

What is the quality of the diet of Australian youth?

(See paper by A. Magarey and E. Bannerman, pages 16–22)

Despite an apparent abundance of food in Australia for most youth, there appears to be an inadequate intake of some micronutrients particularly in adolescent females. The proportion of ten to 15-year-olds with inadequate micronutrient intakes appears to have remained static in the decade from 1985 to 1995. The evidence for this comes from further analyses of data from the National Nutrition Survey 1995 (NNS95) and National Health Survey 1985 reported by Magarey and Bannerman (1).

Magarey and Bannerman (1) have defined an inadequate micronutrient intake as the percentage of children who had a nutrient intake < 70% of the recommended dietary intake (RDI). Using this cut-off point, Magarey and Bannerman (1) found:

1. for > 20% of adolescent males inadequate intakes of calcium
2. for > 20% adolescent females
 - a) inadequate intakes of zinc, calcium, iron and vitamin A (in decreasing order of magnitude)
 - b) inadequate intake of three or more nutrients.

Subjects with inadequate nutrient intakes consumed both less food and chose foods with a lower nutrient density. Although this analysis excluded vitamin and mineral supplements their inclusion would have only had a small effect on nutrient intake as only 13% of the subjects were supplement users and mainly of vitamin C. Another consideration noted by Magarey and Bannerman (1) was the difficulty of making definitive comparisons between 1995 and 1985 survey data because of methodological differences between the two studies.

How much weight can we put on these findings? The strength of these results is that the NNS95 data set is a large representative sample (3007 children aged two to 18 years) and appropriate adjustments were made for non-respondents and for within-person variation of nutrient intake in order to reflect usual nutrient intake. However nutrient data was obtained via 24-hour dietary recall and one could ask the question: how accurate were these 24-hour food recalls? This question was not addressed by Magarey and Bannerman (1) and admittedly it is difficult to assess. In a previous report of these data (2) it was stated that 6.2% and 10.5% of males and 10.6% and 20.5% of females aged ten to 15 years and 16 to 18 years respectively, had implausibly low energy intakes according to the criteria of Goldberg et al. (3) based on a physical activity level of 1.55 x basal metabolic rate. These criteria may not be appropriate for this group as their physical activity levels are generally lower than 1.55 (4,5). However, in one study using the appropriate physical activity level the problem of underreporting of food intake was identified as a major problem in female adolescents and in children and adolescents of both sexes with a higher BMI (5). Therefore

some unknown percentage of these food records are likely to be inaccurate, most likely underreporting true intake.

Another question is how appropriate was the definition of inadequate micronutrient intake? Although using the cut-off point of < 70% RDI may be argued to be arbitrary, it does give some indication of the proportion of a population which is likely to have an inadequate intake, if dietary data are adjusted for within-person variation as these authors have done. Less than 70% RDI is a better measure for reporting dietary inadequacy than taking the percentage of individuals with intakes less than RDI. This latter measure has been used in many national surveys and has the weakness that it overestimates the actual prevalence of inadequate intakes due to the safety factors incorporated into the RDIs for micronutrients. The cut-off point of < 70% RDI corresponds approximately with the estimated average requirement that is now being recommended as one method for evaluation of adequacy of dietary intake of groups (6,7). It has been shown that the percentage of individuals with usual intakes less than the estimated average requirement is a general approximation for the expected prevalence of inadequate intakes provided that the distribution of the requirement is symmetrical. Another factor to consider when interpreting nutrient intake data is that the bioavailability for some nutrients is affected by an individual's nutrient status and other dietary factors. This is particularly true for iron, calcium and zinc so the intake data for these micronutrients are difficult to interpret. Additional measures of micronutrient status such as biochemical and functional tests would be necessary to confirm these dietary results. Despite these limitations other nutrient intake studies in developed countries have confirmed these findings of low micronutrient intakes in adolescent females (8,9). Adolescent females are at greater risk of nutrient deficiencies compared with males because of their usually lower energy requirements due to their smaller size.

Further analysis of this data set in terms of types of food eaten would be useful to elucidate the food choices that are associated with poor micronutrient intake. This information would be helpful for the development of future public health programs. Previously Magarey and Bannerman (10) reported that the majority of children and adolescents had an inadequate intake of fruit and vegetables. This may explain some of their low micronutrient intake. It would be helpful too, to do further analysis to identify any socio-demographic factors or food habits that could predict those individuals likely to be at risk of an inadequate micronutrient intake.

This paper by Magarey and Bannerman (1) is an important contribution to our understanding of the proportion of children and adolescents likely to have an inadequate micronutrient intake, but further research that includes biochemical and functional tests that reflect micronutrient status is needed to confirm these dietary

data. Continued monitoring of the micronutrient intake of children and adolescents is essential for the implementation of appropriate health strategies to help prevent future disease.

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