

For Heart Attack Risk a Surprising Result Nearly 400,000 Adults, Six Body Measurements

Commonly used anthropometric measures include [body mass index](#) (BMI) and waist circumference (WC). However, these measures have limitations as markers of body fat distribution: BMI cannot describe regional adiposity, and WC cannot distinguish visceral from subcutaneous abdominal fat. A recent study published examined the body roundness index (BRI) and its association with the risk of a new heart attack or myocardial infarction.



Study

The analysis included 395,831 participants aged 40-70 years from the UK Biobank cohort. Participants were categorized into quartiles based on various anthropometric indices: BRI, BMI, WC, weight-adjusted waist index (WWI), [body surface area](#) (BSA), and A body shape index (ABSI).

The researchers evaluated these for associations with heart attack risk using Cox proportional hazards regression and [restricted cubic spline](#) (RCS). To assess their predictive utility, the researchers used area under the receiver operating characteristic (ROC) curve (AUC), net reclassification improvement (NRI), and integrated discrimination improvement (IDI). The regression models accounted for demographic, lifestyle, and clinical risk factors. The median follow-up was 13.3 years.

The study recorded 14,419 MI events over the follow-up period. Participants who had heart attacks were older, more often male, with a higher deprivation metric, and more likely to have a smoking history. They were also more likely to have a family history of heart disease and to have hypertension, diabetes, and [hypercholesterolemia](#).

In addition, participants who had [heart attacks](#) reported more sedentary hours each day, were more likely to have higher anthropometric measures, and had higher serum creatinine and C-reactive protein levels.

Findings

The findings showed a 52% higher adjusted hazard of heart attack among participants in the highest versus the lowest quartile of BRI, with a progressive increase in the association across

quartiles. The adjusted hazard of heart attack was 13% higher with each [standard deviation](#) (SD) increase in BRI.

Similar trends were observed for the other indices, except for BSA. Each SD increase was associated with a 9% to 15% higher adjusted hazard, depending on the index used. When comparing the lowest versus [highest quartiles](#) of WWI and WC, the adjusted hazards were 46% and 40% higher in the highest quartiles, respectively.

Participants in the highest BMI and ABSI quartiles had a 32% higher adjusted hazard than those in the lowest quartiles. All measures except BSA showed significant [nonlinear associations](#) with MI risk.

BRI showed slightly better predictive performance than the other five indices, with an AUC of 0.710, compared with 0.697 to 0.708 for the other measures. These models adjusted for age, sex, and [race](#); BRI's advantage over the next-best index, WWI, was just 0.002 AUC points.

The study reported NRI and IDI values above zero for predicting heart attack risk compared with each of the other five indices, supporting a [statistical advantage](#) without establishing a clinically meaningful improvement.

The associations remained largely consistent in sex-stratified models. In females, BRI and WWI had comparable predictive value and exceeded that of the other measures, whereas in males, BRI remained the top-performing measure for [heart attack prediction](#).

The authors hypothesize that differences in fat distribution between males and females may partly explain this, with men more likely to accumulate abdominal fat around the viscera. This has long been associated with [metabolic abnormalities](#) and may partly account for the findings. Visceral fat was not directly measured.

By comparison, women are likely to accumulate more [peripheral subcutaneous fat](#), which may help explain BRI's smaller predictive advantage among women, but this mechanism was not tested. The comparable predictive performance of WWI and BRI for heart attack risk in females but not males requires further research to elucidate sex-specific mechanisms tying adiposity to CVD risk elevation.

Conclusion

“BRI is positively associated with higher incident MI risk, showing statistically significant but modest predictive improvements over other anthropometric indices.” The small advantage does not establish that BRI would improve existing clinical [cardiovascular risk](#) scores. Independent studies must validate these findings in diverse populations before BRI can be considered for routine clinical use.

Source:

<https://www.news-medical.net/news/20261013/Nearly-400000-adults-six-body-measurements-and-a-surprising-result-for-heart-attack-risk.aspx>