

### In this edition...

#### **Food and Health – Nutritional Epidemiology in Australasia. What is it about?**

In this edition we have eight interesting papers which reflect the strengths and tensions of the field in Australia and elsewhere. At first glance one might expect nutritional epidemiology to focus on the distribution of nutrients within populations over space and time rather like infectious disease epidemiology deals with the distribution of disease cases. This selection shows that nutritional epidemiology (at least in Australasia) is multifocal. It certainly deals with nutrients (for example, iodine)<sup>1</sup> but also with food purchasing,<sup>2</sup> children's food consumption and parental beliefs<sup>3-5</sup> as well dietary patterns,<sup>6</sup> food composition<sup>7</sup> and food production and climate change.<sup>8</sup>

This diversity may well reflect Australians' historically broad-based approach to research but it also reflects the changing state of nutrition science itself and the varied food and health issues facing today's populations. Whilst there is a continuing need to prevent and remedy nutrient deficiencies, the rise of metabolic diseases in populations which may be nutritionally replete has generated interest in the complex web of environmental, social and behavioural influences which underlie conditions such as obesity and type 2 diabetes and especially food components (food matrices) and dietary patterns.<sup>9</sup> Whilst these newer concerns have come to dominate Australian nutrition, micronutrient deficiencies such as iodine deficiencies, as Charlton and Yeatman note,<sup>1</sup> can have profound effects on population health.

The population groups studied here also are fairly typical of the area. Three of the papers deal with children<sup>3-5</sup> and one with pregnancy outcomes.<sup>1</sup> This paediatric emphasis is common. There are relatively few studies of people over sixty years of age despite their greater morbidity and costs of health care. Surprisingly no studies of Indigenous groups are included here though these are certainly underway. So the focus of much of our research has been pure and long term with relatively little emphasis on finding solutions to current public health problems in the immediate term (Charlton and Yeatman's and Riley's papers being exceptions to this trend).<sup>1,8</sup>

Charlton and Yeatman<sup>1</sup> review their studies of iodine deficiency and call for thorough surveillance and education approaches to this serious but overlooked problem. The lack of comprehensive nutrition surveillance and monitoring systems in Australia has been a national disgrace for far too long.

Three papers take up the theme of young children's food consumption and to varying degrees highlight the importance of tracking studies of young children. Golley et al.<sup>3</sup> and Spence et al.<sup>5</sup> provide useful reviews of studies of young children's eating habits. Golley et al.<sup>3</sup> call for more longitudinal studies, which given our experience in several cohort studies of other age groups, could be feasible. Spence et al.<sup>5</sup> provide a valuable review of the primarily intrapersonal parental factors which may influence young children's food consumption. In a similar intrapersonal vein, Champion et al.<sup>4</sup> report on parental styles which may influence children's obesity; one scale they developed (Lenience) may have a role in the prevention of children's obesity, though confirmatory data from their longitudinal study are required. Are these three studies examples of nutritional epidemiology or do they belong to behavioural epidemiology?

At a broader level of aggregation, Miura and Giskes<sup>2</sup> report on a comprehensive study of the influence of household income and social economic position on food purchasing. They found that fruit and vegetable consumption were weakly positively related to household income but concluded that other factors such as nutrition knowledge and education are also likely to be important predictors of the purchasing of healthy foods. This is a fine example of what might be termed "food epidemiology" which is quite removed from, say, the micronutrient epidemiology illustrated by Charlton and Yeatman.<sup>1</sup>

Two methodological papers illustrate some of the complexities in the area. The review of food composition methods by Cunningham et al.<sup>7</sup> will be required reading for many. They explain the importance of food composition methods for the derivation of accurate nutrient estimations and warn against 'willy nilly' acceptance of food composition data. McNaughton<sup>6</sup> provides an excellent discussion of the state of play in the derivation of dietary patterns. This is an evolving area which has yet to develop methods which match the complexity of its subject matter.

Finally, Riley<sup>8</sup> reminds us that nutrition, food consumption and the many variables derived from them, depend on food production. This is under threat from climate change and other environmental threats, particularly in Australia. He suggests that nutritional epidemiologists have much expertise which can be brought to bear to help us adapt to or mitigate these changes.

These papers, then, are a mixed but representative bag. Perhaps we can make a few tentative conclusions:

First, apart from nutrients measured in the form of biomarkers from body fluids and tissues (as in iodine spot urine tests), it is clear that many of the phenomena measured in “nutritional epidemiology” are derived from human behaviour and the workings of the human mind. Whilst indices of frequency and amounts of foods consumed are often created, other potentially important phenomena are little studied such as the timing, content and context of meals, and, population food preferences. Perhaps our evidence-based medicine framework has led us to avoid descriptive, observational studies of basic phenomena (as carried out in sociology, zoology, astronomy and other science disciplines)? Perhaps we should keep in mind the major difference between nutrient epidemiology involving biological materials from the epidemiology of food behaviours?

Second, whilst we always need pure and strategic research, we might place renewed emphasis on reducing micronutrient deficiencies in the immediate future through surveillance of population nutrient status and evaluated health promotion programs.

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## References

1. **Charlton KE, Yeatman H.** Strategies to address iodine deficiency in Australia require ongoing monitoring and surveillance. *Australasian Epidemiologist*. 2010;17.1:8-10.
2. **Miura K, Giskes K.** Household food expenditure and its contribution to socioeconomic inequalities in purchasing foods consistent with Australian dietary guideline recommendations. *Australasian Epidemiologist*. 2010;17.1:26-31.
3. **Golley RK, Smithers LG, Campbell K, Lynch J.** Understanding the role of infant and toddler nutrition on population health: Epidemiological Resources in Australasia. *Australasian Epidemiologist*. 2010;17.1:11-16.
4. **Champion S, Giles LC, Moore VM.** Parenting beliefs and practices contributing to overweight and obesity in children. *Australasian Epidemiologist*. 2010;17.1:21-25.
5. **Spence A, Campbell K, Hesketh K.** Parental correlates of young children’s dietary intakes: A review. *Australasian Epidemiologist*. 2010;17.1:17-20.
6. **McNaughton SA.** Dietary patterns and diet quality: approaches to assessing complex exposures in nutrition. *Australasian Epidemiologist*. 2010;17.1:35-37.
7. **Cunningham J, Tompsett S, Abbey J, Sobolewski R, Mackerras D.** Food composition – essential data in epidemiological studies of food and health. *Australasian Epidemiologist*. 2010;17.1:32-34.
8. **Riley M.** The food system and climate change: what can epidemiology contribute? *Australasian Epidemiologist*. 2010;17.1:38-39.
9. **Jacobs DR, Tapsell LC.** Food, not nutrients, is the fundamental unit in nutrition. *Nutrition Reviews*. 2007;65:439-50.