

**30 Years
 Of Follow-up
 One Measure
 That Matters**

Long-Term Association of Body Mass Index Measured in Middle Adulthood with Severe COVID-19 Requiring Intensive Care Later in Life: A 30-Year Population-Based Cohort Study

Hanno Ulmer^{1,2}, Lea Corn³, Sarah Maier¹, Josef Fritz¹, Emanuel Zitt², Wolfgang List³, Reinhard Germann³
 1 Institute of Clinical Epidemiology, Public Health, Health Economics, Medical Statistics and Informatics, Medical University of Innsbruck, Innsbruck, Austria
 2 Agency for Preventive and Social Medicine, Bregenz, Austria
 3 Department of Anesthesia and Intensive Care, Academic Teaching Hospital, Feldkirch, Austria
 email: hanno.ulmer@i-med.ac.at

Background

Obesity is a well-established risk factor for severe COVID-19, but most evidence is based on body mass index (BMI) measured near the time of infection. Few studies have linked pre-pandemic measurements to COVID-19 outcomes.

Aims

To examine the long-term association between BMI measured in middle adulthood and subsequent ICU admission for severe COVID-19.

THE STUDY IN NUMBERS



177,384
 participants
 (VHM&PP cohort)
 1988-2005



227
 ICU admissions
 for COVID-19
 from the cohort
 (2020-2022)



45,971
 non-COVID-19
 deaths treated
 as competing
 events



~30 years

Methods

EXPOSURE

BMI measured at baseline (1988-2005) in middle adulthood

OUTCOME

ICU admission for severe COVID-19 (2020-2022)

ANALYSIS

Competing-risk regression (sub-distribution hazard ratios) per 1 kg/m² in BMI

ADJUSTED FOR

Age, sex, smoking, systolic blood pressure, fasting glucose, triglycerides, cholesterol

Baseline & ICU Characteristics

AT BASELINE (1988-2005)



Median age
42 years
 54%
 female

AT ICU ADMISSION (2020-2022)



Median age
70 years
 65%
 male

Participants who later required ICU admission for COVID-19 had a higher mean BMI:
27.2 ± 4.9 kg/m²
 vs
24.9 ± 4.3 kg/m²
 (those who did not)

409 total COVID-19 ICU admission in Vorarlberg
 • 227 were from the VHM&PP cohort

Key Results

BMI was independently associated with higher risk of ICU admission for severe COVID-19.

1.12

SHR per 1 kg/m² increase in BMI
 (95% CI: 1.09-1.14)

Statistically significant positive association after full adjustment.

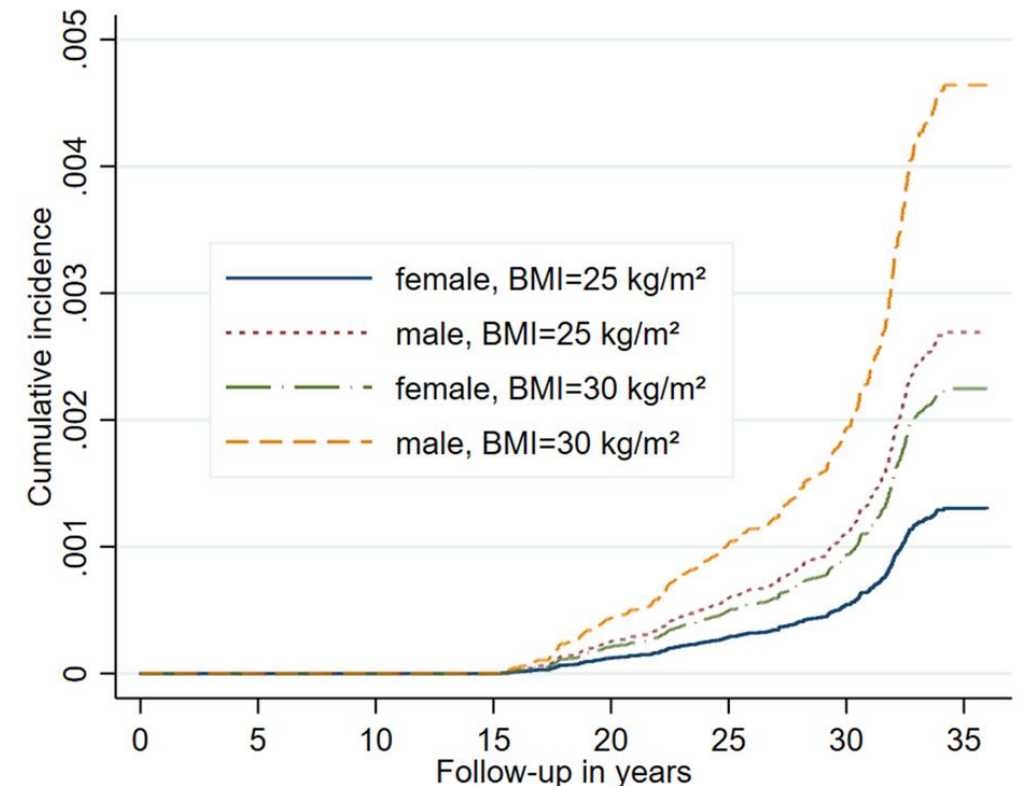
Male sex strongly increased risk:
 SHR 2.07 (95% CI: 1.56-2.75)

STRONGER BMI*ICU ASSOCIATION IN FEMALES

Females SHR 1.14 per kg/m² (95%CI: 1.11-1.16)
 Males SHR 1.09 per kg/m² (95%CI: 1.05-1.12)

Interaction between sex and BMI:
 p=0.029

CUMULATIVE INCIDENCE OF ICU ADMISSION FOR SEVERE COVID-19



Higher BMI in middle adulthood and male sex was associated with greater risk of ICU admission for COVID-19 decades later.

Conclusion

Higher BMI measured 30 years prior to infection was independently associated with increased risk of severe COVID-19 requiring ICU, suggesting that long standing elevated body weight contributes to this risk.

References

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