



Department of Human Nutrition - research in Africa

Professor Rosalind Gibson

I have been a member of an interdisciplinary team with expertise in soil science, plant mineral nutrition, human nutrition and public health from the University and Ministry of Health in Malawi, University of Otago, Universities of Nottingham and East Anglia in the UK, and the British Geological Survey. The pilot project funded by the UK National Environmental Research Council (NERC), the UK Department of International Development (DFID), and the Economic and Social Research Council (ESRC) under the Ecosystems Services for Poverty Alleviation scheme explored the environmental, dietary, health, and socioeconomic determinants of trace element status of subsistence farming Malawian women in two districts with contrasting soil mineralogy.



We reported a much lower prevalence of iron deficiency anaemia among our rural women compared to earlier reports, even though their diets were based on unrefined cereals containing high concentrations of potent inhibitors of iron absorption and negligible intakes of readily absorbable haem iron from meat, poultry or fish. On further investigation however, the iron intakes were found to be surprisingly high, attributed in part to contaminant iron from soil through the use of threshing sticks to thresh cereal grains. On examination, some iron in the district with acidic soils was shown to be bioavailable, but not from the district with calcareous soils.

These findings are also relevant to Ethiopia, a country where the prevalence of iron deficiency among women is reportedly low. I was involved in assisting the Ethiopian Health and Nutrition Institute with the analysis of the Ethiopian national food consumption survey, which again indicated surprisingly high iron intakes, with very few women with intakes judged to be inadequate. In rural Ethiopia threshing is achieved under the hooves of cattle so the potential for contaminate iron from soil is high. It appears from our Malawi data that acidic contaminant soil iron has the potential to contribute to iron nutrition and hence should be taken into account in settings where traditional threshing practices are likely to contaminate staple cereal grains with iron. Consideration of the potential contribution of soil iron to iron nutrition is especially important when implementing national programmes for iron fortified cereals.

OIHRN
7TH ANNUAL
CONFERENCE
12 & 13 NOVEMBER 2014
DUNEDIN



The Otago International Health Research Network (OIHRN) 7th Annual Conference was held on the 12th & 13th November at the Otago Museum.

This year's conference was the most successful yet - with over 90 participants, from Sweden, Myanmar, Vanuatu, Canada, Singapore and Thailand. Along with people 'skyping' in to present from Fiji. Our New Zealand participants included delegates from Auckland, Wellington Palmerston North, Fielding, Masterton, Christchurch and of course Dunedin.

We hope to see you all at the 2015 conference and while we still have to confirm the exact dates we know it will be in November.

Student Presentation Prize:

kindly sponsored by Stewart Caithness Gray Optometrists.

The 2014 best student presentation award was presented by Prof Dr Jakob Zinsstag-Klopfenstein (right) to Aaron Jenkins (along with Namrata Prasad, Laniet Naucukidi, Varanisese Rosa, Shalini Pravin & Gandercillar Vosaki) for their paper 'An interdisciplinary investigation of environmental, socio-cultural, and behavioural determinants of typhoid fever in the Central Division, Republic of Fiji'. As

Aaron and the team are based in Fiji, the award was presented via 'skype' with Prof John Crump (left) assisting.



Macandrew Bay School Artwork

kindly sponsored by Executive Support NZ

Once again, we are fortunate to have the students from Macandrew Bay School provide fabulous artwork for the conference. The artwork was designed with the conference theme "One-health" in mind.





Department of Human Nutrition - research in Africa (continued)

Dr Lisa Houghton

In collaboration with Maria Bautista and Shona Jennings from ChildFund New Zealand, Professor Judith Kimiywe from Kenyatta University, Kenya and a community-based team from ChildFund Kenya, we have conducted a nutrition survey of pre-school children in southeastern Kenya in the districts of Makueni and Kajiado Counties. Local people in Kajiado County are predominantly of the Maasai tribe who are largely pastoral whereas the Kamba tribe inhabit Makueni County and are mixed farmers. The survey area is semi-arid and has been hit by repeated droughts over the last 10 years.

In an effort to alleviate hunger in this food insecure region, ChildFund New Zealand has supported the construction of 36 preschools and provides a school feeding programme which offers a mid-morning ration of a vitamin and mineral fortified porridge in addition to their daily mid-day school meal of Githeri, a traditional meal composed of beans and maize. It is estimated that 1400 preschool children in the 2013-2014 school year will benefit from the school feeding programme. Often these meals may be the only food the children are given each day. To date, there has been no evaluation of the effectiveness of the school feeding programme and thus, the aim of our work was to assess the nutritional status of the children and the evaluate the nutritional adequacy of the school meals.

In March 2014, our team surveyed over 500 school children and their mothers collecting information on the child's parental education and income, household resources including water and sanitation facilities and measured the child's growth and micronutrient blood status. We also took a detailed assessment of the school feeding programme including information on recipes used to make the porridge and Githeri and weighed the amount served to the children at 23 different preschools. Overall, we found that the children suffered from chronic infection and multiple micronutrient deficiencies. Of particular concern, the Maasai children had a much greater prevalence of infection and deficiencies than the Kamba children. We also documented growth faltering, particularly stunting among the children sampled. Our evaluation of the school meals found that the recipes were not standardized and often the porridge was too heavily diluted with water. Where possible, we have made a number of recommendations to the community to improve the nutritional content of the meals offered to the children. Various recommended strategies included instructions to thicken the porridge to its recommended nutritional consistency and increase the diversity of the children's meals through the consumption of animal source foods and cultivation of micronutrient rich indigenous plants and biofortified crops. Efforts are ongoing to successfully implement these recommendations and our team will return in 2016 to evaluate the impact of the programme on the health and well-being of the children. Funding for this project was provided by ChildFund New Zealand and New Zealand Ministry of Foreign Affairs & Trade. Members of our University of Otago team include Professor Rosalind Gibson, Dr Rachel Brown, Ms Sarah Beaumont, Dr Karl Bailey and Ms Beth Gray.



Wishing you all a very safe and happy holiday season.