

The association between A1C and waist circumference in the US population

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Glycated hemoglobin (A1C) is now used for the diagnosis of diabetes and pre-diabetes. As these are related to obesity, we studied their relationship with waist circumference. We analyzed data on 960 men and 1001 women who participated in United States National Health and Nutrition Examination Survey 2007-08. Participants who were older than 20 years, had overnight fasting, and had not been treated with anti-diabetic medication were included in the analysis. There was a continuous linear relationship between waist circumference and A1C, which was true both in men and women (both $P < 0.001$). A1C was also associated with age, independent of waist circumference ($P < 0.001$). The waist circumferences corresponding to an A1C of 5.7% were 198.5, 144.1, and 130.3 cm in men, and 186.6, 125.0, and 96.3 cm in women in age groups 20-39, 40-59, and ≥ 60 years respectively. In conclusion, there is a linear relationship between A1C and waist circumference. There is no threshold in waist circumference below which A1C does not decrease with decreased waist circumference. A1C increases with age independent of waist circumference, and is higher in women than in men for the same waist circumference. This suggests that people who are elderly or female should especially try to avoid abdominal obesity and the attendant risk of type 2 diabetes.