

Greater Macrovascular but Not Microvascular Function in Hispanic Adults

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ABSTRACT

According to the 2023 AHA Heart Disease and Stroke Statistics update, Hispanics exhibit the highest prevalence of type II diabetes (men: 14.5%, women 12.3%) compared to non-Hispanic White (NHW men: 11.5%, women 7.7%) and Non-Hispanic Black (men: 11.8%, women 13.3%). Endothelial dysfunction is a precursor to cardiovascular diseases including type II diabetes; however, it remains unknown whether healthy asymptomatic Hispanic adults present a reduced endothelial function before the onset of cardiovascular symptoms. Although two previous studies have compared the endothelial function in Hispanic and Non-Hispanic White individuals, these studies included smokers and obese individuals.

PURPOSE: To date, no study has investigated endothelial function in healthy, non-smoking, asymptomatic Hispanic adults. We hypothesized that healthy, normotensive Hispanic individuals would demonstrate a reduced flow-mediated dilation compared to NHW adults. **METHODS:** We studied 14 healthy, normotensive Hispanic (5 women; age = 19 ± 1 , BMI = 25.4 ± 3.3) and 10 NHW (5 women; age = 20 ± 4 , BMI = 23.3 ± 2.9) adults. Macrovascular function was assessed using brachial artery flow-mediated dilation (duplex Doppler ultrasound), which was normalized to shear rate area under the curve (AUC) from cuff deflation to peak diameter. Microvascular function was assessed using multiple indices of reactive hyperemia following cuff deflation: peak velocity, peak blood flow, peak shear and hyperemic blood flow AUC back to baseline. **RESULTS:** Flow-mediated dilation was significantly higher in Hispanic adults compared to NHW participants (Hispanic = $8.4 \pm 2.7\%$, NHW = $5.8 \pm 2.2\%$, $p = 0.01$). Hyperemic shear AUC to peak diameter was similar between the groups (Hispanic: 31474.9 ± 12390.5 , NHW: 32290.7 ± 10105.7 arbitrary units, $p = 0.93$) and was used to normalize the FMD values. Normalized FMD was significantly higher in Hispanic adults compared to NHW adults (Hispanic: $8.4 \pm 0.6\%$, NHW: $5.7 \pm 0.7\%$, $p = 0.013$). On the contrary, microvascular function was not different between both groups: peak velocity (Hispanic: 89.6 ± 17.7 , NHW: 89.2 ± 14.2 cm/s, $p = 0.95$), peak blood flow (Hispanic: 554.5 ± 146.7 , NHW: 602.8 ± 175.2 ml/min, $p = 0.52$), peak shear (Hispanic: 1015.8 ± 259.3 , NHW: 935.2 ± 167.5 , $p = 0.56$), and hyperemic blood flow AUC from cuff release to return to baseline (Hispanic: 31760.2 ± 14788.3 , NHW: 38243.8 ± 13932.7 arbitrary units, $p = 0.34$). **CONCLUSION:** These preliminary data suggest Hispanic adults exhibit higher macrovascular function compared to age and weight-matched NHW adults while microvascular function was similar between these groups.