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## **BODY MASS INDEX AND RISK OF POOR CARDIOVASCULAR HEALTH: A POSITIVE ASSOCIATION**

**Shenghui Wu**

*Department of Public Health, Beaver College of Health Sciences, Appalachian State University,  
USA*

[wus@appstate.edu](mailto:wus@appstate.edu)

**Zhong Liu**

*Department of Kinesiology, Beaver College of Health Sciences, Appalachian State University,  
USA*

[liuz@appstate.edu](mailto:liuz@appstate.edu)

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### **Abstract**

**Study Aims:** *Epidemiological evidence on body mass index (BMI) and non-invasive cardiovascular parameters remains limited and inconsistent. To strengthen prevention and control efforts, we investigated the associations between BMI, including overweight and obesity, and non-invasive cardiovascular parameters, as well as their dose–response relationships, in adults from the Appalachian region of North Carolina.*

**Methods:** *In this cross-sectional study, 71 participants were included. Non-invasive cardiovascular parameters assessed were pulse wave velocity (arterial stiffness), augmentation index standardized at 75 bpm (peripheral arterial stiffness), ejection time (left ventricular*

performance), and Buckberg index (coronary microvascular circulation). Associations were analyzed using logistic regression models.

**Results:** Each 1-unit ( $\text{kg}/\text{m}^2$ ) increase in BMI was associated with a 25% statistically significant increase in multivariable-adjusted odds of higher arterial stiffness (OR=1.25; 95% CI: 1.04-1.51), a 31% in higher peripheral arterial stiffness, a 23% in worse left ventricular performance, and a 25% in worse coronary microvascular circulation. Overweight/obesity was associated with a 532% statistically significant increase in the odds of higher arterial stiffness (OR=6.32; 95% CI:1.42-28.09) and a 704% increase in the odds of worse left ventricular performance after the adjustment of age, sex, physical activity, and body fat percentage.

**Conclusions:** Higher BMI, particularly overweight and obesity, was significantly associated with an increased risk of adverse cardiovascular health as measured by non-invasive cardiovascular parameters. Targeted efforts to reduce overweight and obesity are needed to improve cardiovascular outcomes in North Carolina, especially within Appalachian populations.

**Keywords:**

Body Mass Index, Cardiovascular Health, Pulse Wave Velocity, Aix75, Ejection Time, Buckberg