Proceedings of the Nutrition Society (2017), **76 (OCE4)**, E178 doi:10.1017/S0029665117003408

Summer Meeting, 10–12 July 2017, Improving Nutrition in Metropolitan Areas

Dietary potential renal acid load and net acid excretion in rural and urban pre-menopausal Gambian women

G.R. Goldberg[1,2], S.E. Dalzell[1], L.M.A. Jarjou[2], K. Ward[1] and A. Prentice[1,2]
[1]*Medical Research Council Elsie Widdowson Laboratory, Cambridge CB1 9NL, UK and*
[2]*Medical Research Council Unit The Gambia, The Gambia*

The role that diet plays in acid-base homeostasis, particularly through effects on the skeleton, has been the focus of much research[1]. Measured or predicted Potential Renal Acid Load (PRAL) and net acid excretion (NAE) expressed as milli equivalents (mEq) have been associated with bone mineral and markers of bone metabolism in adults and children[2,3]. In particular positive effects of diets high in fruits and vegetables, leading to a lower PRAL or NAE have been highlighted. These studies have been conducted in Western populations and to our knowledge none have been reported in African populations. We report here some preliminary findings from a study conducted in rural (*n* 75) and urban (*n* 58) Gambian women (Dalzell *et al.* unpublished results). Prospective 2-day weighed records were made and the data coded and analysed using Gambian Food Composition Tables[4] and an integrated dietary assessment system[5]. Reported intakes of protein, phosphorus, potassium, magnesium and calcium were used to calculate PRAL, protein:potassium ratio, and estimated NAE (NAE_{ES}) using the formulae derived by Remer *et al*[2] and Frassetto *et al*[3]. Values were not adjusted for energy. Results are shown in the Table. Data were analysed by ANOVA and Scheffé's *post hoc* tests.

	Rural women			Urban women		
	Mean	SD	Range	Mean	SD	Range
PRAL (mEq/day)	−9·3	11·7	−46·5–9·4	1·1	7·0	−14·4–17·9
NAE_{ES} (mEq/day)	29·2	12·2	−12·7–56·1	42·7	8·3	25·6–70·6
Protein:potassium (g/mEq)	1·2	0·2	0·5–1·7	1·4	0·2	0·9–1·9
Renal net acid excretion (mEq/day)	53·9	13·7	19·2–82·0	68·5	11·5	37·3–93·3

These values are lower than reported in women from the US and Europe. The differences between the rural and urban women were significant (all $P < 0{\cdot}0001$) and consistent with the observations that the rural group ate more fruit and green leafy vegetables, and the urban group ate more fish (Dalzell *et al.* unpublished results). The nutrition transition is likely to underlie these differences. Analyses are ongoing to investigate relationships with DXA measurements of whole-body, hip and spine bone mineral, and with urinary measures.

Acknowledgements
Supported by the UK Medical Research Council (MRC) under programmes U105960371 and U123261351. This research is jointly funded by the MRC and the Department for International Development (DFID) under the MRC/DFID Concordat agreement. SD is in receipt of an MRC PhD studentship.

1. New SA (2002) *Proc Nutr Soc* **61**, 151–164.
2. Remer T, Dimitriou T, Manz F (2003) *Am J Clin Nutr* **77**, 1255–1260.
3. Frassetto LA, Todd KM, Morris RC Jr *et al.* (1998) *Am J Clin Nutr* **68**, 576–583.
4. Prynne CJ, Paul AA (2011) *Food composition table for use in The Gambia.* MRC Human Nutrition Research, Cambridge.
5. Fitt E, Cole D, Ziauddeen N *et al.* (2015) *Public Health Nutr* **18**, 234–241.