



P3.056: Clinical obesity, rather than BMI-defined obesity, is associated with increased risk of lung cancer

Wenxuan Li¹, **Zhangyan Lyu¹**, Kexin Chen¹

¹Department of Epidemiology and Biostatistics, Key Laboratory of Molecular Cancer Epidemiology, Key Laboratory of Prevention and Control of Human Major Diseases, Ministry of Education, National Clinical Research Center for Cancer, Tianjin Medical University Cancer Institute and Hospital, Tianjin Medical University, Tianjin, 300060, China.

Correspondence: Kexin Chen: chenkexin@tmu.edu.cn



IASLC 2026 World
Conference on Lung Cancer
SEPTEMBER 12 – 15, 2026
SEOUL, REPUBLIC OF KOREA

INTRODUCTION

- BMI-defined obesity may not adequately capture **adiposity-related organ dysfunction** and disease burden.
- Pre-clinical and clinical obesity** are newly proposed phenotypes incorporating body fat distribution and obesity-related comorbidities beyond BMI alone.
- This study examined their associations with **lung cancer incidence and mortality** and whether comorbidity burden further identifies high-risk individuals.

METHODS

- We conducted a prospective cohort study using UK Biobank data.
- BMI-defined obesity was defined using ethnicity-specific thresholds.
- Participants with BMI-defined obesity were further classified as BMI-defined obesity alone, pre-clinical obesity, or clinical obesity, incorporating waist circumference/WHR and obesity-related comorbidities across major organ systems.
- Cox proportional hazards models estimated HRs and 95% CIs for lung cancer incidence and mortality.

DISCUSSION AND CONCLUSION

- BMI-defined obesity alone did not identify increased lung cancer risk, whereas **clinical obesity captured a higher-risk phenotype**, particularly among individuals with a **high comorbidity burden**.
- Assessing obesity-related clinical impairment may improve lung cancer risk stratification beyond BMI.
- External validation and evaluation of its incremental value for **lung cancer risk stratification** and screening are warranted.

FUNDING & SUPPORT

- Funding: National Natural Science Foundation of China grants (82430107 to K. Chen, 82204121 to Z. Lyu), Tianjin Science and Technology Committee Foundation Public Health Program (No. 25ZXWQSY00030 to Z. Lyu), and Tianjin Key Medical Discipline (Specialty) Construction Project grant (YXZDXK-009A).
- Acknowledgements: The UK Biobank received ethical approval (16/NW/0274). This study used UK Biobank data under Application No. 76092. We thank all participants and contributors.

RESULTS

- Compared with non-obesity, **BMI-defined obesity was not associated with lung cancer incidence**.
- Among participants with BMI-defined obesity, **clinical obesity was associated with higher lung cancer incidence** compared with BMI-defined obesity alone (HR 2.38, 95% CI 1.44–3.92), whereas pre-clinical obesity was not significantly associated (HR 1.49, 95% CI 0.86–2.57).
- Associations with lung cancer mortality were not significant for either pre-clinical obesity or clinical obesity overall (Table 1)

Table1 Associations of obesity phenotypes with lung cancer incidence and mortality

Phenotype	Lung cancer cases, n	Incidence HR (95% CI)	Lung cancer deaths, n	Mortality HR (95% CI)
BMI-defined obesity	16/5,713	1.00 (Reference)	17/5,713	1.00 (Reference)
Preclinical obesity	66/15,626	1.49 (0.86–2.57)	48/15,626	1.19 (0.64–2.21)
Clinical obesity	558/52,130	2.38 (1.44–3.92)	384/52,130	1.60 (0.92–2.81)

- Clinical obesity was associated with higher lung cancer incidence, **especially among current smokers** (HR 5.18, 95% CI 1.28–20.93) and those **with ≥3 comorbidities** (HR 3.65, 95% CI 2.20–6.08).
- Higher lung cancer mortality was observed only among participants with clinical obesity and ≥3 comorbidities (HR 2.08, 95% CI 1.25–3.44). (Figure 2)

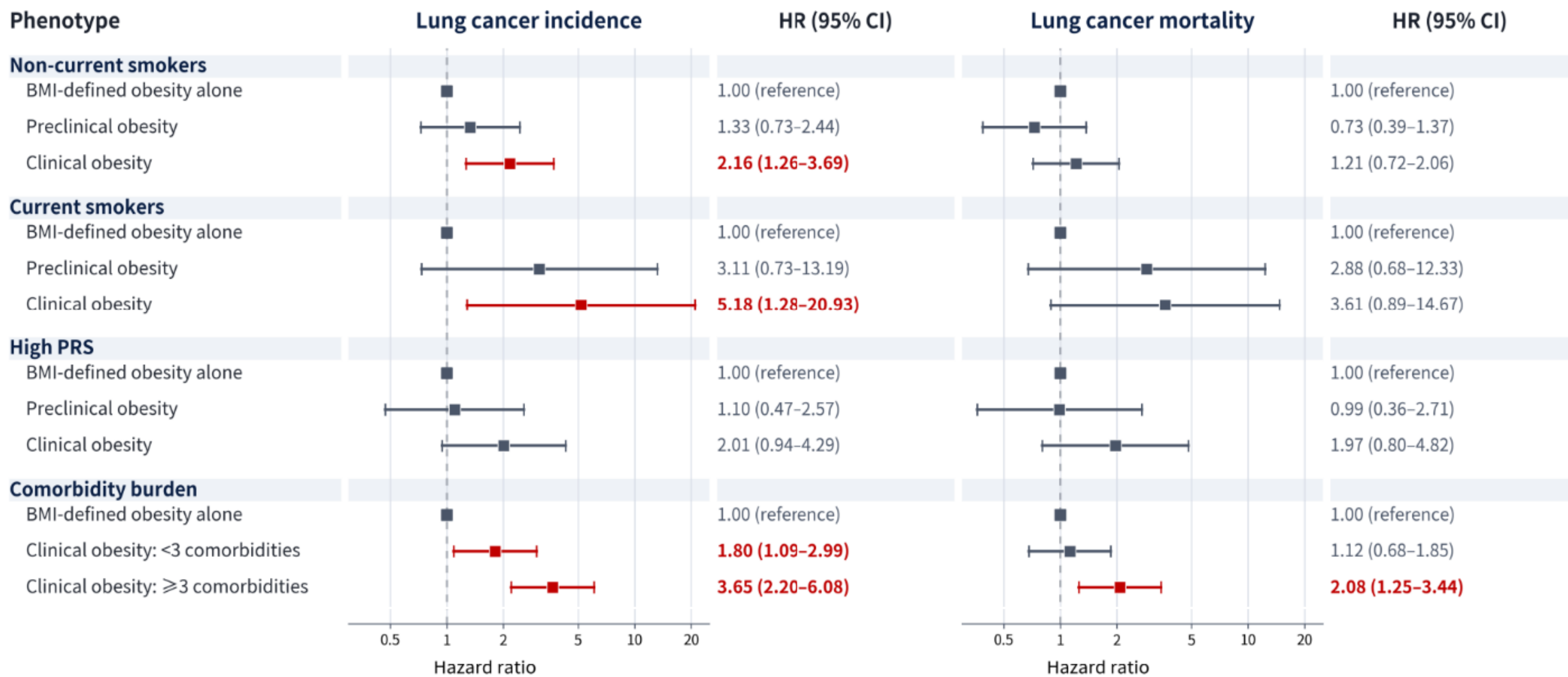


Figure 2 Stratified associations of obesity phenotypes with lung cancer risk