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U-shaped relationship between body mass index and the incident risk for type 2 diabetes mellitus: the Korean Genome and Epidemiology Study (KoGES)

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Obejectives : Body mass index (BMI) ≥ 25 is associated with the increased risk for type 2 diabetes mellitus (T2DM) in Asian. However, it is still debatable in the clinical significance of Asian-specific cut-off of underweight (BMI<18.5) and overweight (BMI≥23) in predicting T2DM. This study was to evaluate the incidental risk for T2DM according to BMI levels and assess the appropriateness of Asian-specific cut-off of BMI.
Materials and Method: A total of 7,660 non-diabetic Korean was classified into 5 groups by Asian-specific cut-off of BMI, and followed up for the development of T2DM. With a reference of normal BMI group, Cox proportional hazards model was used to calculate multivariate-adjusted hazard ratios (HR) and their 95% CI of incident T2DM in 5 groups. Subgroup analysis was conducted by gender and age of 60 or less.
Results: Adjusted HRs for T2DM significantly increased in underweight, obese and severe obese group in all participants (adjusted HR; 1.85 [95% CI 1.25 – 2.73] in underweight, 1.14 [95% CI 0.97 – 1.33] in overweight, 1.31 [95% CI 1.13 - 1.51] in obese, 1.93 [95% CI 1.52 - 2.45] in severe obese). However, overweight group didn't show the statistically significant increase in adjusted HRs for T2DM. This findings indicate a U-Shaped relationship between incidental risk for T2DM and BMI, which was consistently observed in all age subgroups.
Conclusion: U-Shaped relationship was observed between incidental risk for T2DM and BMI. This finding suggests the necessity of further study to investigate the optimal cut-off of BMI in Asian.