

P1.328: National Trends and Regional Characteristics of Hypertension Comorbidity in Cancer: Lung Cancer Evidence from Yunnan

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INTRODUCTION

- **Background:** Hypertension is common in lung cancer and may affect cardiovascular risk and survivorship.
- **Knowledge gap:** Temporal trends, regional heterogeneity, environmental context, and associated biological features remain incompletely characterized in China.
- **Objective:** We integrated national cancer survey evidence with regional clinical, ecological, and molecular analyses, using lung cancer in Yunnan as the primary regional focus.

RESULTS

- **National cancer context | CHARLS (n = 889):** Crude HTN prevalence **31.9% → 44.7%**; the age/sex-adjusted year effect remained significant (OR 1.052; P = 0.0238).
- **Yunnan lung cancer cohort (n = 14,782):** HTN prevalence **16.99% → 19.78%**; the trend persisted after age standardization and multivariable adjustment (adjusted OR 1.0417; P < 0.001).
- **Regional heterogeneity:** Marked prefecture-level variation, but no significant global spatial clustering (Moran's I = 0.1145; P = 0.1297); PM_{2.5}/O₃ patterns were not consistently associated.
- **Exploratory biological evidence:** Hypoxia, oxidative stress, and iron-homeostasis alterations were suggested; ferritin was higher overall in HTN patients (P = 0.036).

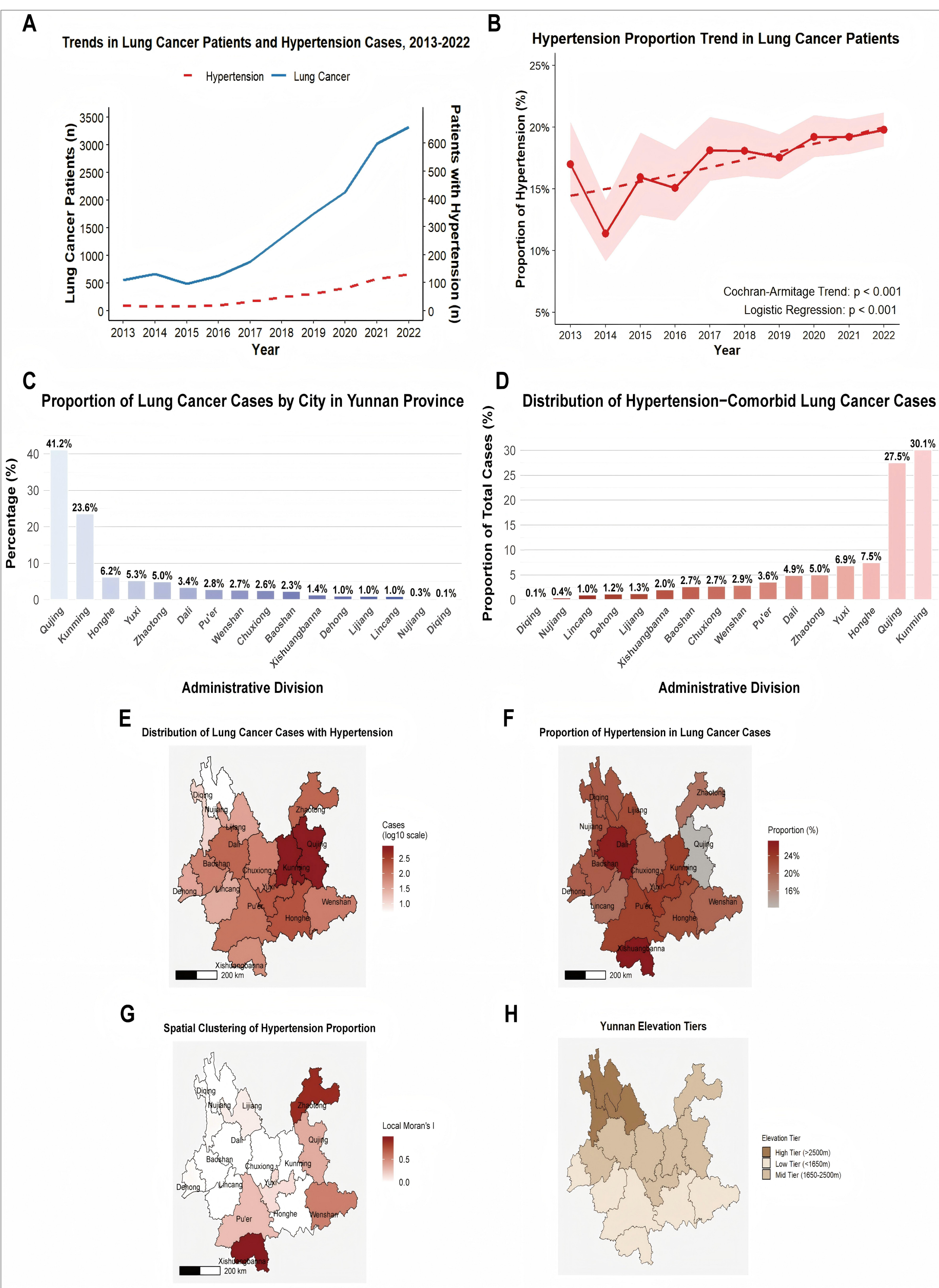


Fig. 1. Yunnan cohort trends and regional distribution (2013–2022). Hypertension prevalence increased from 16.99% to 19.78%; the age-standardized trend remained significant (P = 0.0014).

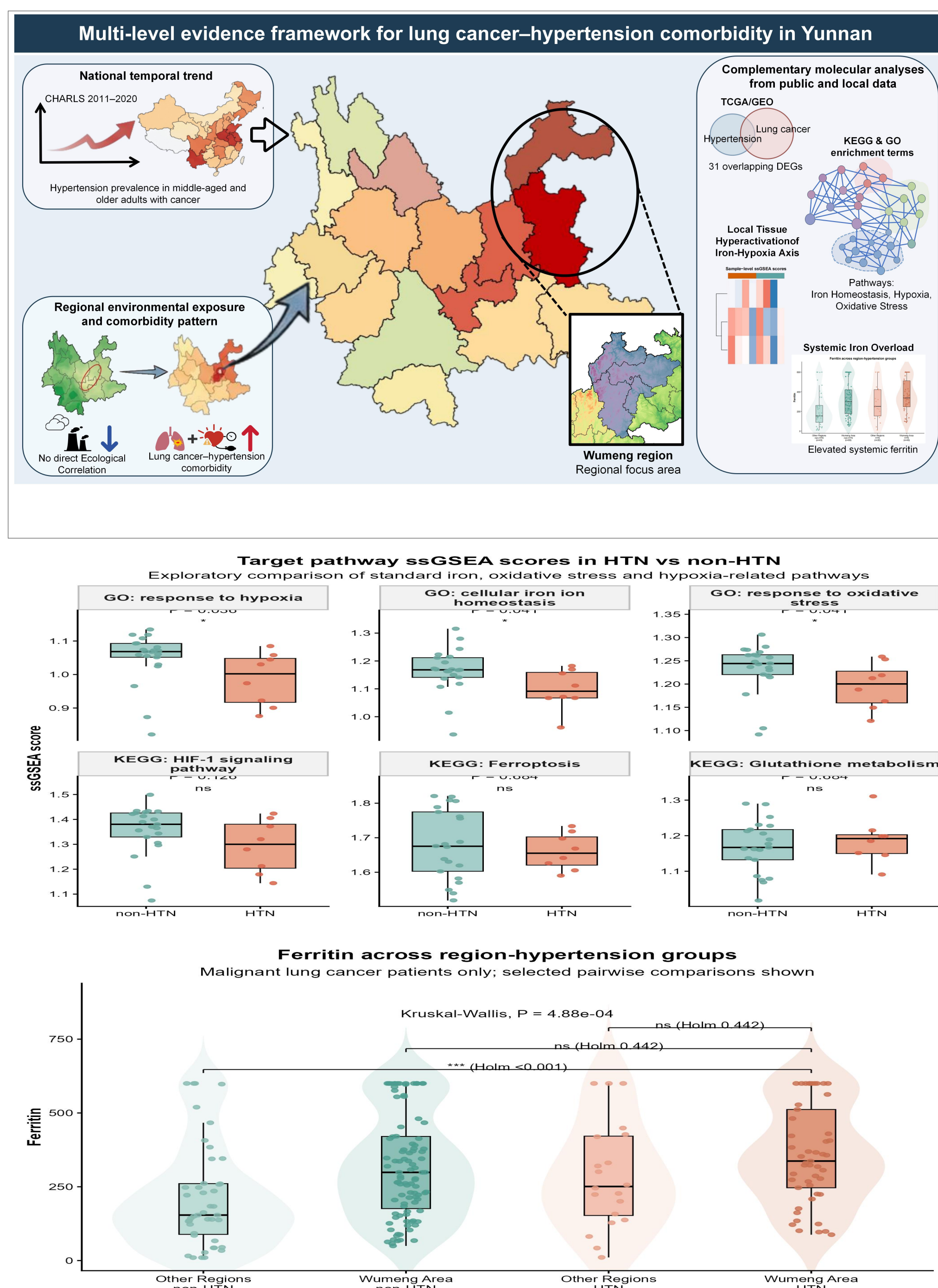


Fig. 2. Multi-level framework and exploratory local evidence. Tissue profiles suggested inflammation, hypoxia, oxidative stress, and iron-homeostasis alterations. Ferritin varied across region-hypertension groups (Kruskal-Wallis P = 4.88 × 10⁻⁴) and was higher overall in HTN patients (P = 0.036).

CONCLUSION

- In the national cancer context, crude hypertension prevalence increased; in the Yunnan lung cancer cohort, the temporal increase persisted after age standardization and multivariable adjustment.
- Hypertension burden varied substantially across prefectures, but global spatial clustering was not significant and PM_{2.5}/O₃ patterns did not consistently explain the regional distribution.
- Exploratory public-dataset analyses and local supporting evidence suggested hypoxia, oxidative stress, and iron-homeostasis alterations, with higher ferritin levels in hypertensive patients.
- **Clinical implication:** These findings support routine blood-pressure assessment and motivate prospective, region-specific cardio-oncology risk-stratification studies in lung cancer care.

METHODS

Hierarchical multi-source design

- **National context:** five CHARLS waves (2011–2020); 889 adults with cancer and complete hypertension/covariate data.
- **Primary cohort:** 14,782 pathologically confirmed lung cancer patients from Yunnan Cancer Hospital (2013–2022); first eligible hospitalization retained.
- **Regional/ecological:** 16 prefectures; PM_{2.5} and O₃ matched by prefecture-year; trend, age-standardization, regression, correlation, and Moran's I analyses.
- **Molecular:** GEO GSE24752 and TCGA-LUAD/LUSC shared-DEG analyses; CancerSEA; local adjacent-lung RNA-seq with ssGSEA; ferritin analysis.

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Selected data sources

CHARLS 2011–2020; TCGA-LUAD/LUSC; GEO GSE24752; local RNA-seq PRJNA790037.

Ethics

Yunnan Cancer Hospital Ethics Committee (KYCS2023-207); consent was waived for the de-identified retrospective EMR analysis. CHARLS had Peking University ethics approval and written informed consent.

AI Use Disclosure

ChatGPT (OpenAI) was used for English-language refinement and poster layout/formatting assistance. It was not used to generate data, statistical analyses, or scientific images; no identifiable patient information was entered. All scientific content, interpretations, and the final poster were reviewed and approved by the authors.