

Waist-to-height ratio bests BMI for predicting fat mass in children

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Waist circumference-to-height ratio (WHtR) is an inexpensive alternative to body mass index (BMI) for predicting fat mass (FM) in pediatric patients, according to a study published online March 5 in *Pediatric Research*.

Andrew O. Agbaje, M.D., Ph.D., from the University of Eastern Finland

in Kuopio, examined agreement of surrogate measures of adiposity with dual-energy X-ray absorptiometry-measured body composition. The analysis included 7,237 9-year-old children participating in the Avon Longitudinal Study of Parents and Children, with 15-year follow-up data.

Agbaje found that during follow-up, BMI, total FM, and trunk FM increased, but WHtR was relatively stable. Over time, WHtR provided better absolute agreement with total FM as well as trunk FM (males: intraclass correlation [ICC], 0.84; females: ICC, 0.81) compared with BMI (males: ICC, 0.65; females: ICC, 0.72). For predicting excess total FM (75th to 95th percentile), the WHtR cut point was 0.50 to 0.53 in males (area under the curve [AUC], 0.86 to 0.94; sensitivity: 0.51 to 0.79; specificity: 0.93 to 0.95). In females, the WHtR cut point for predicting excess total FM was 0.52 to 0.54 (AUC, 0.83 to 0.95; sensitivity: 0.38 to 0.68; specificity: 0.92 to 0.95). For trunk FM, results were similar.

"This study provides novel information that would be useful in updating future childhood obesity guidelines and policy statements," Agbaje said in a statement. "The average waist circumference-to-height ratio in childhood, adolescence, and young adulthood is 0.45; it does not vary with age and among individuals like BMI."

More information: Andrew O. Agbaje, Waist-circumference-to-height-ratio had better longitudinal agreement with DEXA-measured fat mass than BMI in 7237 children, *Pediatric Research* (2024). [DOI: 10.1038/s41390-024-03112-8](https://doi.org/10.1038/s41390-024-03112-8)

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