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THE ASSOCIATION BETWEEN SERUM AND URINARY COTININE LEVELS AND ARTERIAL STIFFNESS IN THE BIRTH-TO-TWENTY AND AFRICAN-PREDICT COHORT STUDIES

ABSTRACT

Cardiovascular disease (CVD) is the leading cause of mortality globally, resulting from various risk factors, including genes, environment, demographics and poor lifestyle behaviours, such as tobacco exposure, a preventable CVD risk factor. Arterial stiffness is a predictor of CVD, pulse wave velocity (PWV) is often used to stratify the risk for development of CVD. The aim of this study was to examine the relationship between tobacco exposure (own use and environmental tobacco smoke [ETS]), as assessed by the biomarker cotinine, and arterial stiffness in South African adults and children of African ancestry.

Two South African cohort studies of young adults, the African-PREDICT study (n=587 African adult men and women, 20-30 years) and Birth-to-Twenty-Plus study (n=95 African adult women, 28-68 years and n=47 African children, 4-10 years), were explored. Chemiluminescence method on the IMMULITE system was used to measure cotinine (serum and urinary). Cotinine values above 10 ng/ml were considered for tobacco exposed and PWV was measured using the SphygmoCor XCEL device.

Thirty one percent adults and forty five percent children were classified as tobacco exposed. Linear regression showed that, in both children and adults, tobacco exposure was associated with arterial stiffness in the univariate analysis but not in multivariate analysis. Blood pressure (BP) was higher in tobacco exposed individuals (adults and children) compared to the non-exposed counterparts. These findings highlight the need to stop tobacco use to maintain ideal cardiovascular (CV) health. Highlighting the need for a thorough assessment of the current guidelines on tobacco cessation strategies in South Africa.