

The development and validation of short sets of questions for ethnic groups is a national as well as a State priority and recommendations have been made for national networking of this issue in Chapter 3 of this report (refer to Section 3.2.2.2).

4.4.3 Aboriginal and Torres Strait Islander populations

At present, the 1994 *National Aboriginal and Torres Strait Islander Survey* (NATSIS) (ABS 1994) provides the only questions for use in population-based surveys that specifically monitor the food habits and intakes of Aboriginal and Torres Strait Islander populations. These questions aim to rank the population with respect to fat and sugar intake. Questions were also included in this survey on breastfeeding initiation and duration and food security.

The validity of the fat and sugar index (FSI) questionnaire was assessed in a pilot study in the Katherine region of the Northern Territory prior to the NATSI survey (Paterson 1994) but it is not known how well these questions perform in different settings and geographic locations. Until the validity and reliability of these questions has been assessed, they are not recommended for use in other surveys.

Poor housing and sanitation in many Australian Aboriginal communities highlights the importance of the promotion of breastfeeding with this population. Thus, there is a need for further development and validation of questions for use in population-based surveys that assess breastfeeding initiation and duration, as well as the food habits and intakes of Aboriginal and Torres Strait Islander populations. The differences in dietary intake between subgroups of this population (e.g., Torres Strait Islanders compared with mainland Aboriginal people, those living in the Top End compared with those living in the southern Australian states, and rural compared with urban populations) need to be considered in the development of dietary questions.

As with questions for ethnic populations, the development and validation of questions for use with Aboriginal groups should be a national, as well as a State priority. Recommendations have been made for national networking of this issue in Chapter 3 of this report (refer to Section 3.2.2.3).

4.5 Analysis and dissemination of the data

The analysis and dissemination of limited food and nutrition data from the NSW Health Survey is carried out by the Epidemiology and Surveillance Branch of the NSW Health Department as part of their reporting on key survey results.

The following are some possibilities for further analysis and dissemination of the food and nutrition information from the NSW Health Survey:

- a) a short report containing more detailed food and nutrition information, such as Area-specific analyses, interpretation of findings, and graphical presentation of data, similar to

- the style used in *Food and nutrition in New South Wales - a catalogue of data* (Stickney et al 1994). This report should be widely promoted through the NSW Nutrition Network, Area Health Promotion Units, Public Health Units and Area Executives,
- b) the most important findings should be included in the Chief Health Officer's Report of the NSW Health Department,
 - c) key points could be included in the NSW Health Department *Public Health Bulletin*, and any newsletters and/or circulars which are distributed to Area Executives.

Detailed suggestions for analysis and interpretation of the data can be found in *Measuring key aspects of food habits and food intakes in population-based surveys in NSW: recommendations for short modules* (Hewitt et al 1998).

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Chapter 5: Information required from the National Nutrition Survey

5.1 Introduction

5.1.1 Why is the National Nutrition Survey so important?

The 1995 National Nutrition Survey (NNS) provides the first nationally representative data on the food and nutrient intakes of Australians since the 1983 National Dietary Survey of Adults and the 1985 National Dietary Survey of Schoolchildren (aged 10-15 years). Data were collected in the NNS on individuals of all ages from two years and upwards, thus making it the most comprehensive nutrition survey of the Australian population ever undertaken. The NNS supplies the first data on food and nutrient intakes for many population subgroups including young children, young adults, older people and rural Australians. It also provides trend data for comparison with the 1983 and 1985 National Dietary Surveys.

The NNS was conducted in conjunction with the 1995 National Health Survey (NHS), thus making it possible to link the NNS data with NHS data on socio-economic status, self-reported health status and use of health services. The NNS was conducted by the Australian Bureau of Statistics (ABS) for the Commonwealth Department of Health and Family Services (DHFS) and was the first dietary survey to be conducted under the statistics legislation. The NNS survey sample was selected from households responding to the NHS. The NNS sample was approximately 13,800 across Australia, thus permitting national estimates of dietary patterns by age (i.e., for each year of age) and sex.

The NNS included several short questions relating to current food and nutrition policy objectives as well as 24-hour recall interview and food frequency questionnaire data. Such information will enable an assessment of the validity of these short questions compared with more comprehensive dietary assessment methods. Thus, until we have a nationally agreed set of short questions, they provide a good option for those seeking questions for statewide or local population surveys as there is potential for validation and they provide information comparable to the NNS (as discussed in Chapter 4).

5.1.2 What data were collected in the NNS?

The data collected in the NNS are summarised in the following three tables.

Table 5.1: Summary of dietary and related data collected in the NNS

Information	Age
Individual Food Intake Questionnaire (IFIQ = 24 hour recall, see Table 5.2 for details)	2 years
Intake on recall day not considered usual	2 years
Reason recall day not considered usual	2 years
Previous day vitamin and mineral supplement use	2 years
Previous day drinking water quantity	2 years
Usual way of eating	2 years
Usual daily number of eating occasions	2 years
Frequency of breakfast consumption	2 years
Frequency of salt use in cooking	2 years
Frequency of salt use at table	2 years
Weight change over previous year	16 years
Desire for specific dietary changes	16 years
Barriers to dietary changes	16 years
Dietary change due to mouth, throat conditions	16 years
Food security	16 years
Frequency of food consumption over past 12 months (118 item food frequency questionnaire)	12 years

Table 5.2: Food and nutrition information collected in, and calculated from, the Individual Food Intake Questionnaire (IFIQ) of the NNS

Information^a
1. The consumption of separate food and beverage items, served individually, as components of mixed dishes and together with other foods as meals.
2. Food preparation methods including the type and amount of fat added in cooking and at the table, and whether salt was used in cooking.
3. The type of food, whether fresh, frozen, canned, dried etc.
4. The sources of the food such as from shops, restaurants, hotels, vending machines, home grown etc.
5. The time the item was eaten and whether it was consumed at home or ever in the home.
6. Exact portion size information.
7. The nutrient intake of all foods and beverages consumed.

^a **All respondents aged 2 years**

Table 5.3: Physical measurements collected in the NNS^a

Information	Age
Blood pressure	16 years
Height	2 years
Weight	2 years
Waist circumference	2 years
Hip circumference	2 years

^a **Not collected from pregnant respondents**

5.1.3 NNS publications

There are three reports which present results from the 1995 National Nutrition Survey:

1. *National Nutrition Survey: Selected Highlights, Australia, 1995* (ABS and DHFS 4802.0 1997) - which presents selected summary statistics covering eating patterns, foods consumed, nutrient intake and anthropometric indicators for adults and children in Australia.
2. *National Nutrition Survey: Nutrient Intakes and Physical Measurements, Australia, 1995* (ABS and DHFS 4805.0 1998) - which presents detailed information on energy, water and nutrient intakes; and physical measurements such as weight and height (and weight in relation to height), waist and hip circumference (and waist to hip ratio), and blood pressure.
3. *National Nutrition Survey: Foods Eaten, Australia, 1995* (ABS and DHFS 4804.0 1999) - which includes mean and median daily intake and percent consuming for 2 and 3 digit food categories (see explanation below).

These three publications contain only limited State information.

The NNS Confidentialised Unit Record Files (CURF) are available for interested parties to perform their own analyses on the NNS data sets.

The food grouping system used to code the food data includes three levels:

1. the two-digit level, e.g., 19 = milk; milk products and dishes
2. the three-digit level, e.g., 191 = dairy milk
3. the four-digit level, e.g., 1912 = milk, fluid, regular whole, full-fat

The 'Nutrient Intakes and Physical Measurements' publication includes information on the following nutrients:

- energy;
- moisture;
- macronutrients - protein, fat (total, saturated, monounsaturated and polyunsaturated), cholesterol, carbohydrate (total, starch and sugars), dietary fibre and alcohol;
- vitamins - vitamin A (retinol equivalents, preformed and provitamin), thiamin, riboflavin, niacin equivalents, folate, vitamin C; and
- minerals - calcium, phosphorus, magnesium, iron, zinc and potassium.

5.1.4 Why obtain NSW-specific information?

As noted above, the 1995 NNS provides the first representative data about food and nutrient intakes of Australians since the 1983 and 1985 National Dietary Surveys (NDSs), the only representative data for several important population subgroups (including nutritionally vulnerable subgroups) and trend data for comparison with the 1983 and 1985 National Dietary Surveys. The NNS NSW sample is sufficiently large for some analyses by age and sex, and by metropolitan/rural areas. The analysis and presentation of a comprehensive set of State-specific data would:

- provide a good snapshot of the nutrition situation in NSW compared with other States,
- provide trend data for comparison with the previous NDSs,
- provide new baseline data for population subgroups of interest, and
- answer questions posed by practitioners and policy-makers in NSW.

There are many users of nutrition information in NSW, including community nutritionists; State and Area health promotion, public health and research/evaluation personnel; Area Chief Executive Officers; nutrition and public health academics; non-government organisations and the food industry. Most of these groups have some interest in the State-based information about food and nutrient intakes available from the NNS, particularly in relation to current initiatives to increase the consumption of fruits, vegetables, breads and cereals, and to decrease fat intake. Other issues covered by the NNS were also identified, by the public health workers consulted as part of the NSW Nutrition Monitoring Project, as important issues for Statewide monitoring. These included weight status, dietary change patterns, meal patterns and food security (refer to Chapter 1 for more detail on these consultations).

5.1.5 NSW analyses

In addition to the limited State data presented in the three major NNS publications, the then Public Health Food and Nutrition Unit (PHFNU) of the Commonwealth Department of Health and Family Services (DHFS) negotiated for the Australian Bureau of Statistics (ABS), who were responsible for the analysis and presentation of NNS data for national purposes, to produce a set of State tabulations of the NNS data. These tabulations included detailed State data about particular issues not included in the national publications.

NSW, Queensland and Victoria provided substantial funding for collection and analysis of data from the NNS and have sufficient sample sizes to provide some State figures by age group (e.g., 19-24 years) and sex. These States were therefore contacted to provide their priorities for the State tabulations. The NSW Health Department asked the NSW Food and Nutrition Monitoring Project to negotiate with the DHFS and the ABS in this regard. The State tabulations were only provided to States as paper copies of data tables. No official reports with summaries or interpretation of these State level data are planned.

5.2 Recommendations

5.2.1 The process of identifying NSW priorities for NNS analysis

The NSW Food and Nutrition Monitoring Project was thus given the task of identifying NSW priorities (from the NNS data available) for information to be included in the State tabulations produced by the ABS. The identification of these 'NSW priorities' included an assessment of the need for information in relation to:

- NSW goals and targets for coronary heart disease (NSW CORONARY HEART DISEASE EWG 1995),
- current strategic directions for improving nutrition in NSW (Martin and Macoun 1996, NSW HD 1997), and
- consultations conducted for the NSW Nutrition Monitoring Project (as described in Chapter 1).

Priority nutrition issues and those which are addressed by the data available from the NNS are shown in Table 5.4.

Table 5.4: NSW priorities for food and nutrition information

Source	Priority nutrition issues ^a
<p><i>Coronary Heart Disease - NSW goals and targets and strategies for health gain</i> (NSW CORONARY HEART DISEASE EWG 1995)</p>	<ul style="list-style-type: none"> • <i>Increase intake of fruit, vegetables, breads and cereals</i> • <i>Reduce the total and saturated fat content of the diet of NSW residents (not including infants and children)</i> • <i>Reduce dietary sodium intake</i> • <i>Increase the proportion of adults with an acceptable body weight</i> • <i>Reduce the prevalence of obesity among adults</i>
<p><i>Food and Nutrition - Directions for NSW 1996-2000</i> (Martin and Macoun 1996)</p>	<ul style="list-style-type: none"> • <i>Promote demand for breads, cereals, vegetables and fruits</i> • <i>Increase the proportion of NSW schools, childcare centres, hospitals and Meals on Wheels services which adopt food and nutrition policies consistent with national dietary guidelines</i> • <i>Develop community-based food and nutrition programs with Aboriginal and Torres Strait Islander peoples</i> • <i>Develop an ongoing nutrition monitoring and surveillance system for NSW to:</i> <ul style="list-style-type: none"> - <i>monitor demand for healthy food choices, food supply in institutions, nutrition status, food borne illness, and</i> - <i>provide data to support planning and evaluation of State-wide nutrition programs</i> • <i>Promote the safety of the food supply</i>
Source	Priority nutrition issues ^a
<p><i>Caring for Health. Implementation Statement: Putting policy into action</i> (NSW HD 1997)</p>	<ul style="list-style-type: none"> • <i>Increased per capita consumption of bread, cereal, fruit and vegetables</i> • <i>Increased availability of nutritious food in institutional settings</i> • <i>Improved nutrition, awareness, knowledge and eating behaviour amongst Aboriginal people</i> • <i>Improved food habits relating to fat intake</i>
<p>NSW Food and Nutrition Monitoring Project 1997: Consultations</p>	<p>Nutrition issues considered important enough to warrant the collection of routine data included (in order of priority):</p> <ul style="list-style-type: none"> • <i>Fat consumption habits</i> • <i>Weight status of adults</i> • <i>Dietary change patterns</i> • <i>Food service in institutions</i> • <i>Food retailing</i> • <i>Intake of core food groups</i> • <i>Meal patterns</i>

Source	Priority nutrition issues ^a
	<ul style="list-style-type: none"> • Growth and <i>weight status of children</i> • <i>Fat intake</i> • Alcohol consumption habits • Breastfeeding • <i>Food security</i> • Food service in commercial settings

^a Issues which are addressed by the data available from the NNS are shaded and italicized

5.2.2 Liaison with the Commonwealth Department of Health and Family Services and the ABS regarding NSW priorities for NNS analysis

A set of dummy tables was prepared which outlined the NNS information most relevant to NSW priorities (refer to Appendix 3). These tables included topics such as:

- weight status,
- detailed information on food intake (including core food group intake and intake of selected foods of particular interest),
- nutrient intakes (including contribution of nutrients to total energy intake),
- the proportion of the population meeting recommendations for nutrient intakes,
- the proportion of the population with particular dietary habits, and
- the use of vitamin and mineral supplements.

In general, data were requested by sex, by age categories and for metropolitan and rural areas (with the proviso that the statisticians at the ABS would not produce data for the age categories as requested for any cell sizes which were too small). Statistical differences by sex, age and metropolitan/rural were also requested. The 23 tables presented were further prioritised by indicating the 12 most important tables for NSW purposes (identified by an asterisk in Appendix 3).

Data for weight status of adults were chosen for comparability to the most recent National Heart Foundation Risk Factor Prevalence Study (1989) and for children to enable comparison with recommendations (refer to Chapter 6 and NSW HD 2000).

To obtain food intake data which were comparable to the National Dietary Surveys of Adults (1983) and Schoolchildren (1995) and recommendations for core food group intake (NHMRC 1995):

- mean and % consuming were included (medians were also included because population distributions of food intakes tend to be skewed, and so the median is a better estimate of central tendency than the mean),
- ‘per capita’ results (i.e., denominator for calculation of intakes = total number of respondents) were requested in preference to ‘per consumer’ results (i.e., denominator = total number of respondents who consumed that food), and
- the same core food group categories were chosen as in recommendations for core food group intake (NHMRC 1995). At the time the tables in Appendix 3 were prepared,

The Australian Guide to Healthy Eating (Smith et al 1998) had not been published, so *The Core Food Groups* (NHMRC 1995) were used.

Both grams/person/day and serves/person/day were included for core food group intake. Grams/person/day allows easy comparison with recommendations and increases the likelihood of detecting trends in intake. Serves/person/day allows easy interpretation of data for presentation in summary documents.

Food intakes comparing higher and lower-fibre varieties of breads and breakfast cereals and higher and lower fat-milk and spreads were chosen because:

- the NNS is the only recent survey which provides detailed data on food groups, and
- analysis of the national surveys to date does not allow easy interpretation of such data.

All data were to be weighted to the age and sex profile of the NSW population.

The ABS provided 22 'tables in common' for all States and offered 8 additional tables for each of the key States. Together with the three national publications, the State tabulations provide NSW with approximately one third of the data requested. Thus, there is a substantial amount of useful data available regarding NSW priorities which has not been analysed.

5.2.3 Needs for NHS data analysis for NSW

Data relating to breastfeeding and infant feeding, and the use of vitamin and mineral supplements, were collected as part of the 1995 National Health Survey. Depending on the extent to which the ABS disaggregate State data about these issues in their reporting of results from the survey, it may be worthwhile for the NSW Health Department to consider commissioning further analysis in this regard.

5.3 Analysis and dissemination of the data

5.3.1 Who will be responsible for analysing and preparing NSW data?

A considerable amount of data analysis and presentation design is needed for NSW to make optimal use of the data from the NNS.

Several options are available for these tasks:

1. The job could be 'outsourced' to a research organisation in NSW which has experience in analysis and presentation of data from dietary surveys, e.g., the Centre for Clinical Epidemiology and Biostatistics, University of Newcastle or the Department of Public Health and Community Medicine, University of Sydney.
2. It may be possible to negotiate with the National Food and Nutrition Monitoring Project, who have further NNS analysis as part of their work program, to undertake some limited analyses for NSW.

3. Another option is for the NSW Health Department to pay the ABS to produce additional tables. The ABS has indicated its willingness to carry out additional data analysis. However, this option would be relatively expensive and there may be delays given the current work program related to the NNS.
4. One of the recommendations made in this document for supporting future NSW monitoring initiatives is for the NSW Health Department to establish a partnership with a group with expertise in nutritional epidemiology and nutrition monitoring (refer to Section 2.1.2). Such a group could undertake the additional NNS analysis required.

Options 2 and 3 would require planning expertise from groups such as those described in options 1 and 4, to produce specifications for tables and to interpret and prepare reports on receipt of the tables.

Option 4, and to a lesser extent option 1, would build the capacity of the NSW Health Service to process large data sets such as the NNS to meet their own information needs.

5.3.2 How can the information best be presented and disseminated?

The State tabulations produced by the ABS are quite detailed and lack a summary and interpretation. Any analysis which the NSW Health Department commissions, beyond these ABS State tabulations, should similarly be presented in detailed tabular format. In addition, a more user-friendly mode of presentation will be required for all NSW NNS data. Following are some suggestions for making the NSW NNS data accessible to a wide audience, thus ensuring optimal use for policy and program development and evaluation:

1. A short report could be produced which contains key information from the ABS State tabulations and any further analysis beyond the ABS State tabulations, including graphical presentation and interpretation of data, similar to the style used in *Food and nutrition in New South Wales - a catalogue of data* (Stickney et al 1994). This report could be widely promoted through the NSW Nutrition Network, Area Health Promotion Units, Public Health Units and Area Executives.
2. The most important findings should be included in the *Chief Health Officer's Report* of the NSW Health Department.
3. Key points could be included in the NSW Health Department's *Public Health Bulletin*, and any newsletters and/or circulars which are distributed to Area Executives.

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Chapter 6: Recommendations for monitoring overweight and obesity in NSW

6.1 Why is it important to monitor overweight and obesity?

- To provide information on prevalence and trends.
- To provide information for policy makers and field workers, who when consulted, identified overweight and obesity as a priority issue for nutrition monitoring.
- To assess progress towards State cardiovascular disease goals and targets and Area Performance Contracts.
- To contribute to the overall information required for national monitoring of this significant problem.

6.2 Recommendations for monitoring overweight and obesity in NSW

Recommendations for standard methods for collecting, measuring and analysing data about overweight and obesity in NSW were part of the work of the NSW Food and Nutrition Monitoring Project. These recommendations and their rationale are described in detail in a separate report - *Recommendations for monitoring overweight and obesity in NSW* (NSW HD 2000). Main references used in the development of this report are included at the end of this chapter.

This report includes a review of the literature, current views about measurement, and **recommendations** regarding:

- what target groups to monitor,
- what and how to measure overweight and obesity,
- standards for classifying people as overweight or obese,
- how to sample a population to give a representative picture, and
- options for obtaining NSW information.

The report (NSW HD 2000) has been designed for :

- The **NSW Health Department** - including the Sun Exposure, Nutrition and Physical Activity Policy Unit; Health Promotion Branch; Research and Clinical Policy Branch and the Epidemiology and Surveillance Branch,
- **NSW Area Health personnel** - including Health Promotion and Public Health Unit personnel, Community Nutritionists, and Health Outcomes Councils, and
- **Others** interested in monitoring overweight and obesity, for example, the NHMRC and AIHW who are considering standardised methods for monitoring weight status and weight-related beliefs and practices.

6.3 Summary of recommendations

The rationale for the following recommendations is given in the full report on *Recommendations for monitoring overweight and obesity in NSW* (NSW HD 2000). These recommendations will need to be reviewed in light of recommendations from the Expert Working Group for Anthropometric Measurement as part of the National Obesity Strategy.

6.3.1 Recommended target groups

- men aged 25 - 40 years
- menopausal women
- Aboriginals
- children and adolescents
- older people
- people from low socio-economic groups
- people from non-English speaking backgrounds

6.3.2 Recommended measures

- weight
- height
- abdominal circumference - in the adult population
- socio-demographic information
- attitudes and practices related to weight management

6.3.3 Recommended indices derived from measurements

- Body Mass Index (BMI) - compare to cut-points for children and adults
- z-scores - compare to reference population for young children

6.3.4 How to measure overweight and obesity

The recommended methods for measuring weight, height and abdominal circumference are described in the protocols in (NSW HD 2000), adapted from the World Health Organisation (WHO) recommended protocols.

6.3.5 Recommended questions to obtain self-reported data

1. How tall are you without shoes?
_____ centimetres

or
_____ feet _____ inches
2. How much do you weigh without clothes or shoes?
_____ kilograms

or
_____ stones _____ pounds

6.3.6 The validation of self-reported data

The validity of self-reported data needs to be assessed at regular intervals by measuring weights and heights. Those who are overweight are more likely to under-report their weight and over-report their height. It also appears likely that the way people self-report their heights and weights may vary over time. The validation study of the NSW Health Survey data on heights and weights provides information on the accuracy of self-reported data using telephone methodology (refer to Section 2.2.1).

6.3.7 Self-reported data in children and adolescents

Until more information is available about the validity of self-reported heights and weights in this group, it is recommended that surveys of children and adolescents should **not** rely on self-reported weight and height as a means to determine weight status.

6.3.8 Measuring heights and weights in children and adolescents

Priority should be given to surveying weights and heights of children and adolescents on a routine basis, and disseminating results and planning actions to address problems identified.

6.3.9 Measured or self-reported abdominal circumferences

Until more information is available about the validity of self-reported abdominal measurements, only measured or self-measured (with clear instructions and tape provided) abdominal measurements should be conducted on the adult population.

6.3.10 Standards for classifying individuals and populations as overweight and obese in the general population

Commonly used categories for comparisons with past surveys are grouped as: ‘underweight’, ‘acceptable weight’, ‘overweight’ and ‘obese’.

Underweight	BMI < 20
Acceptable weight	BMI ≥ 20 <25
Overweight	BMI ≥ 25 <30
Obese	BMI > 30

To maintain consistency with the National Nutrition Survey, a further refined breakdown of categories is recommended (using a modified version of the latest recommendations by WHO).

Underweight BMI <18.5	(WHO grade 1, 2 and 3 thinness)
Normal weight	(report the two categories of cut-points separately to allow comparison with past data sets)
	18.5 ≥ BMI <20 (WHO normal range 18.5-24.99)
	20 ≥ BMI <25
Overweight	25 ≥ BMI <30 (WHO grade 1 overweight)
Obese	BMI > 30 (WHO grade 2 overweight 30.0-39.99, WHO grade 3 overweight 40.00)

Example of interpretation of BMI category: 25 BMI < 30 = 25.00 - 29.99.

Combine the ‘thin’ categories and 18.5 - < 20 of the normal category to provide an ‘underweight’ category for comparisons with past surveys.

6.3.11 Weight categories for use with the Aboriginal population

Until more information is available about the distribution of fat and its relationship with BMI in the Aboriginal population, the BMI categories recommended for the general adult population should be used for interpreting information about the Aboriginal population. Acknowledging the limitations of this weight classification, this information still provides a means of tracking change over time.

6.3.12 Weight categories for people from different ethnic backgrounds

There are no definitive BMI categories for use with people from different ethnic populations (though these are currently being researched). For the present, the BMI categories recommended for the general adult population should be used for people from different ethnic populations. Acknowledging the limitations of the weight classification for ethnic groups, the

information still provides a means of tracking change over time. If different BMI categories are eventually recommended, they are likely to vary between these groups.

6.3.13 Standards for classifying weights of children 0-8 years

Use the z-score definitions for classifying the weight status of children aged 0-8 years. Compare these to the National Center for Health Statistics/WHO reference population until improved international reference population data exists. The z-scores are:

For children of low weight:

- low weight for height: < -2 z-scores of the sex specific reference value for age
- (Represents degree of thinness or wasting)
- low weight for age : < -2 z-scores of the sex specific reference value for age
- (Represents degree of lightness or underweight)

For children overweight:

- high weight for age: $> +2$ z-scores of the sex specific reference value for age
- (Represents degree of heaviness or overweight)
- high weight for height: $> +2$ z-scores of the sex specific reference value for age
- (Represents degree of heaviness or overweight)

Based on the normal distribution of a population, the expected values for each of these -2 and $+2$ z-scores is 2.3%. If the z-score exceeds this amount then there is cause for concern.

6.3.14 Classifying weights of children 9-15 years

Reference data recommended for use:

1. Australian data derived from the Australian Health and Fitness Survey (Lazarus et al 1995). This provides a reference data set from an Australian population of children.
2. US reference data (National Health and Nutrition Examination Survey-I) (Must et al 1991) for comparisons to the National Nutrition Survey and international data.

‘At risk of overweight’: 85th percentile BMI and < 95 th percentile BMI (when BMI > 30) for age and sex of reference population (see above).

Overweight: 95th percentile for age and sex or BMI > 30 .

To indicate **thinness:** < 5 th percentile BMI.

6.3.15 Classifying weights of 16-24 year olds

Given the similarity of the US cut points in this age range to the adult recommended cut points, and the common use of 18-24 year old age group using adult cut points, it is recommended that weight classification for this age group be consistent with the general **adult weight classification**.

This recommendation should be reviewed as more population-based survey data becomes available, especially for the 16-17 year old age group.

6.3.16 Possible options to obtain weight status information about the NSW general population

- National Nutrition Survey
- New survey that measures weights and heights
- Self-reported data from the NSW Health Survey
- Measure weights and heights from a sub sample of the NSW Health Survey
- Women's Health Study - longitudinal survey, 1996- 2016
- Blue Mountain's Eye Study

6.3.17 Possible options to obtain weight status information about NSW children

- Include measured weights and heights in the Drug and Alcohol Survey
- Repeat the School Survey of Fitness and Physical Activity
- Regularly collect weights and heights of all schoolchildren to monitor overweight, obesity and growth

6.3.18 Presentation and analysis of data

Descriptive statistics:

For population / sample data report the following:

- mean
- median
- standard deviation
- standard error of mean
- 95% confidence intervals
- centile distribution

In adults:

- Report the above information by sex and 5-year age groups (where the sample permits).
- Report proportion of population classified as:
Underweight
Acceptable weight
Overweight
Obese

In adolescents:

- Report the above descriptive statistics by sex and year of age for BMI
- Report frequency of adolescents with BMI > 30.
- Report frequency of those considered at risk of overweight (85th percentile) relative to the reference data.
- Report frequency of those considered overweight (95th percentile) relative to the reference data.
- Report frequency of thinness (<5th percentile) relative to the reference data.

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