Rice and noodle consumption is associated with insulin resistance and hyperglycaemia in an Asian population.

Author information

Abstract
High consumption of refined grains, particularly white rice, has been reported to be associated with a higher risk of type 2 diabetes. Therefore, in the present study, we evaluated the association between rice and noodle consumption and markers of glucose homeostasis, inflammation and dyslipidemia in an Asian population. We carried out a population-based cross-sectional study in 2738 Singaporean Chinese men and women aged between 24 and 97 years. Rice and noodle intake was assessed using a validated FFQ and studied in relation to glycemic (fasting glucose, glycated Hb, homeostasis model assessment (HOMA) index for insulin resistance (HOMA-IR) and HOMA index for β-cell function (HOMA-β)), inflammatory (plasma adiponectin and C-reactive protein (CRP)) and lipids (fasting TAG and HDL-cholesterol (HDL-C)) markers. We used multiple linear regression analyses with adjustment for total energy intake and sociodemographic, anthropometric (BMI and waist hip ratio) and lifestyle factors. Higher rice consumption was found to be associated with higher fasting glucose concentrations (β 8.1% higher glucose values per portion increment; 95% CI 0.09, 1.54) and HOMA-IR (4.62%, 95% CI 1.29, 8.07). Higher noodle consumption was also found to be significantly associated with higher fasting glucose concentrations (β 2.9%, 95% CI 0.44, 2.93), HOMA-IR (β 17.7%, 95% CI 0.49, 12.16) and fasting TAG concentrations (β 17.7%, 95% CI 3.44, 15.22). No significant association was observed between rice and noodle consumption and adiponectin, CRP and HDL-C concentrations or HOMA-β in the fully adjusted model. These results suggest that high consumption of rice and noodles may contribute to hyperglycaemia through greater insulin resistance and that this relationship is independent of adiposity and systemic inflammation.