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Prediction of Cardiovascular Disease by Abdominal Obesity Measures is dependent on Body Mass Index and Sex — Results from two Community Based Cohort Studies

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Abstract

The aim was to study waist-hip-ratio (WHR), waist circumference (WC), sagittal abdominal diameter (SAD), and waist-hip-height-ratio (WHHR) as predictors of CVD, in men and women stratified by BMI (cut-off ≥25).

A cohort of n=3741 (53% women) 60-year old individuals without CVD was followed for 11-years (375 CVD cases). To replicate the results, we also assessed another large independent cohort; The Malmö Diet and Cancer study– cardiovascular cohort (MDCC, (n=5180, 60% women, 602 CVD cases during 16-years).

After adjustment for established risk factors in normal-weight women, the hazard ratio (HR) per one standard deviation (SD) were; WHR; 1.91 (95% confidence interval (CI) 1.35-2.70), WC; 1.81 (95% CI 1.02-3.20), SAD; 1.25 (95% CI 0.74-2.11), and WHHR; 1.97 (95% CI 1.40-2.78). In men the association with WHR, WHHR and WC were not significant, whereas SAD was the only measure that significantly predicted CVD in men (HR 1.19 (95% CI 1.04-1.35).

After adjustments for established risk factors in overweight/obese women, none of the measures were significantly associated with CVD risk. In men, however, all measures were significant predictors; WHR; 1.24 (955 CI 1.04-1.47), WC 1.19 (95% CI 1.00-1.42), SAD 1.21 (95% CI 1.00-1.46), and WHHR; 1.23 (95% CI 1.05-1.44). Only the findings in men with BMI≥25 were verified in MDCC.

In normal weight individuals, WHHR and WHR were the best predictors in women, whereas SAD was the only independent predictor in men. Among overweight/obese individuals all measures failed to predict CVD in women, whereas WHHR was the strongest predictor after adjusting for CVD risk factors.

Biography

Axel C.Carlsson has completed his Ph.D at the age of 36 years from Karolinska Institutet in 2009 and is currently involved in postdoctoral studies at Karolinska Institutet and Uppsala University since then. His area of research involves cardiovascular epidemiology, where cardiometabolic mortality risk and novel biomarkers are his main interests. He has published more than 28 papers in reputed journals and is involved in an update of the current national guidelines for the treatment of type 2 diabetes in Sweden.