



# Geographical variability in severe asthma: comparison of patients' characteristics between national, regional and international cohorts in ISAR

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# Aim and Methods

## Rationale

Severe asthma is a complex and heterogeneous condition with diverse clinical presentation and treatment options across different countries.

## Aim

To describe and compare the clinical characteristics, therapeutic options and comorbidities of patients with severe asthma in Greece, Southern Europe and worldwide.

## Methods

Data from the International Severe Asthma Registry (ISAR) were analyzed across three cohorts: Greek, Southern European, and Global. Variables included demographics, baseline characteristics, age at asthma onset, medication use, lung function, exacerbation history, biomarkers, and comorbidities.

Three partially overlapping cohorts over the following time periods: a) Greece: 6 October 2006 to 6 February 2024, b) Southern Europe (Italy, Portugal, and Spain): 1 January 2005 to 13 March 2024, c) Global cohort (Southern Europe countries, except Greece and 22 other ISAR countries)

**Eligible patients:** adults ( $\geq 18$  years) receiving treatment consistent with Step 5 of the 2018 Global Initiative for Asthma (GINA) guidelines, or those who remain uncontrolled on Step 4 treatment.

A total of 16063 patients from ISAR global, 3406 from Southern Europe and 206 from Greece with severe asthma were eligible for inclusion

# Baseline characteristics of asthmatic patients in the 3 different cohorts

Patient characteristics at index date	ISAR overall* (N=16063)	S. Europe overall* (N=3406)	Greece (n=206)	p-value <sup>1</sup>	p-value <sup>2</sup>
Age (years)	53.52 (15.17)	54.51 (13.02)	50.69 (14.88)	<b>0.009</b>	<b>&lt;0.001</b>
Sex (female:n%)	9976 (62.11)	2137 (62.74)	135 (65.53)	0.313	0.421
<b>Tobacco use</b>				<b>&lt;0.001</b>	<b>&lt;0.001</b>
Current smoker: n (%)	713 (5.29)	138 (4.23)	23 (11.50)		
Ex-smoker: n (%)	3684 (27.33)	896 (27.45)	43 (21.50)		
Never smoker: n (%)	9083 (67.38)	2230 (68.32)	134 (67.00)		
Age at asthma onset (years)	31.06 (18.55)	33.49 (17.04)	31.89 (17.97)	0.434	0.270
Number of asthma exacerbations in preceding year	1.84 (2.58)	1.73 (2.56)	1.24 (1.67)	<b>0.001</b>	0.052
Zero exacerbations in preceding year (n%)	3139 (32.60)	720 (39.00)	71 (41.28)	<b>0.016</b>	0.559
LTOCS status (Yes): n (%)	2495 (21.50)	626 (52.04)	46 (24.73)	0.287	<b>&lt;0.001</b>
LTOCS daily dose in users (mg/day)	11.09 (10.57)	11.07 (11.60)	6.85 (4.38)	<b>0.014</b>	0.221
<b>Asthma control</b>				<b>0.034</b>	<b>&lt;0.001</b>
Uncontrolled: n (%)	5188 (57.07)	1131 (35.58)	114 (60.32)		
Partly controlled: n (%)	2025 (22.27)	922 (29.00)	50 (26.46)		
Well controlled: n (%)	1878 (20.66)	1126 (35.42)	25 (13.23)		
FEV <sub>1</sub> %pred	74.5 (21.4)	79.0 (22.0)	80.8 (21.1)	<b>&lt;0.001</b>	0.088
FEV <sub>1</sub> /FVC	0.70 (0.13)	0.68 (0.12)	0.74 (0.11)	<b>&lt;0.001</b>	<b>&lt;0.001</b>

Data are presented as mean (SD) unless otherwise indicated

Abbreviations: ISAR: International Severe Asthma Registry, LTOCS : Long-term oral corticosteroids, FEV<sub>1</sub>: Forced Exhaled Volume in one Second, FVC: Forced vital capacity

\*Excluding Greece

1. P-values comparing patient characteristics in Greece vs. all other countries in ISAR Global. Kruskal Wallis test was used for continuous variables and Pearson Chi-squared test was used for categorical variables.

2. P-values comparing patient characteristics in Greece vs. other Southern Europe countries in ISAR. Kruskal Wallis test was used for continuous variables and Pearson Chi-squared test was used for categorical variables.

# Biomarkers in the three study cohorts

Biomarkers	ISAR overall	S. Europe overall	Greece	p-value <sup>1</sup>	p-value <sup>2</sup>
<b>Highest blood eosinophil count (cells/mcL)</b>	350 (196,670)	530 (280,900)	385 (179,667)	0.563	<0.001
<b>Eos<math>\geq</math>300 (%)</b>	59.87	74.10	57.24	0.512	<0.001
<b>Latest serum total IgE concentration (IU/mL)</b>	148 (47,409)	171 (62,395)	142 (59,510)	0.435	0.959
<b>Latest FeNO concentration (ppb)</b>	27 (14,57)	31 (15,61)	17 (11,39)	<b>0.001</b>	<0.001
<b>Allergen test results (Positive) %</b>	67.29	75.15	89.58	<b>0.001</b>	<b>0.022</b>

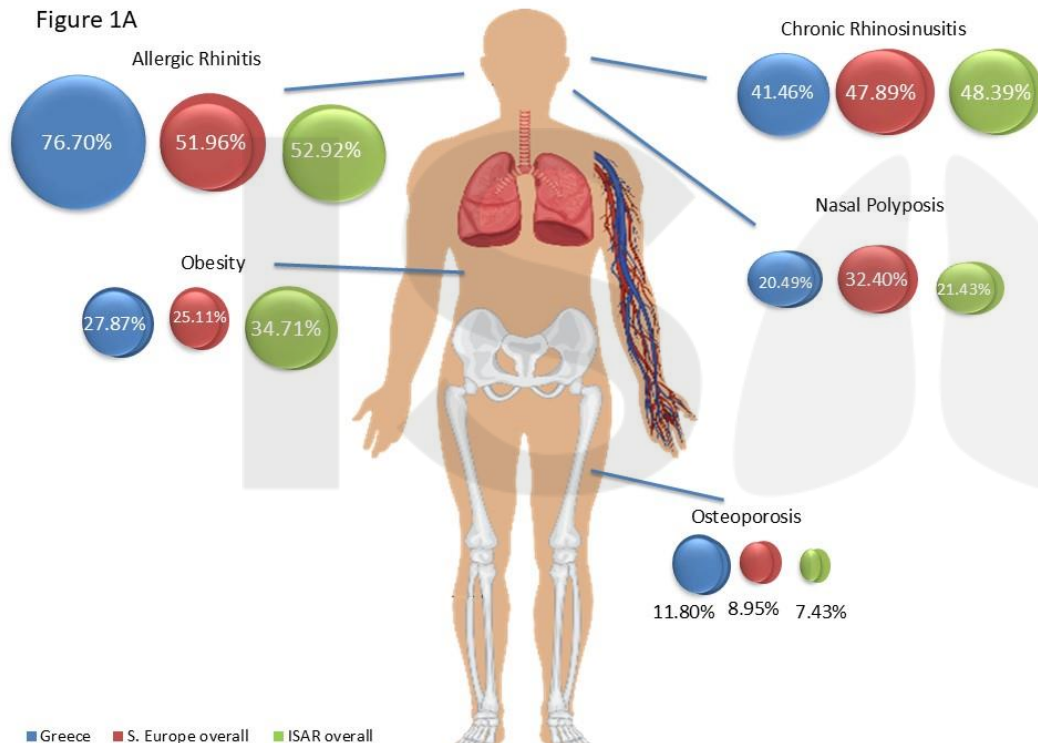
Data are presented as median (IQR) unless otherwise indicated

1. P-values comparing patient characteristics in Greece vs. all other countries in ISAR Global. Kruskal Wallis test was used for continuous variables and Pearson Chi-squared test was used for categorical variables.

2. P-values comparing patient characteristics in Greece vs. other Southern Europe countries in ISAR. Kruskal Wallis test was used for continuous variables and Pearson Chi-squared test was used for categorical variables.

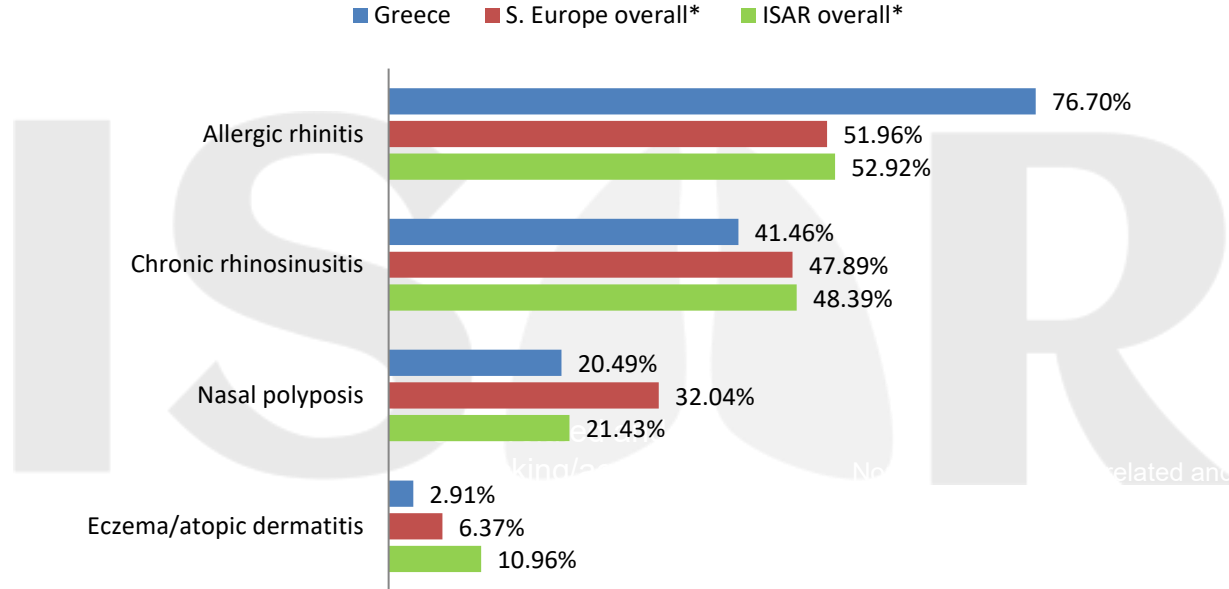
Eos: Eosinophil, IgE: Immunoglobulin E, FeNO: Fractional Exhaled Nitric Oxide, S. Europe: Southern Europe, ISAR: International Severe Asthma Registry

# Comorbidities



In Greece, 33.5% of patients had  $\geq 3$  comorbidities, rates between Southern Europe (29.88%) and global cohort (39.89%). Allergic rhinitis was the most common comorbidity (76.7%, significantly higher than elsewhere), followed by CRS (41.46%) and NP (20.49%)

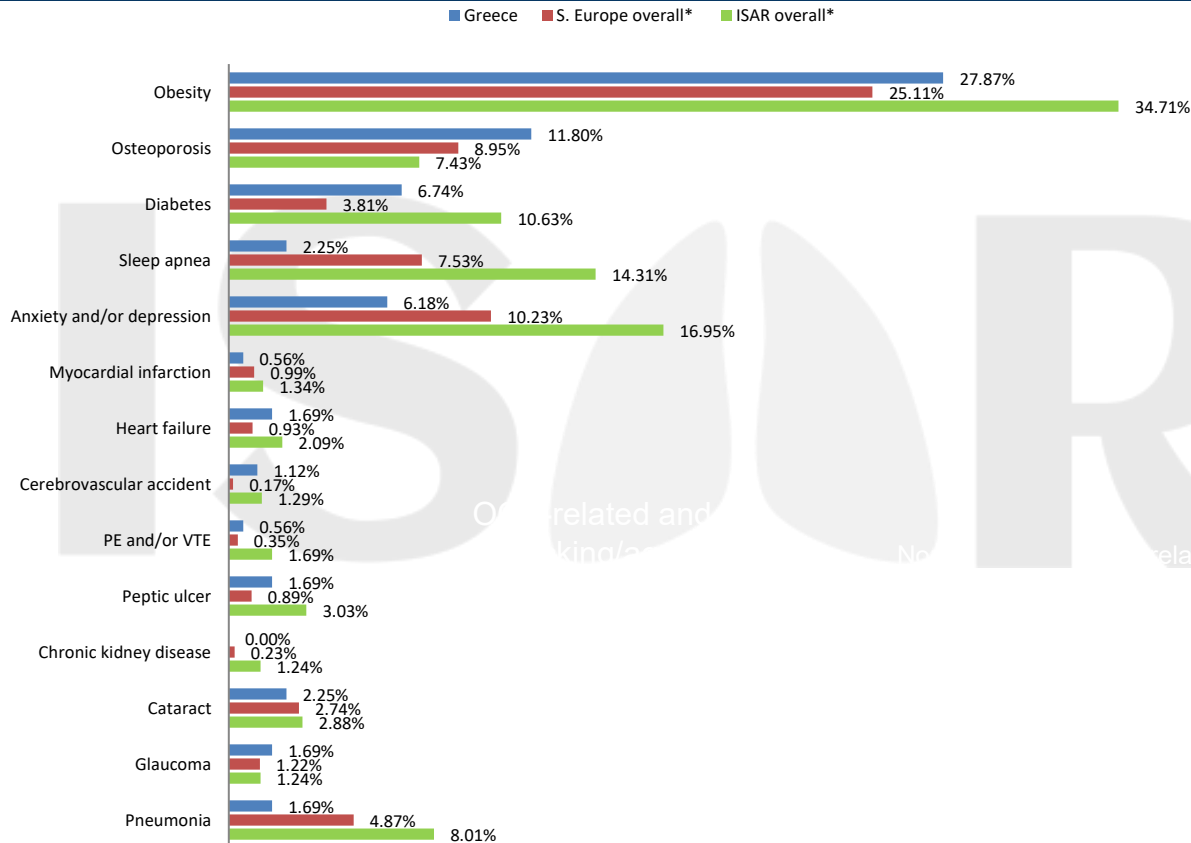
# Potentially T2-related comorbidities



T2: type 2, S. Europe: Southern Europe, ISAR: International Severe Asthma Registry

\*Excluding Greece

# Potentially OCS-related comorbidities



PE: Pulmonary Embolism, VTE: Venous Thromboembolism, OCS: Oral Corticosteroid, S. Europe: Southern Europe, ISAR: International Severe Asthma Registry

\*Excluding Greece

Kallieri, M. et al., Geographical variability in severe asthma: comparison of patients' characteristics between national, regional, and international cohorts in ISAR. 2026, *Journal of Asthma*, 1–11. <https://doi.org/10.1080/02770903.2026.2654601>

# Geographical variability in severe asthma: comparison of patients' characteristics between national, regional and international cohorts in ISAR

## Where

16063 patients from ISAR global, 3406 from Southern Europe and 206 from Greece

## Who



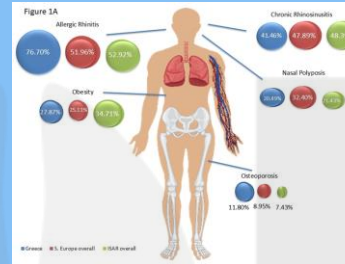
Adults ( $\geq 18$  years) receiving treatment consistent with Step 5 of the 2018 Global Initiative for Asthma (GINA) guidelines, or those who remain uncontrolled on Step 4 treatment

To describe and compare the clinical characteristics, therapeutic options and comorbidities of patients with severe asthma in Greece, Southern Europe and worldwide.

## What



## Results



- T2-high phenotype: more common in Greece, but lower than other cohorts.
- Greece: 33.5% had  $\geq 3$  comorbidities (between Southern Europe: 29.9% and global: 39.9%).
- Most common: Allergic rhinitis (76.7%, higher than elsewhere), followed by CRS (41.5%) and NP (20.5%).

- Greece: highest uncontrolled asthma rates (vs SE & global).
- Fewer exacerbations vs global
- Less OCS maintenance use vs Southern Europe.
- Greece/global: lower LTOCS use vs Southern Europe.
- Biologics: Greece 56.3% (vs 74.0% SE; 48.4% global).

## Conclusions

- ✓ This study reveals **significant regional differences** in the **clinical and biomarker profiles of severe asthmatics**
- ✓ Supports **region-specific strategies** and **tailored care** (disease burden, access, comorbidities).