How useful are anthropometric measurements as predictive markers for elevated blood pressure inadolescents in different gender?

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BACKGROUND : Body mass index (BMI) is an essential anthropometric parameter used to predict body fat mass and show the possible risks for chronic diseases, including high blood pressure . Additional anthropometric measurements, such as skinfold thickness (SFT), waist circumference (WC), and waist circumference-height ratio (WHtR), have also been proposed to be important predictors of blood pressure and cardiovascular disease risk.

OBJECTIVE : To determine the utility of different anthropometric measurements (body mass index [BMI], skinfold thickness [SFT], waist circumference [WC], mid-upper arm circumference[MUAC], arm circumference-height ratio [AHtR],and waist circumference-height ratio [WHtR]) as markers of hypertension (HT) risk in Turkish adolescents.

STUDY SETTING : School based study in 7th and 8th grade students in Ankara

DESIGN :In this cross-sectional study, 544 participants aged between 12 and 13 years were included. Associations between the assessed anthropometric measurements and blood pressure readings were examined by multiple logistic regression analysis, adjusted for the participant's age, HAZ values, and maternal and paternal ages.

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Pediatric Evidence And Research Learning Snippet

Anthropometric measurements as predictive markers for elevated blood pressure in adolescents

RESULTS:

•The frequency of both elevated blood pressure and HT was 30.2% , the rates were 28.4 for males and 31.9% for female students.

•Biceps, triceps, and suprailiac SFT have an impact on HT in girls but only suprailiac SFT in boys.

•WC measurements above the 85th percentile were strongly correlated with HT conditions, and this relationship was stronger in boys than in girls (3.3 vs. 2.6 fold).

•Participants with an MUAC value above the 85th percentile had a greater incidence of Elevated BP and HT

•MUAC, WHtR, and AHtR measurements also have strong correlation with HT in boys but only WHtR has a poor relation in girls.

•In boys and girls with obesity, there was a positive association between obesity and blood pressures.

•In boys, the strongest correlation with systolic blood pressure was demonstrated for WC ($r=0.43$, $p < 0.01$) followed by MUAC ($r=0.42$, $p < 0.01$), whereas BMI Z scores had the strongest correlation in girls ($r=0.33$, $p < 0.01$).

CONCLUSION: Not only age-related BMI Z scores but also a number of other anthropometric measurements, such as Waist circumference (WC), Skin fold thickness (SFT), Mid upper arm circumference (MUAC) , Waist to height ratio (WHtR), and Arm to height ratio (AHtR) could have an influence on high blood pressure. The influence changes with gender during adolescence.

EXPERT COMMENT

"Age related parameters like Waist circumference (WC), Skin fold thickness (SFT), Mid upper arm circumference (MUAC) , Waist to height ratio (WHtR),and Arm to height ratio (AHtR) may give a clue towards cardio metabolic risk factors in overweight and obese adolescents as BMI is a poor indicator of adiposity especially in boys."

Dr Deepa Anirudhan
MD,DNB, Fellowship in Paediatric and adolescent Endocrinology
Associate Professor of Paediatrics,
Govt Medical College, Thrissur , Kerala

With warm regards,

DR MANINDER S DHALIWAL
Editor – Academic Pearls
pedpearls@gmail.com

DR. PIYUSH GUPTA
IAP NATIONAL PRESIDENT 2021

DR REMESH KUMAR R.
IAP PRESIDENT 2022

DR BAKUL JAYANT PAREKH
IAP PRESIDENT 2020

DR G.V. BASAVARAJA
HON. SECRETARY GEN. 2021 - 22

Reference

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