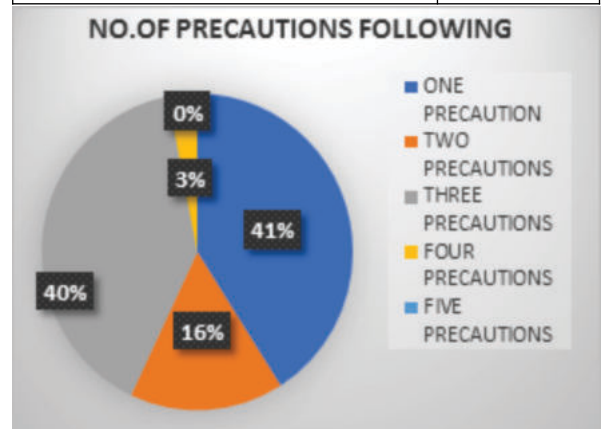


Figure – 7: Most of the Asthmatic patients are following one precaution followed by Three precautions where the precautionary measures reduces the complications and economic burden.

Table – 7: Breathing Exercises performed by Asthma patients

Yes	170
No	330

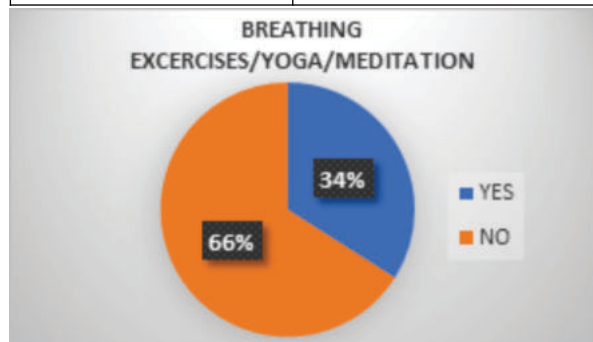


Figure – 8: Breathing exercises like Yoga, Meditation are performed by 34% of the subjects while the remaining 66% of the subjects do not adhere to any of the breathing exercises.

Table – 8: Medication vs Average Expenditure

Only Bronchodilators	Rs. 737
Only Corticosteroids	Rs. 870
Only Leukotriene Antagonists	Rs. 520
Only Mast cell Stabilizers	Rs. 400
Combination of these drugs	Rs. 463

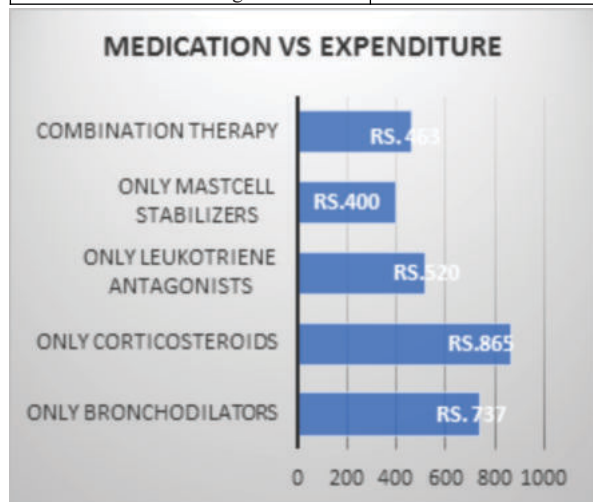


Figure – 9: Subjects who are using only Corticosteroids are at high economic burden followed by the Bronchodilators. According to our study, subjects using combination of drugs are at economically low burden.

CONCLUSION:

The current study concluded that the incidence of Asthma is higher in female gender than males. From this study, we also found that there is no association between social habits and asthma but the risk of asthma increases based on their working profession. Asthma slightly interrupting the sleep patterns where the symptoms tend to occurring mostly in the midnights. Majority of the Asthmatic patients are on only corticosteroid therapy which increasing the economic burden on patients followed by combination therapy showing better outcomes with low costs. The study also concluded that, there is a poor literacy about Asthma treatment and their preventive measures among public which emerges an overwhelming need for patient education to increase the therapeutic outcomes and quality of life in Asthma diagnosed patients.

Limitations:

This study included only 500 subjects. This study has to be further extended with a greater number of patients for a better conclusion.

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Conflict of Interest:

The authors declared no Conflicts of Interests.

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