

Waist-Height Ratio (WHR) may predict loss of nocturnal dip on Ambulatory Blood Pressure Monitoring (ABPM)

Anne Nguyen¹ and Sudha Garimella²

¹University of South Carolina School of Medicine Greenville

²Prisma Health-Upstate Children's Hospital

Introduction 30% of obese children have associated hypertension (HTN)—a risk factor for cardiovascular disease (CVD). Loss of nocturnal dip on ABPM is associated with CVD and chronic kidney disease (CKD) in adults. Abdominal obesity (visceral fat) is associated with cardiovascular risk. Sagittal abdominal diameter (SAD) and waist height ratio (WHR) are measures of visceral fat. There is no data about SAD/WHR and HTN in overweight/obese children.

Methods Children between ages 4-18 referred to Pediatric Nephrology due to elevated blood pressure were recruited. We measured WHR as defined in the NHANES manual. SAD was measured with Kahn caliper (Seritex). Demographic and anthropometric measures were obtained along with office BP. ABPM findings were recorded if available. Statistical analysis: Pearson's correlation coefficient was calculated with $p < 0.05$ as significant. Spearman's Rho was calculated where applicable. Linear regression coefficients were calculated for BMI, SAD and WHR compared to office SBP.

Results 20 participants were studied. At the time of this report, only 5 had completed ABPM. 75% were male. Average age was 13.1 yrs (6-17). 80% had BMI >95th percentile. SAD and WHR was not correlated to office BP ($P=0.338$, $P=0.539$). WHR was negatively correlated to nocturnal dip (significant at $p=0.034$). See Figures.

Conclusion SAD/WHR may be better predictors of office BP and ABPM dip than BMI. A larger cohort should be studied to determine the value of these anthropometric measures in pediatrics. Pediatricians must pay attention to visceral fat measures and not just BMI when counseling families about risk of CVD/HTN with obesity.