The Association between Anthropometry and the Risk of Colorectal Cancer in Chinese Males

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The conclusion
In this large prospective cohort study among Chinese males, we found that waist circumference might be the best predictor of CRC risk among all the anthropometric measurements in Chinese males, especially compared with BMI. Furthermore, it can be applied in the prediction of CRC and colon cancer risk model in the further study.

Introduction
Most studies have identified increasing body mass index (BMI), an indicator of general adiposity, was related to higher risk of colorectal cancer (CRC). However, whether waist circumference, waist-hip-ratio (WHR) and waist-height-ratio (WHtR), indicators of central adiposity, are more predictive of CRC than BMI is controversial.

Methods
Information of males in Kailuan Cohort (2006-2015) on demographics, lifestyle, medical history and outcomes were collected on a biennial basis. Meanwhile, anthropometric parameters were measured according to standardized protocol. All the parameters were divided into five categories by quintile, with the first quintile group serving as the referent category. Cox proportional hazards regression models were used to evaluate the association between anthropometric measures and the risk of CRC.

Results
A total of 106 339 males were included and 400 CRC were newly diagnosed in the cohort (median follow-up 8.9 years). Waist circumference (HR= 1.69, 95%CI: 1.17-2.45) was associated with a higher risk of CRC in males after adjusting for age, status of smoking and drinking, sitting time and diabetes history. The association was robust even after adjusting for BMI (HR= 1.75, 95%CI: 1.14-2.69). However, BMI, hip circumference, WHR and WHtR had no significant relationship with CRC.

Additionally, high waist circumference was positively associated with colon cancer risk, with a multivariable-adjusted HR of 2.57 (95% CI: 1.39-4.76), and the association appeared to be independent of BMI (HR= 2.39, 95% CI: 1.19-4.80). Subjects with high BMI ( ≥ 26.85 kg/m²) had a higher risk of colon cancer (HR= 1.66, 95% CI: 1.02-2.69) (Figure 2). All the anthropometric measures showed no significant association with rectal cancer (Figure 3).

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