COPD and comorbid asthma in Brazilian Private Healthcare: Clinical Profiles and Outcomes from a Real-World Analysis

RWD44

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Background

- Type 2 inflammation (characterized by high eosinophils count) underlies the pathophysiological mechanisms of various disorders characterized by distinct clinical manifestations across multiple organ systems, including chronic obstructive pulmonary disease (COPD) and asthma. This inflammatory endotype influences disease severity, exacerbation frequency, and therapeutic response in both conditions.[1-4]
- Asthma and COPD are complex and heterogeneous diseases associated with high morbidity and mortality rates[4,5]. In Brazil, COPD represents the fifth leading cause of death across all age groups, following ischemic heart disease, cerebrovascular disease, lower respiratory tract infections, and Alzheimer's disease and other dementias[6]. A study evaluating data from the Brazilian Unified Health System's Hospital Information System (SIH/SUS) from 2016 to 2020 identified 6.15 asthma-related deaths per day[7].

Objective

- **To examine the clinical characteristics, comorbidities, and healthcare utilization patterns of patients diagnosed with COPD and asthma within the Brazilian private healthcare system.**

Conclusions

- **Patients with COPD with high blood eosinophil count (≥300/µL) and concurrent asthma demonstrate high healthcare resource utilization and a high burden of comorbidities, but further local studies are needed to better characterize the clinical and economic impact of COPD and comorbid asthma.**
- **These findings emphasize the importance of targeted type 2 inflammation therapies to optimize healthcare resource allocation and enhance clinical outcomes in this complex patient population.**

METHODS & RESULTS

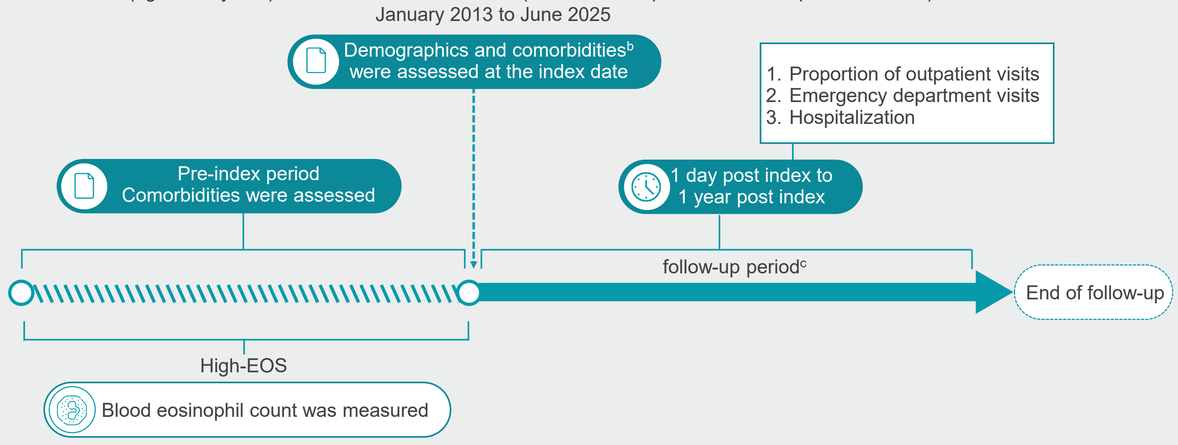
Data source

- This retrospective cohort study utilised the TriNetX real-world database, which consists of anonymised patient data from 24 private Brazilian healthcare organisations and has the data of 16,954,756 patients. This corresponds to 32% of the Brazilian private market and approximately 8% of the total Brazilian population.

Study population

- Eligible participants were adults (aged ≥40 years) primarily diagnosed with COPD (ICD-10 codes J41-J44), presenting with eosinophil counts ≥300/µL and comorbid asthma (ICD-10 code J45) between January 2013 and June 2025.
- The 'index date' referred to the date when a patient first met all selected criteria: ≥40 years, COPD, eosinophil counts ≥300/µL and asthma (at least 1 day after COPD-related ICD-10 code).
- Patients with secondary ICD-10 codes ((B65–B83: helminth infections, T78.4: allergy, unspecified, E27.1: primary adrenocortical insufficiency, and C81–C96: malignant neoplasms of lymphoid, hematopoietic and related tissue)), known to increase eosinophil levels were excluded. The study design is depicted in **Figure 1**.

Figure 1. Study design



[a]The index date referred to the date when a patient first met all selected criteria (≥40 years, COPD, eosinophil counts ≥300/µL and asthma (at least 1 day after COPD-related ICD-10 code).
[b]Comorbidities included any diagnoses that occurred before or on the same day as the index date.
[c]The follow-up period was defined as the time between 1-day post-index date to the first year of the post-index period.
COPD, chronic obstructive pulmonary disease; EOS, eosinophils.

Outcomes

- Increased proportion of medical encounters, such as ambulatory, ED and inpatient visits were assessed from 1 day post index to the first year of the post-index period.
- The data on comorbidities which were recorded for any diagnosis that occurred before or on the same day as the index date were included.

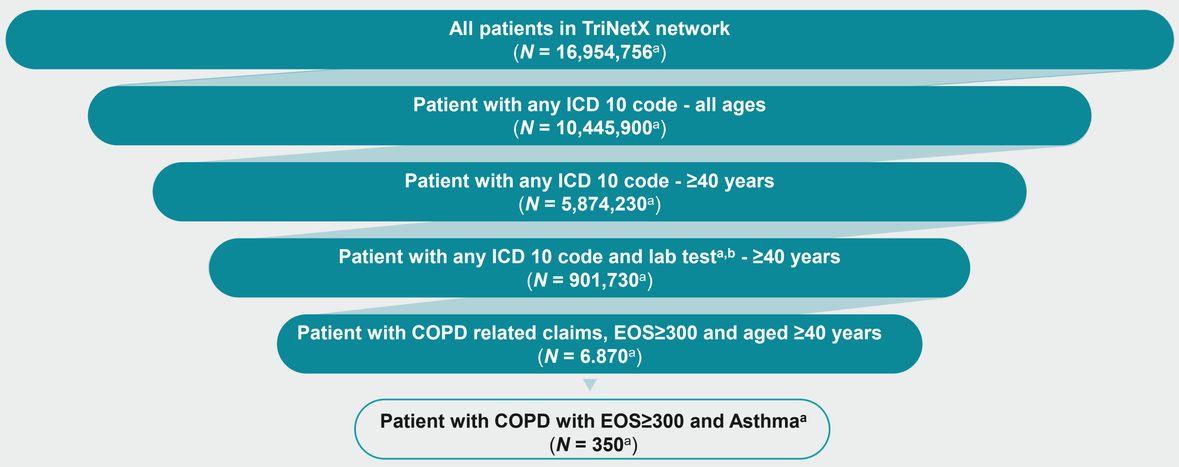
Statistical analysis

- Descriptive analysis was performed directly at the TriNetX platform; continuous or integer values were presented as the range, mean and standard deviations (SDs).
- The proportion of patients experiencing the medical encounters was shown as the ratio of the number of patients who presented with an outcome during the time window to the total number of patients in the cohort.

Results

- Of the 10.4 million individuals with documented ICD-10 codes in the Brazilian TriNetX network, 901,730 had at least one ICD 10 code and eosinophils lab results and aged 40 years and older. A total of 350 patients with a COPD diagnosis and high EOS levels and comorbid asthma were included in the analysis (**Figure 2**).

Figure 2. Patient disposition



[a]Patient counts were rounded up to the nearest 10 to protect PHI. Rounding might influence measures of association results of small cohorts and infrequent Outcomes.
COPD, chronic obstructive pulmonary disease; EOS, eosinophils; ICD, International Classification of Diseases; *N*, total number of patients; PHI, protected/personal health information.

- The mean age of patients was 68.5 (SD: 14.5) years, with 34% male patients. The average EOS count was 315/µL (SD: 424) (**Figure 3**).
- Major comorbidities at the index date included circulatory system diseases (51%), viral or bacterial infections (40%), diseases of the musculoskeletal system (37%), influenza and pneumonia (34%), and genitourinary system disorders (34%). (**Table 1**).

Figure 3. Baseline demographic and clinical characteristics at the index date in patients with high-EOS COPD-and comorbid Asthma

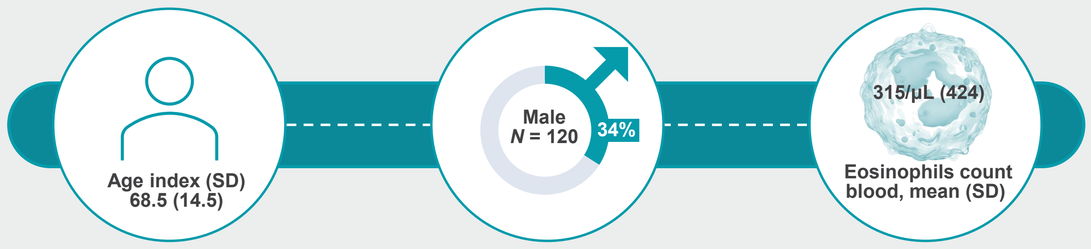


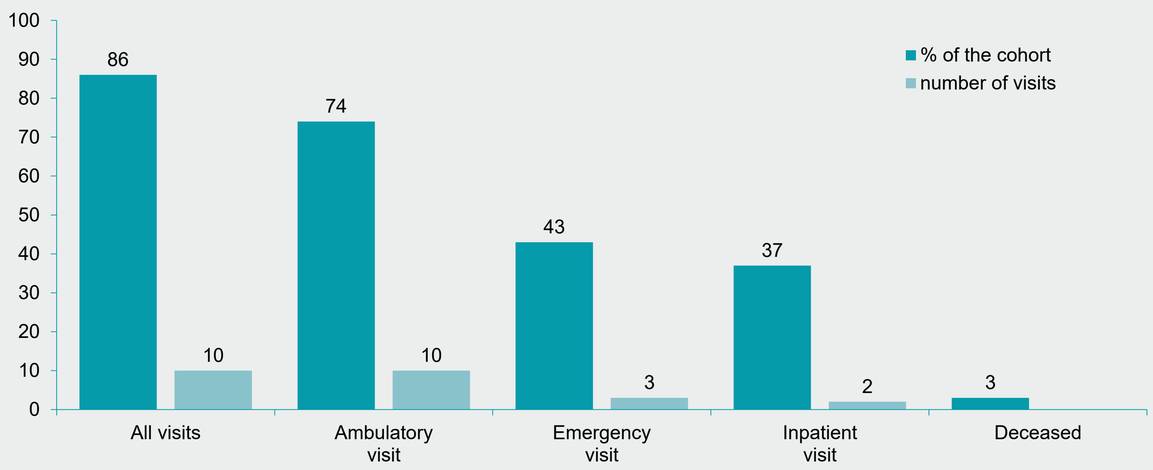
Table 1. Comorbidities at the index date in patients with high-EOS COPD-and comorbid Asthma

Comorbidities, *n* (%)	High-EOS COPD and comorbid Asthma *N* = 350
Diseases of the respiratory system (J00-J99)	350 (100)
Bronchitis, not specified as acute or chronic (J40)	20 (6)
Simple and mucopurulent chronic bronchitis (J41)	20 (6)
Unspecific chronic bronchitis (J42)	30 (9)
Emphysema (J43)	40 (11)
Other chronic obstructive pulmonary disease (J44)	300 (86)
Bronchiectasis (J47)	*10 (3)*
Influenza and pneumonia (J09-J18)	120 (34)
Diseases of the circulatory system (I00-I99)	180 (51)
Neoplasms (C00-D49)	90 (26)
Certain infections and parasitic diseases (A00-B99)	140 (40)
Diseases of the digestive system (K00-K95)	110 (31)
Diseases of the genitourinary system (N00-N99)	120 (34)
Acute upper respiratory infections (J00-J06)	*100 (29)*
Other acute lower respiratory infections (J20-J22)	70 (20)
Other diseases of the respiratory system (J96-J99)	50 (14)
Other diseases of upper respiratory tract (J30-J39)	40 (11)
Diseases of musculoskeletal system and connective tissue (M00-M99)	130 (37)
Diseases of the nervous system (G00-G99)	90 (20)
Endocrine, nutritional and metabolic diseases (E00-E89)	60 (17)
Diseases of the skin and subcutaneous tissue (L00-L99)	50 (14)

Notes: Patient counts were rounded up to the nearest 10 to protect PHI. Rounding might influence measures of association results of small cohorts and infrequent Outcomes.
ICD-10 codes were provided for reference to the corresponding diseases.
COPD, chronic obstructive pulmonary disease; EOS, eosinophils; PHI, protected/personal health information; SD, standard deviation.

- During the first year following the index date, 74% of patients had ambulatory visits, with a mean of 9.91 visits (SD ± 18.86); 43% had ED visits, with a mean of 3.11 visits (SD ± 2.93); 37% were hospitalized with a mean of 1.93 visits (SD ± 1.47); 3% were deceased, as illustrated in **Figure 4**.

Figure 4. Percentage of all medical encounters and number of visits per encounter type in patients with high-EOS COPD-and comorbid Asthma during the first-year post index



Note: Patient counts were rounded up to the nearest 10 to protect PHI. Rounding might influence measures of association results of small cohorts and infrequent Outcomes.
COPD, chronic obstructive pulmonary disease; EOS, eosinophils; PHI, protected/personal health information.

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CONFLICTS OF INTEREST

LBJF, SFW, AGB, AT and FJBM are employees of Sanofi and may hold stocks and/or stock options in the company.

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