

**ORIGINAL ARTICLE**

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**THE FREQUENCY OF DIFFERENT DIAGNOSES IN PATIENTS PRESENTED  
WITH OBSTRUCTIVE AIRWAY SYMPTOMS TO THE OUTPATIENT AND  
PULMONOLOGY DEPARTMENT, MARDAN MEDICAL COMPLEX, KHYBER  
PAKHTUNKHWA**

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**ABSTRACT**

**Background**

Obstructive airway symptoms such as cough, wheezing, and shortness of breath are common in respiratory conditions including asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis, and acute bronchitis.

**Objective**

To determine the frequency and pattern of diagnoses among patients presenting with obstructive airway symptoms and to assess their relationship with gender and age distribution.

**Methodology**

A cross-sectional study was conducted at the Outpatient and Pulmonology Department, Mardan Medical Complex, from Jan to June 2024. A total of 320 patients aged 12–80 years were enrolled through consecutive sampling. Diagnoses were confirmed through spirometry, chest radiography, and CT or HRCT when indicated. Data were analyzed using SPSS version 26.

**Results**

Among 320 patients, 173 (54.1%) were males and 147 (45.9%) were females, with a mean age of  $53.68 \pm 17.9$  years. The most frequent diagnosis was asthma (50.6%), followed by COPD (36.2%), bronchiectasis (11.9%), and acute bronchitis (1.2%). Females predominated in asthma cases (56.8%), while COPD was more prevalent among males (68.1%). The 51–80-year age group accounted for most cases (59.4%).

**Conclusion**

Asthma and COPD were the leading causes of obstructive airway symptoms, with significant gender and age group variations. These findings emphasize the need for early diagnosis and preventive interventions, especially among older adults and high-risk groups.

**Keywords:** Obstructive airway disease, asthma, COPD, bronchiectasis, respiratory symptoms, prevalence

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## INTRODUCTION

Obstructive airway symptoms such as cough, wheezing, and shortness of breath are hallmarks of several respiratory disorders, including asthma, COPD, bronchiectasis, and acute bronchitis (1, 2). Prompt identification and management are crucial to reduce morbidity, mortality, and the socioeconomic burden associated with these chronic diseases (3). Globally, respiratory diseases represent a major public-health challenge, contributing substantially to disability-adjusted life years (4). Asthma, a chronic inflammatory condition characterized by reversible airway obstruction and bronchial hyper responsiveness, affects nearly 300 million people worldwide (5). Environmental triggers such as tobacco smoke, dust, pollen, and viral infections play a pivotal role in exacerbations (6). COPD, primarily attributed to cigarette smoking and occupational exposure, remains the third leading cause of death worldwide (7, 8). It is characterized by progressive airflow limitation, chronic bronchitis, and emphysema. Bronchiectasis, though less common, causes substantial morbidity through recurrent infections, impaired mucociliary clearance, and chronic sputum production (9). Acute bronchitis, a self-limiting viral infection, often presents with transient airflow obstruction and cough lasting less than three weeks (10). Despite overlapping symptoms, differentiating these entities is critical for optimal management (11). In Pakistan, particularly in semi-urban areas such as Mardan, there is limited published data on the frequency of various obstructive airway diseases (12). This study therefore aimed to determine the relative frequencies of asthma, COPD, bronchiectasis, and acute bronchitis among patients presenting with obstructive airway symptoms and to analyze their distribution by age and gender.

## MATERIAL AND METHODS

This cross-sectional study was conducted over Six months Jan to June 2024 at the Outpatient and Pulmonology Department of Mardan Medical Complex (MMC), Khyber Pakhtunkhwa. Ethical approval was obtained from the Institutional Review and Ethics Board of MMC. A total of 320 patients aged 12–80 years presenting with obstructive airway symptoms (cough, wheeze, dyspnea) were enrolled using a consecutive sampling technique. Diagnoses were established through detailed clinical examination, spirometry, chest X-rays, and CT or HRCT when indicated.

**Inclusion Criteria:** Patients aged 12–80 years presenting with obstructive airway symptoms.

**Exclusion Criteria:** Patients with interstitial lung disease (ILD), congestive cardiac failure (CCF), or those < 12 or > 80 years of age.

### Data Analysis

Data were recorded using a structured proforma and analyzed with SPSS version 26.0. Frequencies and percentages were calculated for categorical variables, while mean  $\pm$  standard deviation was computed for quantitative variables. Results were tabulated and presented graphically.

### Statistical Analysis

Data were analyzed using SPSS version 26.0. Quantitative variables such as age were expressed as mean  $\pm$  standard deviation, while categorical variables like gender and diagnosis were presented as frequencies and percentages. The Chi-square

test assessed associations between categorical variables, and ANOVA compared means across age groups, with  $p < 0.05$  considered significant.

### Ethical Approval Statement

Ethical approval for this study was obtained from the Institutional Review and Ethics Board (IREB) of Mardan Medical Complex, Khyber Pakhtunkhwa. Informed written consent was obtained from all participants.

## RESULTS

The study comprised a total of 320 patients who presented with obstructive airway symptoms at the Outpatient and Pulmonology Department, Mardan Medical Complex. Among these, 173 (54.1%) were males and 147 (45.9%) were females, indicating a slight male predominance. The overall mean age of the study population was  $53.68 \pm 17.91$  years (range 12–80 years), suggesting that both younger and elderly patients were affected by obstructive airway diseases. The age-wise distribution revealed that the 51–80 years group represented the majority, accounting for 190 patients (59.4%), followed by 92 patients (28.7%) in the 31–50 years group, and 38 patients (11.9%) in the 12–30 years category. This trend demonstrates that airway obstruction was more prevalent among older adults. In males, the mean age was  $53.25 \pm 18.21$  years, while in females it was  $54.17 \pm 17.60$  years; the difference was statistically insignificant ( $p > 0.05$ , Independent t-test). Demographic characteristics are summarized in Table 1.

**Table 1: Gender and Age-Wise Distribution of Patients**

Gender	N	% of Total	Min Age	Max Age	Mean Age	SD
Male	173	54.1	13	80	53.25	18.21
Female	147	45.9	17	79	54.17	17.60
<b>Total</b>	<b>320</b>	<b>100.0</b>	<b>12</b>	<b>80</b>	<b>53.68</b>	<b>17.91</b>

The most common diagnosis was asthma, accounting for 162 cases (50.6%), followed by COPD (116 cases; 36.2%), bronchiectasis (38 cases; 11.9%), and acute bronchitis (4 cases; 1.2%). These findings indicate that asthma and COPD were the predominant causes of obstructive airway symptoms in this population. The gender-wise distribution of these diagnoses is presented in Table 2.

**Table 2: Gender-Wise Distribution of Diagnosed Diseases**

Disease	Male (n, %)	Female (n, %)	Total (n, %)
Asthma	70 (43.2%)	92 (56.8%)	162 (50.6%)
COPD	79 (68.1%)	37 (31.9%)	116 (36.2%)
Bronchiectasis	21 (55.3%)	17 (44.7%)	38 (11.9%)
Acute Bronchitis	3 (75.0%)	1 (25.0%)	4 (1.2%)

Patients were further categorized into three age groups (12–30, 31–50, and 51–80 years) to evaluate the age-specific frequency of diseases. The 51–80 years group was the most affected, with the majority diagnosed with COPD (78.4%) and asthma (52.5%). The 31–50 years group showed a predominance of asthma, while the 12–30 years group included a few cases of asthma, bronchiectasis, and acute bronchitis. These findings are detailed in Table 3.

**Table 3: Age-Group Distribution of Specific Diagnoses**

Disease	12–30 yrs	31–50 yrs	51–80 yrs	Total (%)
Asthma	23 (14.2%)	54 (33.3%)	85 (52.5%)	162 (50.6%)
COPD	1 (0.9%)	24 (20.7%)	91 (78.4%)	116 (36.2%)
Bronchiectasis	11 (28.9%)	13 (34.2%)	14 (36.8%)	38 (11.9%)
Acute Bronchitis	3 (75%)	1 (25%)	0 (0%)	4 (1.2%)

This table summarizes disease distribution among three age categories (12–30, 31–50, 51–80 years). The Chi-square test for trend evaluated associations between age groups and diagnosis types. Data are presented as frequency (n) and percentage (%) of total cases per disease.

**DISCUSSION**

Our study found that asthma (50.6%) was the most frequent cause of obstructive airway symptoms, followed by COPD (36.2%), bronchiectasis (11.9%), and acute bronchitis (1.2%). Similar proportions have been reported in regional surveys (13, 14). The strong correlation between age and airway obstruction emphasizes that these diseases worsen with advancing age (15). The predominance of asthma mirrors global trends, particularly in developing nations, where environmental pollutants and urbanization contribute to rising prevalence (16). Female

predominance in asthma (56.8%) aligns with findings by Abrasion et al., who reported higher female susceptibility due to hormonal and immunological differences (17). Conversely, COPD was more common in males (68.1%), consistent with higher smoking rates among Pakistani men (18, 19). The high burden of COPD in the 51–80-year age group is in agreement with the BOLD study, which found COPD prevalence increasing with age and tobacco exposure (20). Bronchiectasis, although less prevalent, remains clinically significant due to its chronic infective nature; similar trends were observed in studies by Chalmers and Aliberti et al. (21,22). Acute bronchitis represented only 1.2% of cases, reflecting its self-limiting course and outpatient management (23). From a public-health standpoint, the observed patterns highlight the importance of preventive strategies. Primary-care spirometry screening, public awareness, and anti-smoking initiatives can substantially reduce morbidity (24).

**Limitations**

The study excluded ILD and CCF patients, and risk factors such as smoking status and environmental exposure were not quantified. Future multicenter studies incorporating these variables would enhance understanding of regional airway disease epidemiology.

**Conclusion**

Asthma and COPD were the leading causes of obstructive airway symptoms among patients at Mardan Medical Complex. Older adults and males were more likely to have COPD, while asthma predominated among females. Early diagnosis, spirometry screening, and prevention programs are critical to reduce respiratory disease burden in similar populations.

**Disclaimer:** Nil

**Conflict of Interest:** Nil

**Funding Disclosure:** Nil

**Authors Contribution**

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**Final Approval of version:** All Manton Authors Approved the Final Version.

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