INDICES OF INSULIN RESISTANCE AND MARKERS OF SUB-CLINICAL CARDIOVASCULAR DISEASE IN MIXED ANCESTRY SOUTH AFRICANS.

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BACKGROUND: Insulin resistance (IR) is strongly associated with diabetes and subsequent cardiovascular disease which are increasingly common in low to middle income countries including South Africa. In this study, we investigated the relationship between indices of IR and carotid intima media thickness (CIMT), a marker of subclinical cardiovascular disease in mixed-ancestry South Africans.

METHODS: Five hundred and fifteen subjects of the Bellville South cohort, Cape Town, took part in this study. Participants with no history of medically diagnosed diabetes mellitus underwent a 75 g oral glucose tolerance test and cardiometabolic risk factors including insulin levels were measured. Homeostatic model assessment of insulin resistance, quantitative insulin-sensitivity check index, product of fasting triglycerides and glucose, fasting insulin resistance index and glucose/insulin ratio were calculated. CIMT was measured in longitudinal section at the far wall of the distal common carotid arteries, 2 cm from the bifurcation, at 3 consecutive end-points, 5-10 mm apart.

RESULTS: One hundred and thirty seven (26.6%) were men and 150 (29.1%) had diabetes. The CIMT was significantly higher in the males and diabetic subjects (both $p<0.0001$). In a multiple robust linear regression models containing age, sex, body mass index and diabetes status, all were significantly associated with CIMT (all $p<0.023$), and all togetherexplained 29.1% of variations in CIMT. In the presence of these four variables, only fasting plasma glucose ($\beta = 0.087$,$p = 0.042$) and glucose/insulin ratio ($\beta = 0.026$, $p = 0.026$) were associated with CIMT, however, the effect on the overall model performance was trivial, with the highest achieved R2 being only 29.7%.

CONCLUSIONS: Our findings demonstrate that measures of IR are weakly associated with CIMT. In the presence of traditional risk factors, age, sex, body mass index and diabetes, measures of IR add little to subclinical CVD risk estimation in our population.