

EVALUATION OF ASTHMA: AGGRAVATING FACTORS AND FAMILY HISTORY- A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Asthma is a respiratory disorder prevalent in around 15% population of Pakistan. The global prevalence of asthma varies widely from country to country, however, ranges between 4.3%- 8.6%. The factors aggravating asthma in urban areas are well established. Still, there is limited data available from rural areas for the pattern of asthma, its aggravating factors and its association with family history. Therefore, this study was conducted to evaluate these factors. This descriptive and cross-sectional study was conducted in outdoor patient departments (OPD) of hospitals in Tando Adam, Sindh, Pakistan. In this study, 300 asthmatic patients were included. A non-probability convenient sampling method was adopted, and data was collected by filling a pre-designed structured proforma. The data showed that male patients were predominate with a rate of 56% as compared to 44% of females. Age and family history was not significantly associated with asthma. However factors environmental

pollutants and smoking mainly associated with asthma. Quaderple therapy was most frequently prescribed method of treatment. Further studies with long term follow-up will be required to confirm findings of this study.

Key Words: Asthma, aggravating factors, Management pattern

INTRODUCTION

Bronchial asthma is a long-term inflammatory state of the respiratory area related to bronchial hyper-reactivity and limitation of air-flow because of airway smooth muscle withdrawal frequently prompting trouble breathing and hypoxia (1,2,3). The pathogenesis of asthma includes eosinophil, mast cell activation and T-helper 2 (TH-2) lymphocytes invasion, IgE development by lymphocytes, and the advent of other inflammatory intermediaries, chemokines, and development factors via airway epithelium(4).

The causative and aggravating factors include a family history of atopy and environmental factors (5). The development of asthma is linked to natural triggers and endogenous biological factors (6). Thus, each individual with asthma has different pathological stimuli to start an episode of asthma (7). Commonly known triggers include strenuous work out and exposure to allergens such as dust, food, pet hairs, molds, quills, pollens, and chilly air. Modern synthetic substances (8) and tobacco smoke (9) may likewise have the potential to trigger asthma. Asthma affects approximately 334 million people worldwide, with 100 million expected to be affected by 2025(10, 11). The annually estimated overall mortality rate of asthma is reported to be 180,000 (12).

There is a remarkable variation in asthma prevalence in Pakistan. It ranges from 4.3% to 31.58% across different regions (11,13). According to a report from Pakistan, it was assessed that 5% of the total population was experiencing bronchial asthma. Asthma cases have grown over a decade and

2 million patients are now experiencing asthma, which incorporates a high level of youngsters, which is 20-30%, and the number is expanding by 5% yearly (14,15,16). Reported literature has shown association of age where in a study carried out in 1997 showed that 10% of the youngsters were experiencing asthma (17). Another investigation led in cowhide tannery plant in Karachi reported that 10.8% of the laborers were experiencing asthma (18). Though these studies were reported from urban areas or without any focus on rural areas, where is a less chance of interaction with environmental pollutions.

For management of asthma Two classes of anti-asthma medications are used anti-inflammatory and bronchodilators. Bronchodilators rearrange the bronchospasm of the prompt period of asthma while calming drugs restrains the inflammatory intermediaries of both chronic and immediate stages. The primary medications utilized as bronchodilators are β 2-adrenoceptor agonists; additional drugs include Cysteinyl Leukotriene Receptor Antagonists, Xanthenes, and Muscarinic Receptor Antagonists. Failure to provide appropriate asthma treatment can lead to worsening symptoms and exacerbations (19), resulting in early and late consequences for the social, personal, and emotional well-being of asthma patients (20, 21). Therefore, 'asthma management' guidelines (22) recommend regular preventive management in order to reduce emergencies (21-26). However, it is reported that long term compliance of patients is not as per recommendations and at many places they are not provided with proper guidance as long they have to take medications.

Given the limited literature available showing asthma pattern in rural areas, association with environmental factors and family history, this study was designed evaluate these factors and in addition management pattern of asthma in hospitals of Tando Adam.

METHODS

It was a descriptive observational study conducted in asthma patients reported in Tando Adam, Sindh, Pakistan. The study was conducted over a period of 12 months from 1st September 2017 to 31st August 2018. A total of 300 patients were included in this study. The patients suffering from asthma and visited the hospital during the study period were included in this study. The patients which were suffering from co-morbidities and also other diseases of respiratory tract were also excluded. A non-probability convenient sampling method was adopted. The demographic and pathophysiological data of patients was recorded by using a pre-designed structured proforma. The questionnaire type proforma having information regarding patient's history of the disease, gender, age, education, factors and management of asthma. The record of medicines was also obtained from the physician's prescriptions for management of the asthma.

STATISTICAL METHODS

The data was analysed using Statistical Package for Social Sciences (SPSS version 21.0). All continuous variables are presented as mean and median with standard deviation, while categorical data was presented as frequency distribution. As this was a descriptive study no hypothesis was tested.

RESULTS

A total of 1873 patients presented with respiratory symptoms and 300 (16%) patients were diagnosed with asthma by the treating physicians. . Out of these 168 patients were males (56%) while 142 (44%) were females.

Age distribution of patients presenting with asthma

The majority of patients in this study were between 49-58 years old (n=91, 30.33%), followed by the age groups 18-28 (n=72, 24%), 39-48 (n=66, 22%), 29-38 (n=41, 13.67%), and \geq 58 (n=30, 10%).

Family history of asthma

This study found that most patients with asthma have no family history (n=211,70.33%) while 89 (29.67%) patients reported to have a family history.

Symptoms reported in asthma patients

Cough was the most common symptom reported in patients with asthma in different combinations. These combinations are presented in Figure 1.

Factors aggravating asthma

The most common factors in this study were smoking (n=56, 18.67%), exposure to environmental toxins (n=53, 17.67%), exposure to chemicals (n=52, 17.34%), dust exposure (n=39, 13%), air pollutants (n=36, 12%), pets (n=18, 6%), food allergy (n=18, 6%), exposure to gases (n= 15, 5%), and insect bite (n=13, 4.3%).

Prescription pattern

Out of 300 patients great majority (n=153) had quadruple therapy, and only 12 had monotherapy. Figure 2 presents prescription pattern in the study population.

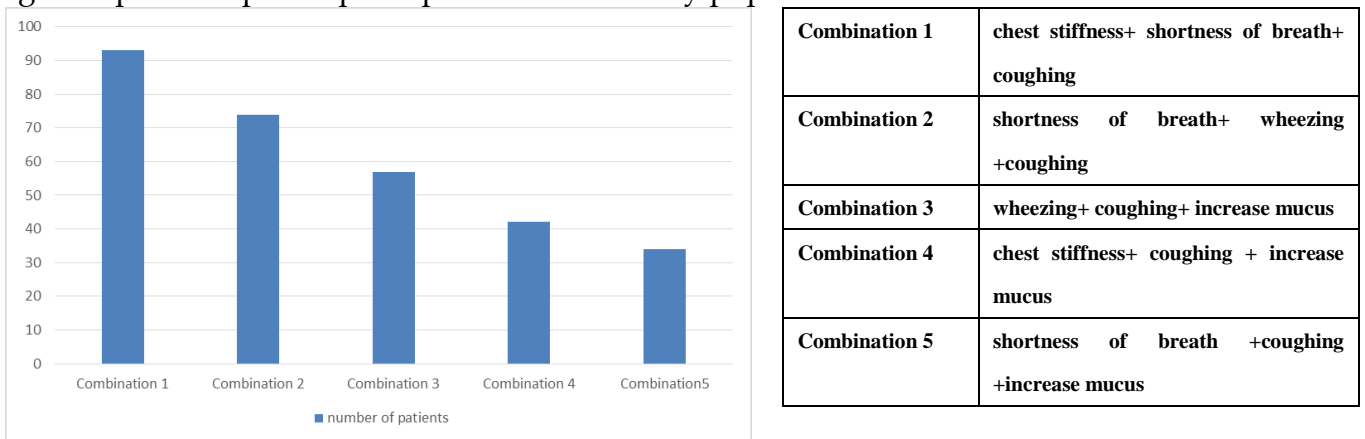


Figure 1. Descriptive statistics of symptoms reported in asthma patients

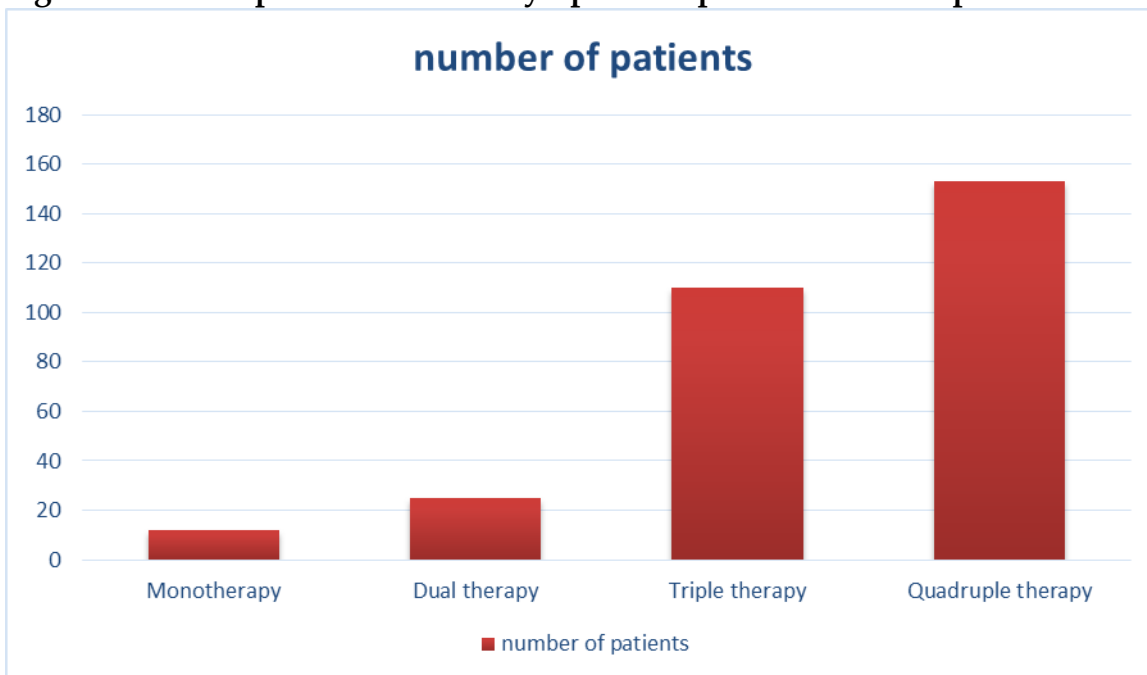


Figure 2. Pattern of Prescription to the patients presenting with Asthma

Table 1. Factors aggravating Asthma in study population

S.No	Factors	No. of patient	Percentage
1	Dust	39	13%
2	Smoking	56	18.67%
3	Pollen grains	36	12%
4	chemicals	52	17.33%
5	Pets	18	6%
6	Insect biting	13	4.33%
7	Food allergy	18	6%
8	Environment hazards	53	17.67%
9	Gases	15	5%
Total		300	100%

DISCUSSION

Asthma is a common clinical condition affecting mainly respiratory system, however most of the studies from Pakistan are reported from urban areas. This research was conducted in both government and private hospitals in Tando Adam, Sindh, as rural city. This research has been performed in public sector and private hospitals of Tando Adam, Sindh. Total of 300 patients were included in the study to assess the prevalence and treatment trends of asthma in the said population. Those patients which were diagnosed and confirmed with asthma by physicians were included. It was observed from the study that asthma have 16% prevalence in Tando Adam. There is currently no cure, but management can help control the symptoms. The data was collected by filling structured proforma containing different questions. Most of patients observed in this study were suffering from symptoms which included shortness of breath, stiffness of chest and cough. There are 4 strategies to manage the asthma which are called as mono, duo, triple and Quadruple therapy according to symptoms patients have been suffered. Bronchodilator drugs followed by leukotriene antagonist and corticosteroids are prescribed in the therapy to overcome almost all of the symptoms. The main objective of the research was to regulate the prevalence and management for asthma in Tando Adam. It is remarkable how asthma affects the wellbeing delivery framework. Asthma is not only the most common incessant disease, but it's also the leading reason for emergency room visits, confirmations from the medical clinic, and non-appearance at school or work. Numerous studies have shown that asthma predominance has been investigated. Scandinavian countries having range from 1% to 1.5%, United States having 2-5% and in New Zealand up to 7%. (WHO 2017) (27). The prevalence of asthma is 16% in Tando Adam as per this research. From September 2013 to October 2013, the descriptive research was conducted in Lahore at Jinnah Hospital. According to that analysis of cases by age, a big figure of patients were between 21 and 30 years n=35 (29%). Least n=14 (11.5%) were over 50 years of age with mean times of 33.5+4.1. (Adil Hameed and colleagues 2014). However, most of the patients in this study were between 49-58 years old. 72 (24%) 68 were between 18-28 and 66 (22%) were between 39-48. 41 (13.37%) were between 29-38, 41 (13.67%) were between 39-48, and 31 (10%) were between 58-onward. To assess the severity of asthma in Southern Punjab, Pakistan, the descriptive study was conducted in Pakistan. There were 81 cases of asthma among

120 patients (67.5%), and 39 patients (32.5%) were women. According to my study, males had more patients at 168 (56%) than females at 132 (44%). (Maryam. K, Muhammad T.J 2015) [28] A descriptive study was conducted in Maysore and gathered information it revealed that n=6268 patients were smokers and n=4289 were non-smokers. (Shivani R. et al 2013) [29]. According to my study, the most common factors are: smoking n=56 (18.67%); environmental hazards n=53 (17.6%), chemicals n=52 (17.33%), dust n=39 (13%), pets n=18 (6%), n=18 food allergy (6%), gases n=15 (5%) and insect bite n=13 (4.3%). A descriptive research study was done in Islamabad on asthma and hypersensitivities. It revealed that asthma is serious in Islamabad. (Muhammad A.W.et al 2009) (30). According to my research, more number of patients who participated in the study reported symptoms such as (shortness of breath +cough + chest stiffness), (n=93 31%) and the patients reported symptoms like (cough +wheezing + shortness of breath)are (n=74 (24.67%), the patients reported symptoms such as (cough + increase mucous formation + wheezing) are (n=57 19%).

CONCLUSION

The study has shown that asthma in our population was aggravated by environmental pollution and smoking. Thus strategies to prevent exposure of these factors is strongly recommended. Further studies to explore pathogenesis of these aggravating factors are recommended.

Declaration: This study is part of M.Phil Thesis of Nabila Channar conducted at University of Sindh.

Ethical Consideration: The study was approved by the local Research Ethics Committee

Conflict of interest

All the authors declared no conflict of interest.

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