# Paper of the Year 2020

## Association Between Body Mass Index and All-Cause Death in Japanese Population: Pooled Individual Participant Data Analysis of 13 Cohort Studies

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**Abstract**
**Background:** We sought to investigate the optimal values of BMI for the lowest risk of all-cause death and whether the optimal BMI differs according to smoking status in large-scale pooled analysis of 13 Japanese cohorts.
**Methods:** Data from 179,987 participants of 13 well-qualified cohort studies conducted throughout Japan were used for our analysis. A cohort-stratified Cox proportional hazard model was used. *P* values for interactions were calculated based on the cross product of BMI and age, sex, or smoking status.
**Results:** In the entire study population, all-cause mortality risk was lowest when the BMI was 22.0–24.9 kg/m$^2$. This was also the case for selected healthy participants (never smoked, baseline total cholesterol level ≥4.1 mmol/L; the first 5 years of follow-up data were excluded). No effect modification of age, sex, or smoking status was observed. Regardless of their BMI, never smokers always had a lower all-cause mortality risk than did current smokers even with an ideal BMI in terms of mortality risk.
**Conclusion:** A BMI of 22–24.9 kg/m$^2$ correlated with the lowest risk of mortality, regardless of whether all participants or selected healthy participants were analyzed. The fact that smoking was more strongly associated with mortality than obesity emphasizes the urgency for effective anti-smoking programs.