Incidence Trends and Characterisation of Lung Cancer: A Multinational European Cohort Study

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1 Introduction

- Lung cancer is the leading cause of cancer-associated mortality worldwide.
- Better understanding of the burden and presentation of lung cancer before diagnosis may enable earlier diagnosis and intervention strategies.

2 Objectives

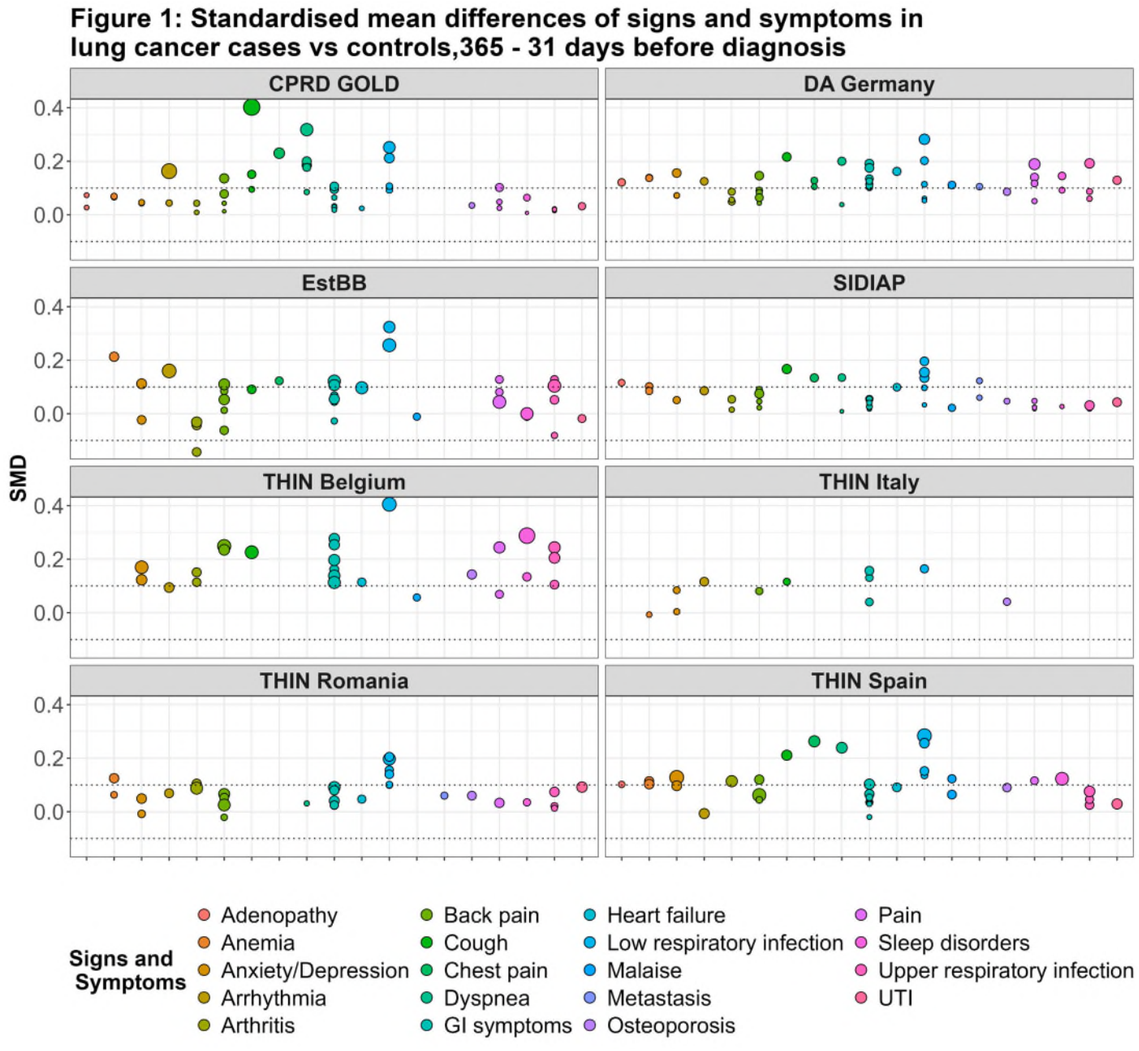
- Estimate secular trends in lung cancer incidence.
- Characterise lung cancer presentation in European real-world data.

3 Methodology

- We used electronic health records from seven European countries: the UK (CPRD GOLD), Spain (SIDIAP, THIN® Spain), Estonia (Estonian Biobank), Germany (DA Germany), Italy (THIN® Italy), Romania (THIN® Romania), and Belgium (THIN® Belgium).
- Individuals aged 18+ with at least one year of prior data were included.
- The study period was from start of database to 2023.
- We estimated annual, age-standardised incidence rates (IRs), stratified by sex. Characteristics of lung cancer patients in the 365 - 31 days before and after diagnosis were compared to age and sex matched controls by estimating standardised mean differences (SMD).

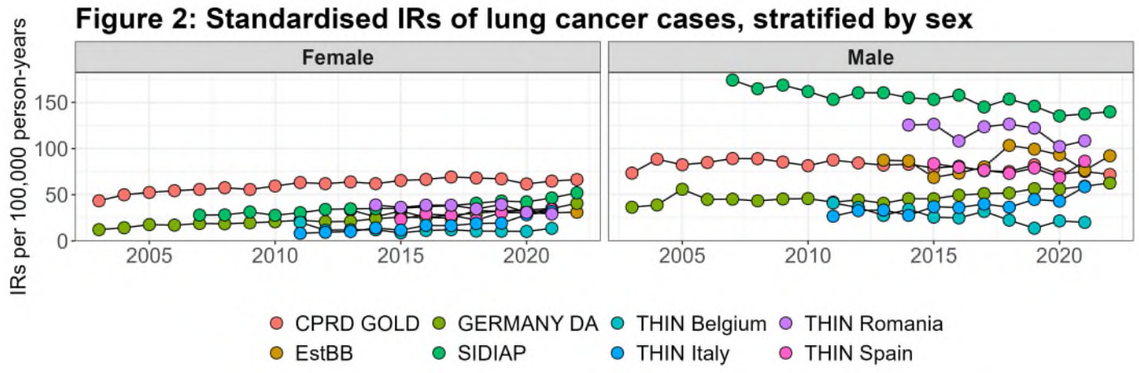
4 Results

Figure 1: Standardised mean differences of signs and symptoms in lung cancer cases vs controls,365 - 31 days before diagnosis



- **Before diagnosis**, lung cancer patients had higher prevalence of symptoms such as cough (SMD 0.10 – 0.40) and lower respiratory infections (0.09 – 0.41) (Figure 1). Likely related to this, amoxicillin (0.15 –0.58) and acetaminophen (0.13 – 0.41) were also common.
- **Post-diagnosis**, respiratory conditions persisted and cancer treatment-related effects [e.g. nausea (0.11 – 0.31)] were commonly observed. Medications related to pain and palliative care management [e.g. morphine (0.6 –1.15)] were also common.
- IRs declined over time or were stable for male patients, whereas for females IRs increased in most databases (Figure 2).

Figure 2: Standardised IRs of lung cancer cases, stratified by sex



5 Conclusion

- Incidence rates varied across countries, reflecting differences in risk factors and healthcare settings.
- Patient characteristics showed a shift from pre-diagnosis symptom management to post-diagnosis cancer management, treatment side-effects, and palliative care.
- Our findings show the value of real-world data and highlight the need for further work to facilitate earlier diagnosis of lung cancer in Europe.

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STUDY CODE