

ABSTRACT

THESIS: The Prevalence of Preclinical Atherosclerosis in a Healthy Adult Population

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Cardiovascular disease (CVD) is a progressive disease that presents signs, such as abnormal thickening or stiffening of arteries, early in its preclinical stage, and screening tools such as carotid intima media thickness (CIMT) measurement and pulse wave velocity (PWV) assessment have the potential to identify individuals prior to the clinical manifestation of CVD. The purpose of this study was to determine the prevalence of preclinical atherosclerosis, as indicated by high CIMT and PWV values, in an adult population aged 40-70 years and free of diagnosed CVD using these screening tools. Secondly, this study aimed to compare established CVD risk factors and other health parameters between those with elevated or normal arterial health values. Sixty subjects made 2 visits to the Ball State University Human Performance Laboratory. The first visit included basic anthropometric measurements as well as assessment of CIMT and PWV. After a one week objective physical activity assessment, subjects returned to the HPL for assessment of blood lipids and body composition via dual energy x-ray absorptiometry scan. Prevalence of preclinical atherosclerosis was calculated from the total sample as well as within both genders, and an independent samples t-test was conducted in order to identify significant differences in health characteristics between those in the normal and high groups. Abnormal CIMT or PWV values were present in 43% of study subjects; 30%

and 18% of the test sample met the criteria for elevated CIMT and PWV, respectively. Significant differences existed between normal and high CIMT and PWV study groups for physical activity, body composition, and blood lipid profile variables. Comparisons within each gender revealed differences in health profile elements. Both the CIMT and PWV measurement techniques may be valuable additions for community CVD screenings, as certain health profile abnormalities may impact each marker of arterial health differently. Additional research is needed in order to determine the cost-effectiveness of these screening tools as a preventive health method.

Key Words: preclinical atherosclerosis, prevalence, carotid intima media thickness, pulse wave velocity, cardiovascular disease