PRESCRIBING TRENDS AND UTILIZATION OF ANTI ASTHMATIC DRUGS IN TERTIARY CARE HOSPITALS OF LAHORE PAKISTAN

Sameera Nazeer [*1], **Farah Gul** [2] **& Fatima Amin**[3]
[*1&2]Final Prof Pharm-D student, Pharm-D, Institute of Pharmacy, Lahore College for Women University, Lahore Pakistan
[3]M-phill Pharmacy practice, Lecturer at Institue of pharmacy Lahore College for Women University, Lahore, Pakistan

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Abstract

Background: Asthma is fast spreading disease among the people in Pakistan. Basic aim of study was to observe current prevalence and prescribing pattern of anti-asthmatic drugs in Tertiary Care hospitals of Lahore.

Methodology: A questionnaire based study was conducted from July to August 2017 in different Tertiary Care hospitals. 250 patients of asthma were selected by convenient random sampling. A questionnaire was designed and data collected was analyzed and results were represented in the form of graphs and tables.

Results: Results showed that mostly prescribed medicines are 24% xanthine derivatives, 23% leukotriene modifiers, 23% corticosteriods used as combined inhalers with long acting β_2-agonist, 15% bronchodilators, 9% anti-cholinergics and 6% corticosteroids. Prescriptions were prescribed by brand names. 7% Therapeutic duplication and 75% Polypharmacy was evaluated. Drugs prescribed per prescription were 2 drugs in 4%, 3 drugs in 20%, 4 drugs in 41%, 5 drugs in 19%, 6 drugs in 11%, 7 drugs in 2% and 8 drugs in 3% of prescriptions. 18.4% were children and the ratio of females 76.8% was greater that of males 23.2%. 75% patient compliance was observed.

Conclusion: Preventive therapies used for asthma treatment were satisfactory but the pharmacist role was negligible.

Introduction

Asthma is a chronic lung disease, characterized by inflammation and narrowing of airways due to excessive mucus production which results in ultimate breathing difficulty, wheeze and cough. Frequent and repeated asthmatic intensifications can cause restlessness, weakness, and decreased activity levels. More than 20 million people in Pakistan are facing asthmatic complication but only 9.5 % cases are diagnosed. To WHO reports, in 2020 asthma will become the third major cause of deaths over the globe [1]. According to study conducted in 2002, prevalence of Pakistan was 5%, although exact epidemiological data was not known. There are 300 million people across the world are suffering from asthma and about 180 million deaths were reported annually [2].

During an asthmatic attack a patient when breathes hear whistling and wheezing sound in chest additionally neck muscles tighten up, lips and finger nails may turn blue and heart rate is increased. The asthmatic patient will die if medical treatment was not provided on time. Common triggers include; 'exercise, allergens (food, dust, pet hairs, feathers, pollens, molds, house dust, mites, pollution, cockroaches etc.) cold air, industrial chemicals, cigarette, smoke, viral infection i.e, common cold can trigger asthma attacks'. In some cases stress also act as triggers [3]. Air pollution component such as PM_{10} can enter and get into the periphery of the lungs. The increase of PM_{10} levels may trigger the asthmatic symptoms [4].

Various risk factors including 'knowledge and management skills of asthma, personal health beliefs, exposure to smoke, cultural issues, geographic location and transportation' may contribute to asthma predominance and seriousness of symptoms [5]. Asthma is arranged into 4 levels on the premise of symptoms and spirometry diagnosis: mild intermittent, mild persistent, moderate and severe persistent [6].
The Global Initiative for Asthma (GINA) guidelines for the management of asthma, were updated in 2002 [7].

The lung function test and x-ray are the diagnostic tests for asthma. There is no cure available for asthma, yet the proper use of medicines can effectively control asthmatic attacks and enable people to lead normal life [2].
Mild to moderate asthma is treated by short term β_2-agonist. The chronic asthma treated with step wise process. In step I, administer occasional relief bronchodilators, step II involves combination of a short acting β_2-agonist and inhaled corticosteroids and step III involves inhaled corticosteroids with long acting β_2-agonist. In step IV, high dose inhaled corticosteroid and regular bronchodilator administer if above treatment is not effective [8].

Materials and Methods
A questionnaire based study was conducted using convenient random sampling technique at pulmonology department in OPD of various Tertiary Care hospitals of Lahore, Pakistan including Gulab Devi Chest Hospital, Jinnah Hospital, Shiekh Zayed Hospital. The data was collected during 2 months (July 2017 – August 2017) and 250 patients were selected by convenient random sampling while patients with status asthmaticus and other respiratory diseases were excluded. A data collection form was designed covering aspects related to demographics, family history, duration of disease, medications (dose, dosage form, route of administration, frequency), side effects and compliance rate among asthmatic patients and was filled during face to face interviews with patients.

Results
(Table: 1) Among 250 patients diagnosed with asthma, the number of females patients were more than male patients (n=250) (76.8% VS 23.2%). Mostly patients were aged between 31-40 years (33.6%), 18.4% were children, 16% between 41-50 years and 14.4% were > 50 years. The mean age of asthmatic patients was found to be 32 years. 40.8% patients also had a family history of this disease while 59.2% had not. Male patients were majorly active smokers 45.6% while 34.4% patients were passive smokers. 65.6% Asthmatic patients were mostly from rural areas and 34.4 % from urban areas. All prescriptions (100%) were prescribed by brand names.

(Table: 2) 7% Therapeutic duplication and 75% Polypharmacy was present in prescriptions. Number of drugs prescribed per prescription were 2 drugs in 4%, 3 drugs in 20%, 4 drugs in 41%, 5 drugs in 19%, 6 drugs in 11 %,7 drugs in 2% and 8 drugs in 3% of prescriptions.

(Fig 1) Results showed that mostly prescribed medicines are 24% xanthine derivatives, 23% leukotriene modifiers, 23% corticosteriods used as combined inhalers with long acting β_2- agonist, 15% bronchodilators, 9% anti-cholinergics and 6% corticosteroids while mast cell stabilizers were not used much clinically.

The diagnostic procedures used were lung function test, spirometery, CBC etc. (Fig: 2) 88% counseling about how to use medication and inhaler or nasal sprays was performed by physician ,7 % by attendents ,and 5% by nurse. 73.6% patient compliance was observed in asthmatic patients. 23% patients reported skin allergies and 7 % have mouth sores as medication side effects.

(Fig 3) Per prescription cost was 11% (500-1000Rs), 47% (1100-2000Rs), 38% (2100-3000) and 4% above 3000Rs.

Discussion
The study showed, the prevalence of asthma in females is higher than males in the ratio of 3:1.A study conducted in Paris and Montpellier also showed the same fact that females are more prone to asthma [9]. According previous studies, increase in urbanization along with lineage marriages trend in Pakistan also contribute as most important

factors of increasing asthma prevalence. There is more than 20 million Pakistani adult population facing asthma and only 9.5% are diagnosed [1]. Similarly elderly people were more susceptible to this disease almost 64% patients were above 30 years of age. Mostly patients were belong to rural areas i.e., 65.6% because rural exposures could aggravate asthma and also may be due to their life styles, animals, using kerosene stoves, illiteracy , fields etc [2] [10]. According to one study the prevalence of Asthma in the poor patients or patients with low socioeconomic status is high[11]. Smoking execrates asthma and asthmatic attacks 45.6% patients evaluated were active smokers, while 34.4% patients were passive smokers and these patients were instructed to stop smoking. 40.8% patients have family history of asthma. In observed prescriptions commonly encountered drugs were 24% Xanthine, 23% leukotriene modifiers, 23% Combination inhalers (rotahaler, aerohaler, Maclife etc.) of long acting β_2- agonists and corticosteroids, 9% Anticholinergic and 6% corticosteroids. Treatment followed was according to GINA guidelines. The GINA program is a management program to provide effective medical care for asthma [12]. Therapeutic duplication was observed in 7% of prescriptions. Polypharmacy was observed in 75% prescriptions due to medications prescribed other than anti-asthmatic drugs i.e., risek, motilium, osam-D, azomax, zantac, etizem, mofest, imuran etc.33% patients were reported about certain side effects: rashes, skin allergies ,fast heart beats, shivering, mouth ulcers etc. This was due to overdoses of asthmatic drugs as patients do not gargle after administration of inhaler.75% patient follow medication order while 25% not follow due to unavailability of medicines prescribed in their vicinity, uneasiness followed by taking medication, financial issues, route of administration, frequency of dosing, medication effects (slow onset of action may contribute to poor adherence rates) and side effects etc [13]. Medication order, their use, use of inhalation devices, nasal sprays, and spacer was councelled by physician 88%, medical attendant 7%, nurse 5% and pharmacist was not appointed for this service which is matter of concern. A management programme delivered by pharmacist can improve asthma control [14]. Pharmacists identified time and patient-related factors are major barriers in asthma services provision. Future research should be done to explore barriers and facilitators for expansion of the pharmacist's role in asthma management [15]. Patients who follow up regularly after 1 month was about 77% and 23% were not follow-up properly because of long distances. Numbers of prescribed drugs per prescription were as follows: 2 drugs 4%, 3 drugs 20%, 4 drugs 41%, and 5 drugs 19%, 6 drugs 11% .7 drugs 2%, 8 drugs 3% so more patients were prescribed by combination therapy. The cost of medications per month was: 11% (500-1000Rs), 47% (1100-2000Rs), 38% (2100-3000Rs) and 4% above 3000Rs.100% prescriptions followed brand names which was a matter of concern. Further research is needed to determine the roles of primary care physicians, allied health professionals, and sub specialists in order to ensure seamless communication and cost effective care targeting individual patient needs.

Conclusion
It was concluded that the preventive therapies used for asthma treatment was satisfactory but the pharmacist role was negligible. As there is no cure of asthma available, so preventive measures and treatment should be taken seriously with life style modifications to control the asthmatic attacks frequency. Treatment was being done according to GINA guidelines. Authentic information regarding disease is still lacking in asthmatic patients. So it is a need of time to appoint pharmacists in hospitals as staff members for councelling of patients which will increase patient's compliance, adherence and cost effectiveness.

Acknowledgment

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Tables

Table: 1   Patient's demographic, Family history, smoking, vicinity, side effects and patient compliance

Parameters	Variables	Frequency n=250	Percentage
Sex	Male female	58 192	23.2% 76.8%
Age	1-15 years 16-20 years 21-30 years 31-40 years 41-50 years 51-60 years >60 years	46 4 40 84 40 24 12	18.4% 1.6% 16% 33.6% 16% 9.6% 4.8%
Family History	Yes No	102 148	40.8% 59.2%
Smoking	Active smokers Passive smokers none	114 86 50	45.6% 34.4% 20%
Side effects	Skin allergy Mouth sore others	58 18 8	23% 7% 3%
Vicinity	Rural Urban	164 86	65.6% 34.4%
Patient compliance	Yes No	184 66	73.6% 26.4%

Table: 2   Prescription related parameters

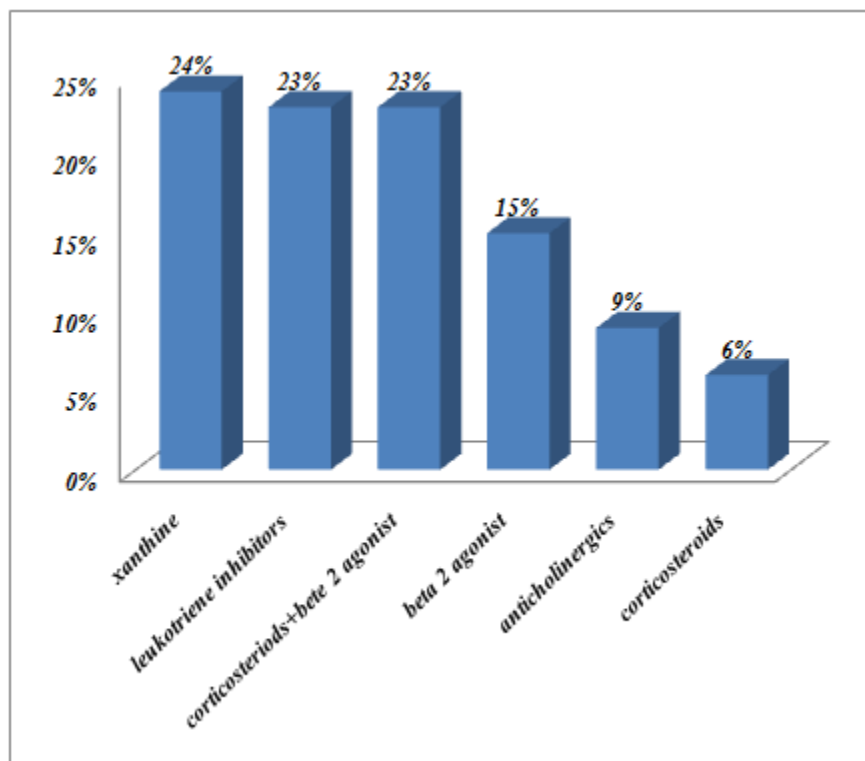| Parameters	Variables	Percentage
Therapeutic duplication	Yes No	7% 93%
Polypharmacy	Yes No	75% 25%
No. of drugs per prescription	2 3 4 5 6 7 8	4% 20% 41% 19% 11% 2% 3%

Figures

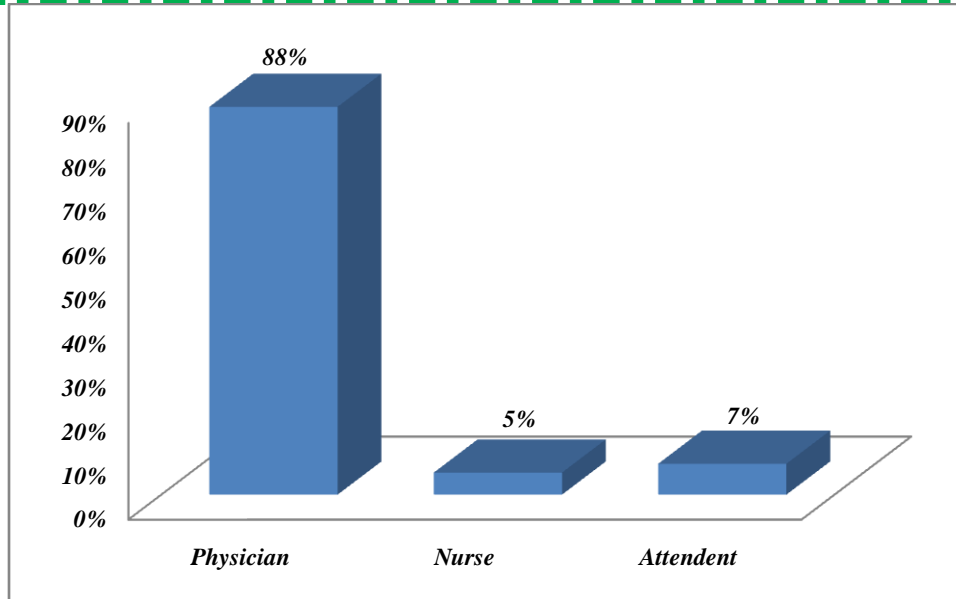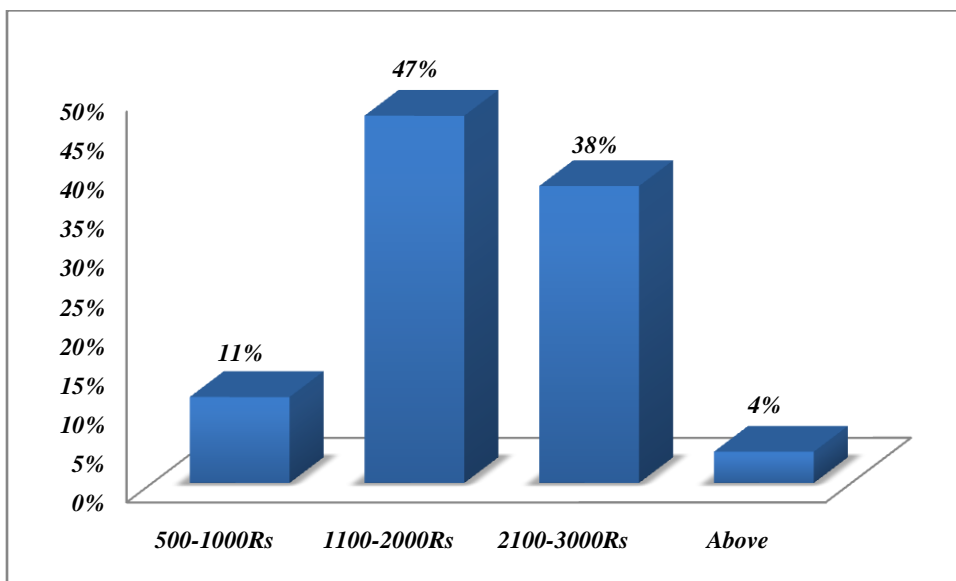

Figure: 1   Medications prescribed

Figure: 2 Counselling performed by

Figure: 3 cost per prescription