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Research Letter

Age differences in the impact of obesity on incident diabetes

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Wang TG et al [1] in *Lancet Healthy Longevity* examined a cohort of 93,781 participants aged ≥40 in China who were free of diabetes at baseline and were followed up for 3.1 years on average, and found that adjusted hazard ratio (HR) of incident diabetes in participants with either general (defined as body mass index - BMI ≥ 28 kg/m^2) or central obesity (as waist circumference – WC ≥ 90 cm in men and ≥ 80 cm in women) was 1·35 (95% confidence interval 1.23 - 1.48) in age of 40 ~ < 55 years, 1.20 (1.09 - 1.31) in 55 ~ < 65 years, 1.16 (1.01 - 1.32) in 65 ~ < 75 years, and 0.99 (0.72 - 1.36) in ≥ 75 years. They concluded that the impact of obesity on diabetic risk decreased with age and older people should pay more attention on other modified risk factors, e.g., reducing unhealthy sleep patterns, rather than adiposity for diabetic prevention [1].

However, we were wondering whether the definition of obesity used by the authors would be suitable for older Chinese and misled to the findings for the conclusion, since (i) BMI ≥ 28 kg/m^2 may not be an appropriate cut-off point for obesity in older Chinese, and (ii) the older people could have different body shapes from their middle-aged counterparts. We have recently analysed the Anhui cohort study data [2], which included 2,809 Chinese aged ≥ 60 who were free of diabetes at baseline and had up to 10 years follow-up, and found that the BMI ≥ 26 kg/m^2 as obesity [3] better predicted the risk of incident diabetes than the BMI ≥ 28 kg/m^2, while China-WC (i.e., ≥ 95 cm in men, ≥ 90 cm in women) [4] better than WC - WHO (≥ 102 cm in men, ≥ 88 cm in women) [5]. Here, we examine age differences in the association of obesity with diabetic risk (Table 1). While the obesity at BMI ≥ 28 kg/m^2 showed that its association with diabetes decreased with age, the BMI ≥ 26 kg/m2 did not have such a trend (Table 1). BMI ≥ 26 kg/m^2 and/or any WC obesity combinations significantly increased the risk of incident diabetes in people aged ≥ 75 years (Table 1). Our community-based cohort study has given evidence that even in older people, adiposity should be controlled to reduce the increased risk of diabetes.

Authors' contributors

AC conceptualised this observation research, performed the analyses and drafted the manuscript. WZ and AN provided statistical support and literature review. DL and RC obtained funding and revised the manuscript. All authors interpreted the findings, commented the manuscript, and approved its final version.

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Disclosure

Ethical approval for this cohort study was obtained from the Research Ethics Committee, Anhui Medical University, China and the Research Ethics Committee, School of Health, University of Wolverhampton, UK.

Declaration of interest

None.

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Table 1. *Adjusted HRs of incident diabetes in participants with obesity defined by different measurements of BMI and WC: Anhui Cohort study*

Definition of Obesity	Participants aged 65 ~ < 75 years (n=1567)				Participants aged ≥ 75 years (n=878)			
	Diabetes N (%)	HR	95% CI	P	Diabetes N (%)	HR	95% CI	P
BMI (kg/m²)								
≥ 28 kg/m²	157 (10.02)	1.45	0.86-2.46	0.168	75 (8.54)	0.49	0.11-2.09	0.334
≥ 26 kg/m²	366 (23.36)	1.43	0.95-2.15	0.087	171 (19.48)	2.05	1.05-4.00	0.036
WC (cm)								
≥ 95 cm in men; ≥ 90 cm in women	414 (26.42)	1.24	0.82-1.87	0.315	203 (23.12)	1.23	0.62-2.45	0.553
≥ 90 cm in men; ≥ 80 cm in women	815 (52.01)	1.59	1.02-2.47	0.039	368 (41.91)	1.73	0.86-3.49	0.124
BMI or WC together								
BMI ≥ 28 or WC (men ≥ 90, women ≥ 80)	832 (53.10)	1.57	1.01-2.44	0.044	385 (43.85)	1.59	0.80-3.19	0.189
BMI ≥ 26 or WC (≥ 95 cm in men; ≥ 90 cm in women)	366 (23.36)	1.43	0.95-2.15	0.087	171 (19.48)	2.05	1.05-4.00	0.036
BMI ≥ 26 or WC (men ≥ 90, women ≥ 80)	892 (56.92)	1.61	1.03-2.53	0.036	412 (46.92)	2.25	1.11-4.56	0.024

HR adjusted for age (cont.), sex, urban-rural, education level, income, smoking, drinking alcohol, walking or group touring, marital status, help available when needed, have trusted friends, relationship with neighbours, feeling lonely, worrying, hypertension status group, hypercholesterolemia, and dementia & depression.

References

1. Wang T, Zhao Z, Wang G, et al. Age-related disparities in diabetes risk attributable to modifiable risk factor profiles in Chinese adults: a nationwide, population-based, cohort study. The Lancet Healthy Longevity 2021; 2(10): e618-e28.
2. Chen A, Zhou W, Hou J, et al. Impact of Older Age Adiposity on Incident Diabetes: A Community-Based Cohort Study in China [published online ahead of print, 2022 Apr 29]. Diabetes Metab J. 2022;10.4093/dmj.2021.0215.
3. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet 2004; 363(9403): 157-63.
4. Association DBoCM. Guidelines for Prevention and treatment of type 2 diabetes. Chin J Endocrinol Metab 2014; 30(10): 893 - 942.
5. Bozeman SR, Hoaglin DC, Burton TM, Pashos CL, Ben-Joseph RH, Hollenbeak CS. Predicting waist circumference from body mass index. BMC Med Res Methodol 2012; 12: 115.