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Physical activity, diet and body weight: results from the 2001 National Health Survey

Introduction

The prevalence of overweight and obesity are acknowledged to be at epidemic levels worldwide, and Australia is no exception. The 2001 Australian Bureau of Statistics (ABS) National Health Survey (NHS), showed that more than seven million Australian adults (aged 18 years and over) were overweight (based on self-reported data) (AIHW: Dixon & Waters 2003).

Overweight and obesity are conditions of excess body fat. Excess body fat is associated with an increased risk of developing a range of health problems including Type 2 diabetes, cardiovascular disease, high blood pressure, certain cancers, sleep apnoea, osteoarthritis, as well as psychological and social problems (WHO 2000). While many factors may influence a person's weight, excess body fat generally accumulates as a result of energy intake from the diet being greater than the energy expended through physical activity over an extended period of time.

This data briefing explores self-reported leisure-time physical activity and selected dietary behaviours collected in the 2001 NHS¹ and analyses how they vary by weight status for adults aged 20 years and over. Self-reported height and weight were used to calculate body mass index (BMI), a commonly used measure of body weight adjusted for height (Box 1). Although it is possible to show statistical associations, it is not possible to infer causal relationships on the basis of these cross-sectional data alone.

¹ The AIHW recommends that data from surveys using the Active Australia Survey questions be used to measure physical activity, however, the NHS physical activity questions have been used here because they can be linked with other risk factor variables (AIHW 2003).

Physical activity and body weight

Insufficient physical activity is known to be a risk factor for many health conditions including cardiovascular disease, Type 2 diabetes, several cancers, depression as well as overweight (AIHW: Armstrong et al. 2000). Not only are people who do low levels of physical activity more likely to become overweight or obese, regular participation in physical activity plays an important role in weight reduction and weight maintenance (WHO 2000; Ross et al. 2000).

As well as collecting height and weight data, the 2001 NHS collected self-reported information about the frequency, duration and intensity of physical activity during the previous two weeks. Respondents were then grouped into one of four physical activity levels (sedentary/very low, low, moderate and high) based on a score derived from this information (Box 2). It should be noted that the NHS questions related to leisure-time physical activity only. Physical activity undertaken for reasons other than exercise, sport or recreation were not examined.

Box 1: Classifying overweight

The most common population-level measure of overweight and obesity is the body mass index (BMI). BMI is calculated by dividing weight in kilograms by the square of height in metres (kgm^{-2}). Classifications of overweight and obesity are based primarily on the association between BMI and mortality, and are the standard recommended by the World Health Organization and included in the National Health Data Dictionary (NHDD).

In this data briefing, we have analysed:

- healthy weight (BMI: 18.5–24.9)
- overweight (BMI: ≥ 25.0)

Self-reported versus measured data

Height and weight data may be collected in surveys as measured or self-reported data. Results in this data briefing are derived from self-reported data. Comparisons have shown that people tend to overestimate their height and underestimate their weight, leading to an underestimate of BMI. Thus, rates of overweight and obesity based on self-reported data are likely to be underestimates of the true prevalence, and are not directly comparable with rates based on measured data.

Sources: ABS 1998a; AIHW: Waters 1993; Flood et al. 2000; NHDC 2003; WHO 2000.

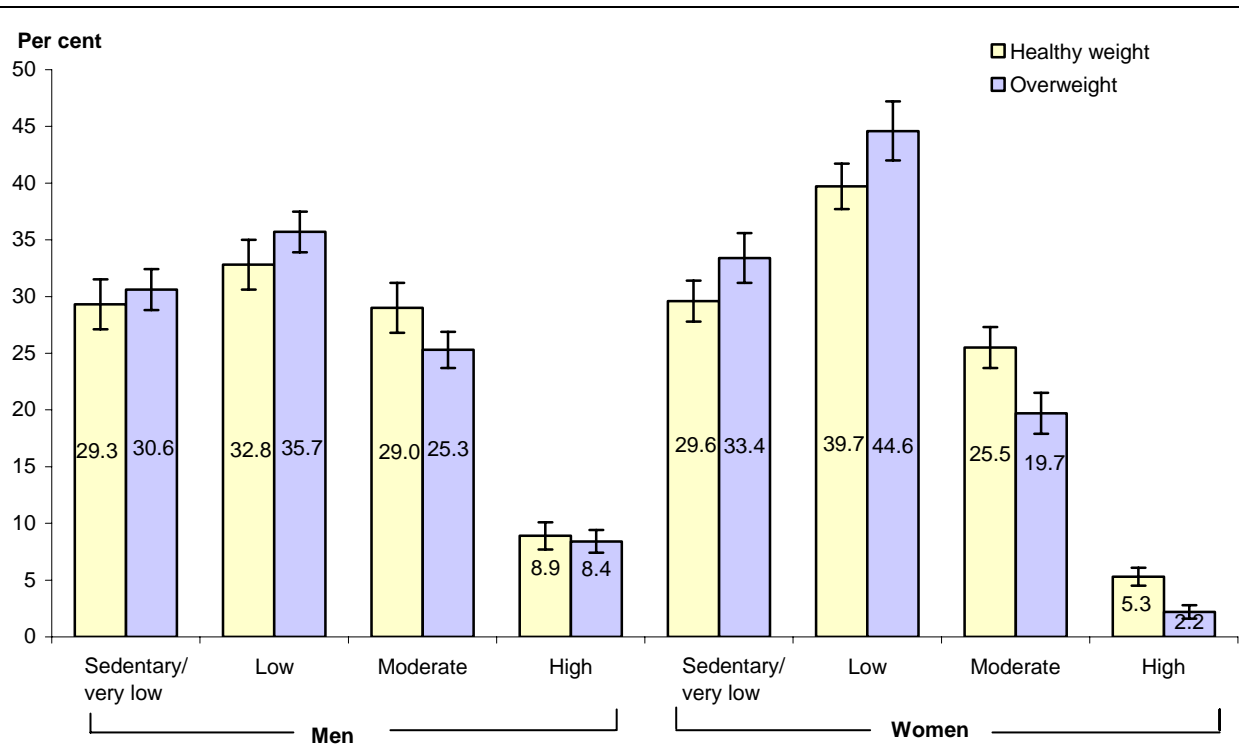
Analysis of the 2001 NHS showed:

- A large proportion (more than 60%) of Australian men and women reported 'sedentary/very low' (including no physical activity) and 'low' levels of physical activity in 2001, irrespective of weight status (Figure 1).
- Healthy weight men and women were more likely to report 'moderate' and 'high' levels of physical activity than overweight men and women. Conversely, overweight men and women were more likely to report 'low' physical activity levels than their healthy weight counterparts. These patterns were stronger for women than for men.
- Overweight women reported less 'moderate' and 'high' levels of physical activity compared with overweight men.

Box 2: 2001 National Health Survey categories of physical activity

The NHS groups the proportions of people undertaking various levels of leisure-time physical activity as sedentary/very low (including no exercise), low, moderate and high. The time spent walking and/or in moderate and vigorous physical activity are multiplied by the number of times activity undertaken and the activity's intensity value and summed to give a total exercise score for each respondent based on energy expenditure.

Source: ABS 2003.



Notes

1. Age-standardised to the 2001 Australian population.
2. Error bars indicate 95% confidence intervals.

Source: AIHW analysis of the 2001 ABS National Health Survey.

Figure 1: Participation in physical activity by men and women aged 20 years and over, by weight category, 2001

How does this relate to the National Physical Activity Guidelines for Australians?

It is difficult to relate the NHS physical activity levels directly to the National Physical Activity Guidelines for Australians (Box 3). However, the majority of NHS respondents classified as participating in 'moderate' or 'high' levels of physical activity can be considered to be meeting the Guidelines' minimum recommendations for physical activity. NHS respondents classified as participating in 'high' levels of physical activity can be considered to be reaching the Guidelines' recommendations for additional health and fitness benefits.

Box 3: National Physical Activity Guidelines for Australians

The National Physical Activity Guidelines for Australians recommend 30 minutes of moderate-intensity physical activity on most (preferably all) days of the week as the minimum requirement for good health (DHAC 1999). This is generally interpreted as a total of at least 150 minutes (2 ½ hours) of moderate activity accrued over at least 5 separate sessions during the week. Moderate intensity activity is activity that causes a slight but noticeable increase in breathing and heart rate, for example brisk walking, digging in the garden or medium paced cycling.

The guidelines also recommend that for additional health and fitness benefits, 30 minutes or more of vigorous activity on 3–4 days of the week should be added to the minimum recommendation.

Sources: AIHW 2003; AIHW: Armstrong et al. 2000; DHAC 1999.

How do these findings compare with other national studies?

The 2001 NHS data are not directly comparable with other studies examining physical activity as they use different data collection methods, recall periods, types of physical activity and methods of calculating physical activity levels (AIHW 2003). Despite the different methodologies, other studies show similar results. The 2000 National Physical Activity Survey indicated that overweight, and particularly obese people, were less likely to undertake physical activity at the levels recommended to achieve health benefits (AIHW: Armstrong et al. 2000). Analysis of the 1999–2000 Australian Diabetes, Obesity and Lifestyle Study (AusDiab) also found that obese women participated in less physical activity than non-obese women (Cameron et al. 2003).

Implications for public health

Data relating current physical activity and weight should be interpreted with caution as the effect of physical activity on body weight happens over time. Nevertheless, these findings demonstrate the need for the majority of Australians, irrespective of their weight status, to increase their levels of physical activity. Strategies that encourage people who are overweight to become more physically active are particularly important.

Dietary behaviour and body weight

The 2001 NHS collected information on selected dietary behaviours, including usual daily serves of fruit and vegetables (Box 4). Adequate consumption of fruit and vegetables is protective against a variety of diseases including coronary heart disease, Type 2 diabetes and many forms of cancer (Box 5), and is a current initiative of *Eat Well Australia* (SIGNAL 2001). Increased fruit and vegetable consumption can also contribute to a reduction in overall energy intake (WHO 2003), and total energy intake is a key factor affecting weight regulation (NHMRC 2003).

Box 4: 2001 National Health Survey categories of fruit, vegetable and milk intake

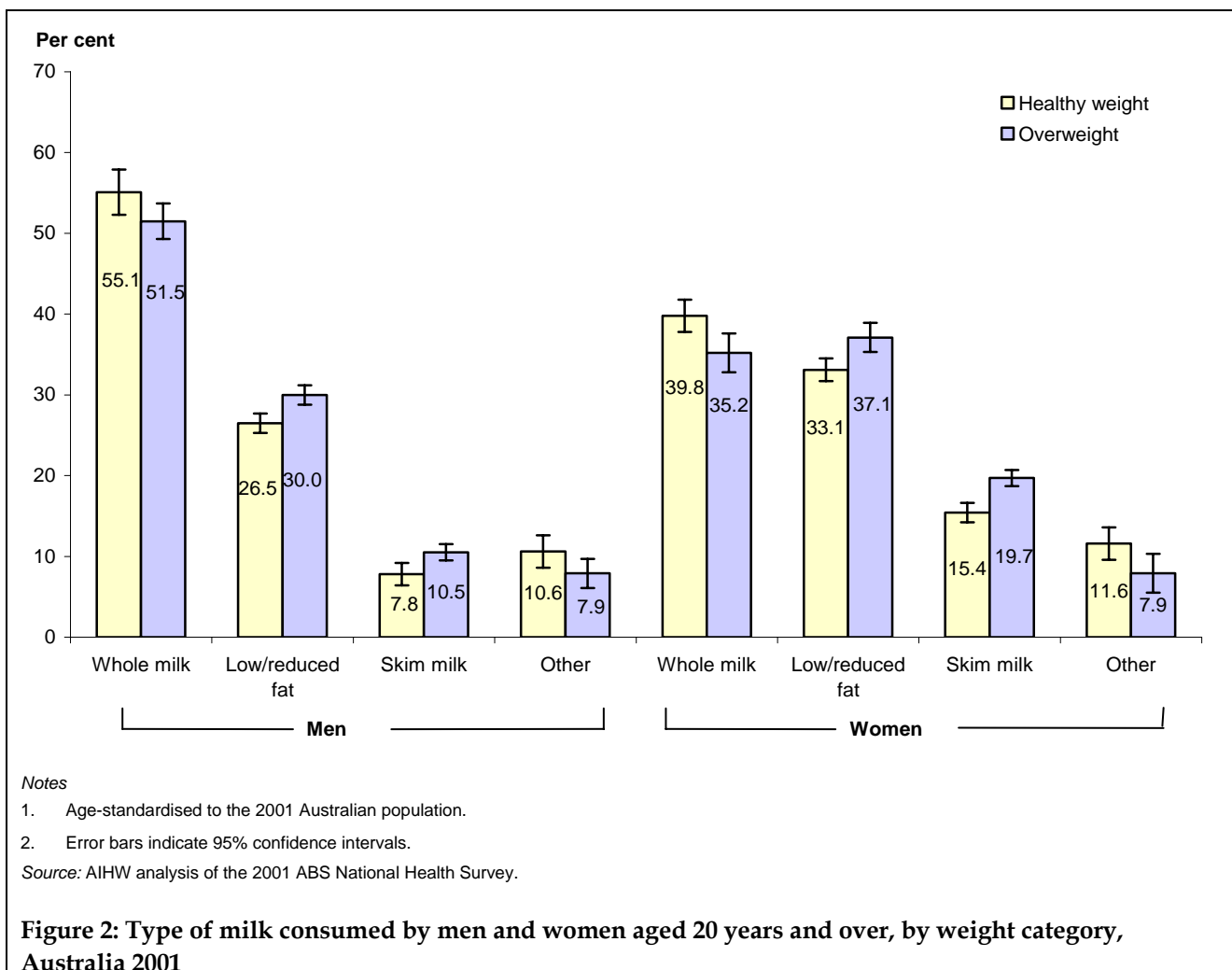
*In the 2001 NHS, respondents were asked to report the number of serves of fruit and vegetables they 'usually' ate each day. A serve of **fruit** was defined as: one medium piece, two small pieces or one cup of diced fruit, being equivalent to about 150g of fresh or 50g of dried fruit. A serve of **vegetables** was defined as half a cup of cooked vegetables or one cup of salad vegetables, being equivalent to about 75g. Respondents were also asked about the type of milk they 'usually' consumed. **Type of milk** was categorised into whole milk, low/reduced fat milk, skim milk and other. The category 'other' included people who do not drink milk.*

Source: ABS 2003.

Information on type of milk usually consumed was also obtained in the 2001 NHS (Box 4). Previous analyses have shown that people who usually use whole milk have significantly higher proportions of total energy from fat and saturated fat than those who report usually using skim or reduced fat milk (Rutishauser et al. 2001).

Examination of the 2001 NHS results by weight status (healthy weight and overweight) showed the following:

- More healthy weight men and women reported usually consuming whole milk than overweight adults in 2001. Conversely, more overweight adults reported usually consuming low fat or skim milk than those of healthy weight (Figure 2).
- Almost 70% of men and women reported usually eating only 2-3 serves or less of vegetables per day, irrespective of weight status. Similarly, around 50% reported eating just one serve or less of fruit per day (Figures 3 and 4).
- More women than men reported usually eating the recommended daily amounts of vegetables and fruits (Box 5).
- Men were twice as likely to report not usually eating fruit than women.
- There were few associations between weight status and reported fruit and vegetable consumption. Overweight women were slightly more likely to report not usually eating fruit (4.9%) compared with women of healthy weight (3.7%), although the difference was not statistically significant.

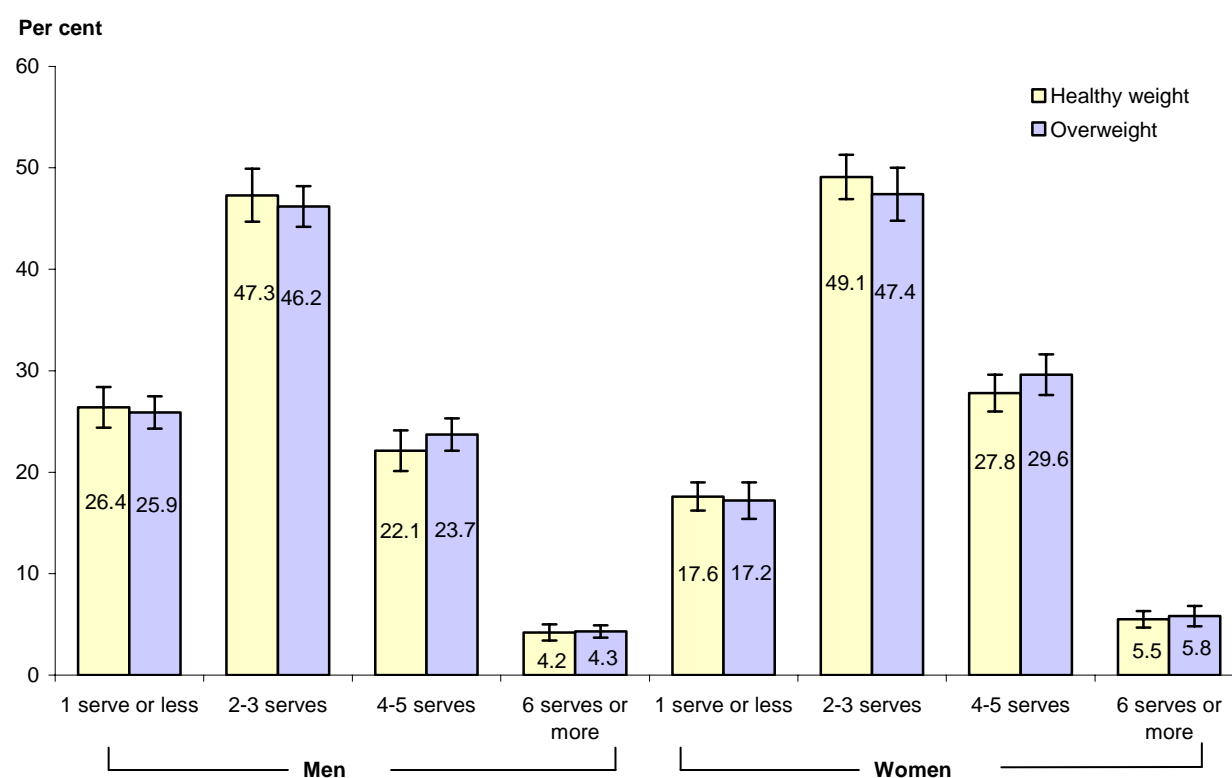


Box 5: Recommendations for fruit, vegetable and milk consumption

The Dietary Guidelines for Australian adults (NHMRC 2003) suggest eating plenty of vegetables, legumes and fruits. There is considerable evidence that people who regularly eat diets high in vegetables, fruits and legumes have substantially lower risks of coronary heart disease, stroke, several cancers, hypertension, Type 2 diabetes, cataracts and macular degeneration of the eye. Minimum recommendations for adults include 5 serves of vegetables and 2 serves of fruit each day (Cashel & Jefferson 1995; DHFS 1998).

The Dietary Guidelines also suggest including milks, yoghurts, cheeses and/or alternatives in the diet. Reduced-fat varieties are recommended for adults where possible because of the relatively high saturated fat content of milk based foods. For example, low- or reduced-fat milks (1 or 2 per cent fat) are recommended instead of full-cream milk (4 per cent fat).

Source: NHMRC 2003.



Notes

1. Age-standardised to the 2001 Australian population.

2. Error bars indicate 95% confidence intervals.

Source: AIHW analysis of the 2001 ABS National Health Survey.

Figure 3: Daily serves of vegetables consumed by men and women aged 20 years and over, by weight category, Australia 2001

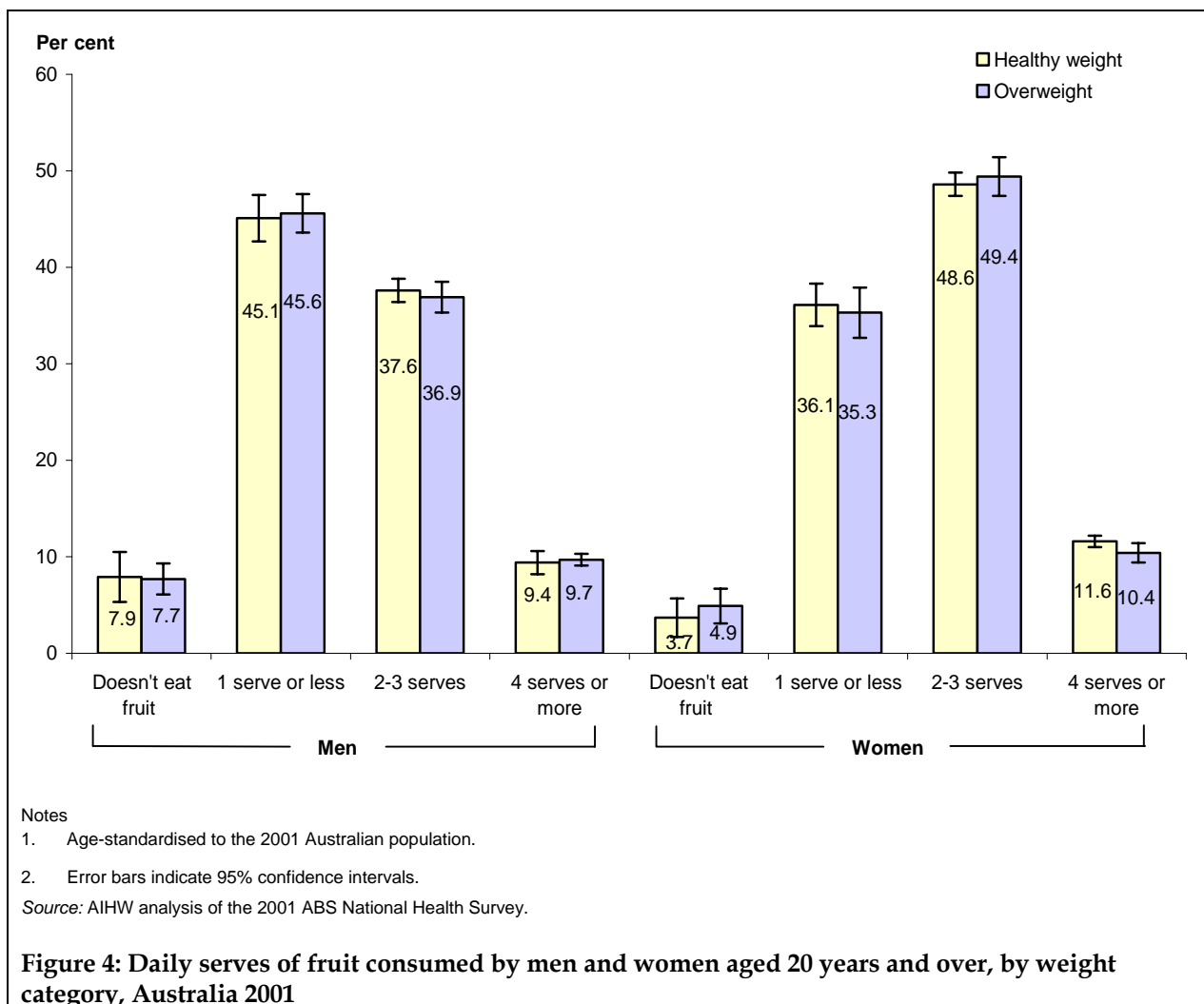
Interpretation of results

Data relating dietary behaviour and weight should be interpreted with caution as the effect of diet on body weight is complex and occurs over a period of time. For example, a higher consumption of reduced-fat milk among overweight people compared with those of healthy weight may reflect attempts to lose weight. Furthermore, self-reported measures of dietary behaviour do not indicate actual food intake and are subject to inaccurate- or under-reporting of food consumption. ABS analysis of the 1995 National Nutrition Survey, which collected detailed information on food and beverage intake,

found that as BMI increased energy intake decreased. While some overweight people may consume less energy consistent with dieting, lower than expected energy intakes may indicate under-reporting of food consumption during the survey reference period (ABS 1998b).

Implications for public health

Despite the limitations outlined above, findings from the 2001 NHS show the majority of Australians need to increase their fruit and vegetable intake irrespective of weight status. More detailed information about food intake, particularly energy intake, together with measured height and weight, appear necessary to derive any associations between weight status and diet.



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