ASSOCIATION OF NECK CIRCUMFERENCE WITH ELEVATED BLOOD PRESSURE AMONG FILIPINO ADOLESCENTS


Background:
With the rise of obesity and insufficient physical activity among adolescents, they are now considered to be at risk for the development of non-communicable diseases particularly elevated blood pressure. The prevalence of overweight and obesity among Filipino adolescents, 10-19 years old, has increased substantially from 4.9% in 2003 to 9.2% in 2015. Neck circumference, as an index of obesity, was measured in the 2013 National Nutrition Survey (NNS).

Objective:
The study aimed to determine the association of neck circumference with elevated blood pressure among Filipinos aged 10 to 17 years old. Specifically, to define the optimum cut-off points of neck circumference that would predict elevated blood pressure among adolescents.

Methods:
This study utilized data from 2013 NNS which employed a multi-stage stratified sampling design. Filipinos aged 10 to 17 years old (n=25,737) with complete data on anthropometry and blood pressure measurement were included in the study. Correlations between neck circumference and systolic and diastolic blood pressure (BP) were analyzed using the Pearson’s correlation coefficient. The receiver operating characteristic (ROC) curve was used to assess the predictive validity of neck circumference as well as to determine the optimal cut-off points to identify elevated blood pressure.

Results and Findings:
The study found that 7.9% of the adolescents were pre-hypertensive while 9.9% were hypertensive based on the BP tables developed by the US National Institutes of Health. Mean neck circumference significantly increased with an increase in BP classification. Neck circumference was positively and moderately correlated with systolic BP and a weak correlation with diastolic BP in all participants. The ROC curve analysis showed that neck circumference had a low predictive value among adolescents across all BP cut-offs.

Conclusion and Recommendations:
Neck circumference was positively associated with elevated blood pressure and could be a potential and inexpensive screening tool for hypertension among Filipino adolescents. It is recommended that blood pressure nomograms specifically for Filipino children and adolescents should be established.