

Cardiovascular Topics

The association between anthropometric parameters, the metabolic syndrome and microalbuminuria in black Africans: the SABPA study

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Summary

We aimed to determine which surface anthropometric and metabolic syndrome (MS) markers could be associated with the development of microalbuminuria (MA), and assessed 200 urban Africans (25–60 years) stratified into low (≤ 0.90 and ≤ 0.85) and high (> 0.90 and > 0.85) waist-to-hip ratio (WHR) groups from the North-West province. Anthropometric and fasting MS markers, such as systolic and diastolic blood pressure (BP), and glucose, triglyceride (TG) and high-density lipoprotein (HDL) levels, as well as MA markers were measured.

Males revealed higher lifestyle risk factors (body mass index, smoking, alcohol consumption, low physical activity), anthropometric and MS markers compared to the females. The same overall trend was seen for high-WHR males but not for high-WHR females compared to their low-WHR counterparts. Both high-WHR groups revealed increased glucose values (males, 6.34 mmol/l; females, 6.13 mmol/l). Multiple linear regression analysis, independent of confounders, showed positive associations between diastolic blood pressure (DBP) (high WHR and all males), TG, waist circumference (WC) and development of MA in all males. In high-WHR females, positive associations existed only between WC and the development of MA, while neck circumference (NC) was associated with MA development in all females. To conclude, vascular BP, TG and WC were associated with risk of renal impairment in males, while in females, NC and WC circumferences were associated with this risk.

Keywords: anthropometric, metabolic syndrome, microalbuminuria, black Africans

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According to Rheeder,¹ 33 million people worldwide will have diabetes by the year 2025. Not much information is available concerning the extent of this tendency in the black African population (hereafter referred to as Africans). In terms of well being, urbanised Africans are a vulnerable group.^{2,3} The reason is that they have higher central obesity, blood pressure (BP) and stress levels,⁴ as well as inadequate levels of physical activity and poor dietary habits.⁵ This places them at an increased risk for developing chronic diseases such as type 2 diabetes and cardiovascular diseases,^{2,3,6,8} especially when they become urbanised.⁹

The increased incidence of type 2 diabetes contributes to the increased frequency of developing cardiovascular disease.^{6,7} Other than macrovascular complications, this increased prevalence of cardiovascular diseases in diabetic persons could be due to an increase in the metabolic syndrome (MS).^{10,11} Using the criteria of the World Health Organisation (WHO) the MS is represented by a cluster of risk factors which can also be present in type 2 diabetics. These factors include hypertension, high levels of blood glucose, triglycerides (TG), high-density lipoproteins (HDL), microalbuminuria and central obesity.^{10,11}

In Caucasians, central obesity is associated with an increased waist-to-hip ratio (WHR).¹¹ According to the WHO, the WHR can be seen as a risk factor to health when it exceeds 0.90 for the male and 0.85 for the female population.¹¹ This measure is used as a simple method to determine body fat distribution.¹² The MS risk can also be determined from waist circumference (WC) measurement and when it exceeds 102 cm for the males and 88 cm for the females, it becomes a risk factor.¹² No clear cut-off points for Africans exist and it has been suggested by the International Diabetes Federation (IDF)¹⁰ that European anthropometric data be used as a reference when working with the African population. However, not only does data differ between ethnic groups, but there is also a difference in the type of disease prevalence between genders. African-American females have a greater tendency to present with diabetes than their male counterparts^{13,15} and the mortality rate is found to be higher in female diabetics than males.¹³

The information obtained from this study could be useful for screening purposes in Africans. Screening will help people to acquire the necessary understanding of the underlying factors in order to reduce or even prevent the increasing prevalence of the MS as well as other chronic diseases of lifestyle. Screening is of further use to ensure a better quality of life, and it is also cost saving in terms of disease prevention. The parameters identified during this study could be used to determine a quick and