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The impact of different dietary patterns on nutritional status and metabolic integrity in asymptomatic individuals living with HIV infection (PLWH) in South Africa

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Adequate dietary intake promotes optimal nutritional status and metabolic integrity[(1)]. In PLWH few studies have assessed how different dietary patterns influence nutritional status and metabolic integrity[(2)]. The present cross-sectional secondary data analysis examined the impact of different dietary patterns on nutritional and metabolic integrity in asymptomatic PLWH in the North-West Province of South Africa.

Dietary data were collected using validated quantitative FFQ. Dietary, nutrient, anthropometric and biochemical patterns were generated using principal component analysis. Data analysis was by SPSS version 14 (SPSS Inc., Chicago, IL, USA).

Although asymptomatic, marked biochemical differences depicting altered metabolism and inflammation were observed in PLWH compared with the non-infected individuals. HIV infection was predicted by serum aspartate transaminase (AST; OR 2.9 (95% CI = 1.6, 5.5)) globulins (OR 7.2 (95% CI 3.4, 13)), LDL (OR 0.5 (95% CI 0.3, 0.9)), BMI (OR 0.4 (95% CI 0.1, 1.1)), lean body mass (LBM; OR 2.5 (95% CI 1.2, 5.1)) and albumin (OR 0.5 (95% CI 0.3, 0.9)). Four dietary patterns (animal-based; 'recommended'; staple; legumes and vegetable-based) were observed in both PLWH and the non-infected individuals with slight differences. In PLWH the animal-based dietary pattern, similar to the legumes and vegetable-based pattern, was associated with a more 'optimal' overall nutrient profile (r 0.5, $P<0.001$) and selected nutrients, including energy (r 0.3, $P<0.001$), protein (r 0.6, $P<0.001$), Fe (r 0.5, $P<0.001$), Zn (r 0.6, $P<0.001$) and vitamin A (r 0.5, $P<0.001$), compared with the 'recommended' and staple dietary patterns. The animal-based dietary pattern also predicted higher BMI (OR 2.2 (95% CI 0.9, 5.0)), LBM (OR 3.6 (95% CI 1.3, 10.4)) and serum albumin (OR 1.5 (95% CI 0.9, 2.4)) and lower serum AST (OR 0.5 (95% CI 0.3, 0.8)) and alanine aminotransferase (OR 0.6 (95% CI 0.4, 0.9)). Using graphical chain modelling higher intake of the animal-based diet in contrast to the 'recommended' and staple dietary patterns was associated with a better overall nutrient profile. This association in turn predicted higher serum vitamins A and E and lipid status, which also predicted higher BMI, LBM and albumin.

The findings suggest that a predominantly animal-based diet may provide better nutrient quality, enhancing nutritional status and metabolic integrity, which may delay disease progression, especially in this population within which other factors that predispose to inflammation were likely to be common. However, the short- and longer-term implications of the high fat intake associated with the animal-based dietary pattern on obesity and hyperlipidaemia should be considered. This dilemma poses a challenge to imperatively weigh up the longer-term risks of the overall population profile crucial for public health. These findings may call for a closer look at current dietary guidelines for PLWHA in this population.

1. Jackson AA (2007) In *Nutritional Anaemia*, pp. 215–230 [K Kraemer and MB Zimmerman, editors]. Basel, Switzerland: Sight and Life Press.
2. Vorster HH, Kruger A, Margetts BM *et al.* (2004) *Public Health Nutr* **7**, 1055–1064.