

validity tested among adults, are recommended for use in the children's survey. These questions, rather than two previously untested questions about number of serves consumed, are recommended because we have information about the validity of the frequency questions amongst adults. The question about custard consumption has not been included as previous use of this question indicates only 3% of respondents consumed custard daily, so it is not considered an important contributor to daily calcium intake. If survey space permits, the inclusion of the yoghurt and cheese questions may prove to be useful for monitoring dairy food consumption patterns among children of various ages. An appropriate validation study could assess the ability of these questions (along with the milk questions) to identify the proportion with low intakes of dairy foods and to track these over times.

7.4 Meats

In 2-15 years:

22. How often does [child] eat red meat, such as beef or lamb? Include all steaks, chops, roasts, mince, stir fries and casseroles.) Do not include pork or chicken.

Longer lists of meat types: Veal, Offal (liver, kidney), Mutton, Game (buffalo, crocodile, goanna, goat, hare, kangaroo, rabbit, snake, venison, wild boar)

_____ times per day
_____ times per week
_____ times per month
Rarely/never
I don't know/ can't say

23. How often does [child] eat meat products such as sausages, frankfurters, devon, ham, hamburgers or chicken nuggets?

Longer list: Salami, bacon, meat pies, sausage rolls, luncheon meats, delicatessen meats, meat paste, liver paste, pate, saveloys, cheerios, hot dogs, rissoles, canned meats, smoked chicken, other smoked meats.

_____ times per day
_____ times per week
_____ times per month
Rarely/never
I don't know/ can't say

Questions assess:	Lean red meat and processed meat intake.
Policy relevance:	Dietary guideline 3.3: include red meat and alternatives. Dietary guideline 3.6: limit saturated fat moderate total fat intake. Dietary guideline 3.7: Choose foods low in salt.
Source:	1996 DKIS (Riley et al 2001)
Modifications:	Changed ‘do you’ to ‘does [child]’. The list of meats used in the question has been changed to clarify wording (Q. 22) and to reflect types of meats consumed by children (Q.23) (Webb et al 2005). In addition a longer list of meats has been included, which are to be referred to if respondents ask about different types of meat, but are not required to be asked in the main question.
Validity:	Information comes from Riley et al 2001, from the Dietary Key Indicator Study in adults (DKIS).
Direct validity:	In Q. 22: those who stated they ate red meat at least daily consumed an average of 121g red meat a day, measured by the three day WFR, and those who reported they rarely or never ate red meat consumed an average of 8g red meat a day. In Q.23: those who stated they ate processed meats at least daily consumed on average 72g processed meats, measured by the three day WFR, and those who reported they rarely or never ate these meats consumed an average of 13g.
Indirect validity:	In Q.22: the frequency of red meat measured by the short questions was significantly associated with energy, protein, fat, saturated fat, iron and zinc intake, zinc density ($p<0.05$). In Q.23: the frequency of processed meat measured by the short questions was significantly associated with energy, protein, fat, saturated fat and zinc, negative association with iron density (not associated with iron content or zinc density), unlike the lean meat question.
Indicators:	Q.22: 1. Proportion who rarely or never eat meat 2. Proportion who usually consume red meat less than 3 times per week. Q.23 3. Proportion who rarely or never eat processed meat products. 4. Proportion who usually consume processed meat products 3 times a week or more.

Comments:

In preparation for the modification for these questions, we assessed the fat, saturated fat, iron, zinc and sodium content of meat types for portion sizes, reported by children (Webb et al 2005). The lean red meat question includes meat with fat content less than 3g per serve and iron and zinc content about 0.5 – 1.0 mg per serve. The processed meat question includes meats greater than 5g fat per serve and/or sodium content greater than 200mg per serve (based on serve sizes for 18 month olds).

There were a few meats which were difficult to assign to one category of questions: many ham products currently available have lower fat contents than other sources of processed meat, however, ham continues to have a high sodium content, and has been included in the processed meat question; sausage was relatively high in zinc and iron compared to other red meats, particularly as it is eaten in larger portion sizes, however it also contains high fat and sodium content, so was assigned to the processed meat question (see Appendix 5 for details about these meat products).

7.5 'Extra' foods and drinks

24. How often does [child] eat chips, French fries, wedges, fried potatoes or crisps?

_____ times per day
_____ times per week
_____ times per month
Rarely/never
I don't know/ can't say

25. How often does [child] have meals or snacks such as burgers, pizza, chicken, or chips from places like McDonalds, Hungry Jacks, Pizza Hut, KFC, Red Rooster or local takeaway food places?

_____ times per week
_____ times per month
Rarely/never
I don't know/ can't day

26. How many cups of soft drink, cordials, or sports drink, such as lemonade or Gatorade does [child] usually drink in a day? (1 cup=250ml. One can of soft drink = 1 ½ cups. One 500ml bottle of Gatorade = 2 cups)

_____ cups per day
_____ cups per week
Doesn't drink soft drink
Don't know
Refused

Question 24 assesses:	Usual intake of hot or cold fried potatoes.										
Source:	1996 DKIS										
Modifications:	Changed ‘do you’ to ‘does [child]’.										
Background:	The increasing prevalence of childhood obesity, suggests the importance of investigating food habits that may be related to weight gain. The Australian Guide to Healthy Eating identifies a group of foods high in fat and/or sugar as “extra foods”. These are energy dense, nutrient-poor foods, and it is suggested that these foods be consumed occasionally and/or in limited amounts. The greatest contribution of single foods in this class, to energy intake among 18 month old children have been found to be sweetened drinks, cereal based products (particularly biscuits), and hot chips (Webb et al 2005).										
Validity:	Information about validity comes from DKIS in adults (Riley et al, 2001). Direct validity: Those who reported eating fried potato at least once a day (3%), the mean intake was 166g and in those who reported rarely or never consuming fried potato, the mean intake was 25g (p<0.001). Indirect validity: Significant association with energy, fat and sat fat (p<0.001), e.g. <table border="0" style="margin-left: 40px;"> <tr> <td>Rarely/never</td> <td>26g sat fat</td> </tr> <tr> <td>1/mth-<1/wk</td> <td>31.6g</td> </tr> <tr> <td>1-2/week</td> <td>32.9g</td> </tr> <tr> <td>3/wk-<1/day</td> <td>35.9g</td> </tr> <tr> <td>≥1/day</td> <td>36.6g</td> </tr> </table>	Rarely/never	26g sat fat	1/mth-<1/wk	31.6g	1-2/week	32.9g	3/wk-<1/day	35.9g	≥1/day	36.6g
Rarely/never	26g sat fat										
1/mth-<1/wk	31.6g										
1-2/week	32.9g										
3/wk-<1/day	35.9g										
≥1/day	36.6g										
Indicators:	<ol style="list-style-type: none"> 1. Percentage who rarely or never eat fried potato. 2. Percentage who usually eat fried potato at least once per week. 3. Percentage who usually eat fried potato daily. 										
Question 25 assesses:	Frequency of take-away meals.										
Source:	DIAT survey; also Qld child health survey, WA adolescent survey.										
Modifications:	Original question used the following response categories: Never or rarely, less than once a week, about 1-3 times a week, about 4-6 times a week, once a day, 2 or more times a day.										
Validity:	No information										

Background:	Given the increasing prevalence of overweight and obesity amongst children, and the high fat content and energy density of these foods, this is likely to be an eating pattern requiring monitoring.
Comments	The response categories were changed to allow finer estimates of frequency, which may allow detection of change over time.
Question 26 assesses:	Quantity of sweetened beverage consumption.
Source:	NSW CHS 2001
Modification:	Compare to the CRASH survey question: How much soft drink does [child] usually drink each day? (include all types of soft drink including fruit flavoured drinks and 'sports' drinks but exclude fruit juice or plain water).
Validity:	No information
Background:	Identified as a high contributor to sugars intake, increasing as children become older (NNS 1995). The apparent consumption of carbonated and aerated beverages in Australia has increased from 87.4 litres per capita, in the late 1980's, to 113.0 litres per capita in 1998-1999.
Comments:	Use the information about quantity of soft drink consumed, and measure against other fluid intake: juice, milk, and water, and determine the displacement of drinks, compared to other drinks consumed. However, further investigation may indicate poor reliability to examine displacement of fluids, as different drinks may perform differently in relation to their accuracy of actual intake.

7.6 Other drinks

In 1-15 years:

27. How many cups of fruit juice does [child] usually drink in a day? (1 cup=250ml, a household tea cup or 1 large popper)

_____ cups per day

_____ cups per week

Doesn't drink juice

Don't know

Refused

In 2-15 years:

28. How many cups of water does [child] usually drink in a day? (1 cup=250ml, a household tea cup, 1 average bottle of water = 1 ½ cups)

_____ cups per day

_____ cups per week

Doesn't drink water

Don't know

Refused

29. What source of water does [child] usually drink?

Tap water

Filtered water

Bottled water

Don't know

Question 27 assesses: Quantity of fruit juice consumption.

Source: NSW CHS 2001

Validity: Validity information from Lymer and Gill 2003. In 18 month old children:

Comparison to one serve (250g)
 Direct validity: > 3 cups/day 290g 1.2
 2-3 cups/day 164g 0.7
 1-2 cups/day 133g 0.5
 <1/week-<1/day 97g 0.4
 rarely/never 45g 0.2
 p<0.0001

Indirect validity: Positive significant association with energy, carbohydrate, sugars, Vitamin C (p<0.05) (see Table 7.2 below):

Table 7.2: Measures of indirect validity of quantity of fruit juice short questions amongst 18 month old children.

Nutrient	>3 cups/day	2-3 cups/day	1-2 cup/day	<1/week - 1/day	Rarely/never	P for trend
Energy kJ	5113	4563	4354	4202	4098	0.0162
Carbohydrate g	155	135	127	124	122	0.0071
Sugars g	95	79	76	73	67	0.0073
Vitamin C mg	142	101	83	74	55	<0.0001

Background: Fruit juice is a high contributor to sugars intake amongst children and adolescents, possibly replacing other fluids such as milk and water. Fruit juice provided about 23% sugars and 6.5% energy in the diets of children 2-11 years (NNS 1995).

Indicators: 1. Proportion who consume no fruit juice.
 2. Proportion who report consuming greater than 2 cups of fruit juice per day.

Comments: In the validity study of fruit juice the amount consumed was much lower than that reported in the short questions in this cohort of 18 month old children. It would be useful to know more information about the validity of this question in older children. Nevertheless, it will be of interest to consider trends in fruit juice consumption, and the question can be used as a means to distinguish between lower and greater intakes.

Question 28 assesses:	Usual water consumption.
Policy relevance:	Dietary guideline 3.5.
Source:	New question.
Validity:	No information.
Background:	<p>There are no specific recommendations on the quantity of water required for children (though it is recommended adults drink 8 glasses of water every day). These questions, along with information about other fluids (juice, milk, sweetened drinks) may indicate the possibility of some fluids replacing others.</p> <p>Children who consume water may be less likely to consume sweetened drinks, which are associated with an increased likelihood of overweight and obesity (Gill et al 2004).</p>
Indicators:	<ol style="list-style-type: none"> 1. Proportion of children who consume no water. 2. Distribution of water consumption: <1 cup/day; 1-2 cups/day; 2-3 cups/day; > 3 cups /day. 3. Compare consumption with other drinks: milk, juice, sweetened drinks.
Question 29 assesses:	Source of water.
Policy relevance:	Dietary guideline 3.5.
Source:	New question (though note similar question in environmental section of CATI).
Validity:	No information.
Background:	Dietary guideline 3.5 notes the significant benefit of fluoridated water for the prevention of dental caries in deciduous and permanent teeth. There has been an emerging interest in the decreasing use of fluoridated water and the possible associated increase in dental caries.
Indicators:	<ol style="list-style-type: none"> 1. Proportion of children consuming tap water as main water source. 2. Proportion of children consuming filtered water as main water source. 3. Proportion of children consuming bottled water as main water source. <p>Examine associations with SR dental health.</p>

Comments:

The usefulness of this question needs further field testing and investigation. Some bottled water also has added fluoride, so this may complicate interpretation of the types of water. Additionally, parents may find it difficult to determine most commonly consumed source of water.

7.7 Food Security:

All

30. In the last twelve months, were there times that you ran out of food and couldn't afford to buy more?
- Yes
 - No
 - Don't know
 - Refused
31. How do you cope with feeding [child] when this happens?
(multiple response)
- 1. Parent/guardian skips meals or eats less
 - 2. Children/child skips meals or eat less
 - 3. Cut down on variety of foods family eats
 - 4. Seek help from relatives
 - 5. Seek help from friends
 - 6. Seek help from Government/ Social Security
 - 7. Seek help from welfare agencies
 - 8. Other [Specify] _____
 - 9. Don't know
 - 10. Refused
32. There are a number of agencies that can help with making sure your family has enough food. Would you like the phone numbers of these agencies?
- Yes Refer to list
 - No
 - Don't know
 - Refused

Questions assess:	Some aspects of food security.
Policy relevance:	NSW Health priority.
Source:	1995 NNS; NHS; adult CATI surveys.
Background:	<p>There are various dimensions to food insecurity and these include: quality of food, shortage of food, experiences of hunger, anxiety about food intake and risk of food insecurity among special groups (Marks et al 2001, Rychetnik et al 2003).</p> <p>NSW CHS 2001 asked a number of other questions about food security, however the respondents were generally uncomfortable about this level of questioning for this sensitive issue.</p>
Indicators:	<ol style="list-style-type: none"> 1. Proportion that ran out of food and couldn't afford to buy more at some time over the previous 12 months. 2. Most common coping mechanisms.
Comments:	<p>Further investigation of other questions are needed to reflect other dimensions of food insecurity. These questions will require extensive field testing. Questions used by other CATI groups (see Appendix A4.4 South Australian questions) need to be investigated for future use. Additionally, food security questions used in the USDA Food Consumption Surveys also includes some food security questions which have undergone validity testing (Palmer Keenan et al 2001).</p>

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Selected Annotated Bibliography

Field AE, Colditz GA, Fox MK et al. Comparison of 4 questionnaires for assessment of fruit and vegetable intake. *Am J Public Health* 1998; 88:1216-1218.

Objective: This study compared fruit and vegetable assessments derived from 4 self-administered questionnaires.

Methods: Among 102 adolescents, servings of fruits and vegetables assessed by 4 questionnaires (including those used in the YRBSS and the BRFSS) were compared with estimates from 24-hour recalls.

Results: The prevalence of consuming 5 or more servings of fruits and vegetables a day was underestimated by the questionnaires. Questionnaires asking subjects to recall their diet over the previous year were more effective in ranking subjects (r 's $>$ or $=$.42) than those assessing previous-day diet (r 's $>$ or $=$.30).

Conclusions: Brief assessments of fruit and vegetable intake are more useful for ranking subjects than for estimating prevalence of consumption of 5 or more servings per day.

Marks G, Webb K, Rutishauser I, Riley M. 2001. Monitoring food habits in the Australian population using short questions. Australian Food and Nutrition Monitoring Unit & Department of Health and Aged Care, Canberra.

This report makes recommendations about the selection and interpretation of short dietary questions for use in population health surveys to monitor aspects of food and nutrition. These recommendations are based on information from Rutishauser et al 2001, Riley et al 2001 and Webb et al 2001. It is intended as a guide to health planners, epidemiologists, nutritionists and others involved in nutrition monitoring and surveys. Priorities for further development and testing of questions are also identified. Many gaps exist in our knowledge of the validity and other aspects of the performance of short dietary questions such as suitability for use across population sub-groups, or measuring changes in food habits over time.

McPherson RS, Hoelscher DM, Alexander M, Scanlon KS, Serdula MK. Dietary assessment methods among school-aged children: validity and reliability. *Prev Med* 2000; 31: S11-S33.

Background. Assessing the diets of children presents unique methodological challenges. Validity and reliability studies of recalls, records, food frequency questionnaires (FFQs), diet histories, and observations among children were reviewed.

Methods. Forty-seven studies were published in peer reviewed English journals between January 1970 and April 1999 of children 5–18 years of age with a sample size of at least 30.

Results. Most of the 24-h recall validation studies assessed only a portion of the day, not a 24-h period, with higher agreements for meal versus complete day intake. Food records underestimated energy intake when compared to doubly labeled water. Few studies evaluated children's ability to complete records alone or to record an entire day. FFQs overestimated energy intake; however, validation standards may have over or underestimated intake or used different referent periods. Reliability studies were identified for FFQs and diet history; results showed higher energy intake in first compared to subsequent administrations. Limited data were available on age, ethnicity, and gender effects.

Conclusions. Correlations between the validation standard and dietary method were generally higher for recalls and records than FFQs. It was difficult to generalize the

validity and reliability results of dietary assessment methods because of discrepancies in study design, referent periods, and validation standards.

Riley M, Rutishauser IHE, Webb K. 2001. Comparison of short questions with weighed dietary records. Australian Food and Nutrition Monitoring Unit & Department of Health and Aged Care, Canberra.

This report assessed the performance of 16 short dietary questions from the NHMRC 1996 Tasmanian Food and Nutrition Survey with 3 day weighed food records. The performance of the questions among different population subgroups was also assessed. Subjects (n=794) included 20-65 year old Tasmanian adults and were randomly selected from the electoral roll. The short questions relating to frequency of intake and the response format used were found to provide useful information at a group level for the range of target foods and food categories examined. The performance of some questions varied between subgroups but the differences in performance were generally small.

Rutishauser I, Webb K, Abraham B, Allsopp R. 2001. Evaluation of short dietary questions from the 1995 National Nutrition Survey. Australian Food and Nutrition Monitoring Unit & Department of Health and Aged Care, Canberra.

This report presents the findings of an evaluation of six short dietary questions from the 1995 NNS. The objectives were to assess whether the response categories for each question discriminate between food and/or nutrient intakes (relative validity) and whether the performance for the total population was similar across the main population subgroups of interest (consistency). The comparative dataset was the 1995 NNS 24-hr recall data, completed by over 13,000 people, aged 2 years and over, randomly selected from the Australian population. The results (validity and consistency) ranged from poor to good depending on the question and recommendations were made for future use of the individual questions.

Webb K, Marks GC, Lund-Adams M, Rutishauser IHE, Abraham B. 2001. Towards a national system for monitoring breastfeeding in Australia. Australian Food and Nutrition Monitoring Unit & Department of Health and Aged Care, Canberra.

This report provides a detailed assessment of options for monitoring breastfeeding practices in Australia and includes a basic set of definitions and indicators for monitoring trends in breastfeeding rates in Australia. It also makes recommendations regarding methodological issues such as survey 'vehicles', age of children to be included, current practice vs retrospective practice, survey questions to measure indicators and procedures for data analysis.

Appendix 1:

Table A.1.1: Proportion of energy contributed by food groups to the diets of Australian children, by age and sex categories, NNS 1995

Selected major and sub-major food groups	2 to 11 years		12 to 18 years	
	Males	Females	Males	Females
Cereal and cereal products	20.1	19.4	19.7	19.2
Regular breads	10.6	10.3	9.4	10.6
B'fast cereals, single source	2.4	2.2	2.3	1.1
Pasta	1.8	2.2	2.0	2.2
Rice	1.6	1.6	1.7	2.0
B'fast cereals, mixed	2.6	2.0	3.1	2.1
Cereal-based products & dishes	16.2	15.2	15.8	16.2
Sweet biscuits	2.8	2.8	1.8	1.7
Savoury biscuits	1.5	1.3	0.8	0.9
Cakes, etc	3.5	3.5	2.5	3.5
Pastries	2.7	3.4	4.6	4.1
Mixed cereal dish	4.7	3.1	5.4	5.4
Fruit products	3.9	4.0	2.0	3.0
Pome fruit	1.5	1.5	0.8	1.4
Vegetables products	6.8	7.3	9.4	8.5
Potatoes	5.6	5.8	7.9	6.3
Milk products & dishes	18.5	18.4	15.8	14.1
Dairy milk	10.3	9.7	7.5	5.9
Cheese	2.1	2.2	2.3	2.4
Frozen milk products	3.3	3.1	3.7	3.3
Meat, poultry	9.2	9.1	11.2	11.7
Muscle meat	2.0	1.8	3.3	2.9
Poultry	1.1	1.2	1.8	2.0
Sausages	1.5	1.4	1.1	1.2
Mixed dish, red meat as main meat	1.7	2.2	2.5	2.8
Mixed dish, poultry as main meat	1.8	1.8	1.8	1.9
Fish & seafood	0.9	1.3	1.0	1.5
Snack foods	2.6	2.9	2.2	2.7
Potato snacks	1.3	1.6	1.3	1.5
Sugar products & dishes	2.4	2.0	1.8	2.0
Sugar, honey, syrups	1.0	1.0	1.2	1.2
Confectionery	3.8	4.4	3.5	4.3
Chocolate	1.8	2.4	2.3	3.2

Fats & Oils	3.3	3.2	2.9	2.8
Margarine	2.6	2.5	2.3	1.9
Savoury sauces & condiments	0.9	0.8	1.2	1.4
Non-alcoholic beverages	8.9	9.0	10.1	9.2
Fruit & vege juices	6.2	6.8	4.8	5.0
Soft drinks, fl min water & electrolyte drinks	2.6	2.2	5.2	4.1
Alcoholic beverages	-	-	1.2	1.0
Beers			0.7	0.3
Wines			0.2	0.1

This table only shows major and sub-major food groups contributing 1.5% or more to any age (including adults) by sex group. (Table 37.Nutrient Intakes, NNS 1995)

Table A1.2: Proportion of total fat from selected food groups to the diets of Australian children, by age and sex categories, NNS 1995

Selected major and sub-major food groups	2 to 11 years		12-18 years	
	Males	Females	Males	Females
Cereal and cereal products	6.1	5.8	5.7	5.9
Regular bread and rolls	3.3	3.0	2.9	3.3
Cereal-based products and dishes	19.3	18.1	20.0	20.0
Sweet biscuits	3.4	3.3	2.2	2.1
Savoury biscuits	1.8	1.4	0.9	0.8
Cakes, buns, muffins, scones, cake-type desserts	3.6	3.4	2.6	3.9
Pastries	4.1	5.4	7.1	6.3
Mixed dishes where cereal is the major ingredient	5.1	5.1	6.2	6.0
Vegetable products and dishes	8.2	8.6	11.8	9.8
Potatoes	7.5	7.7	10.5	7.8
Milk products and dishes	26.6	26.4	22.8	20.6
Dairy milk	14.9	13.9	10.1	7.9
Cheese	4.6	4.7	4.9	5.1
Frozen milk products	4.6	4.3	5.1	4.6
Meat, poultry and game products and dishes	14.9	14.0	17.5	18.0
Muscle meat	2.7	2.3	4.5	3.9
Poultry and other feathered game	1.9	1.9	2.7	3.1
Sausages, frankfurts and saveloys	2.9	2.6	2.1	2.3
Mixed dishes where beef or veal is the major component	2.4	3.1	3.9	4.1
Mixed dishes where poultry or game is the major ingredient	3.1	2.9	3.1	3.3
Fish and seafood products and dishes	1.1	1.7	1.2	1.9
Egg products and dishes	1.3	1.6	1.4	1.0
Snack foods	4.3	4.7	3.7	4.3
Potato snacks	2.3	2.8	2.3	2.5
Confectionery	3.6	4.2	3.6	4.8
Chocolate and chocolate-based confectionery	2.4	3.2	3.1	4.3
Seed and nut products and dishes	1.9	2.7	1.2	1.5
Nuts and nut products	1.9	2.7	1.1	1.5
Fats and oils	9.8	9.6	8.6	8.3
Dairy fats	1.6	1.8	1.4	1.8
Margarine	7.8	7.4	6.8	5.8
Savoury sauces and condiments	0.9	1.0	1.6	2.2
Salad dressings	0.3	0.6	0.9	1.1

This table only shows major and sub-major food groups contributing 1.5% or more to any age (incl adults) by sex group. (Table 40. Nutrient Intakes, NNS 1995).

Table A1.3: Proportion of saturated fat from selected food groups to the diets of Australian children, by age and sex categories, NNS 1995

Selected major and sub-major food groups	2 to 11 years		12-18 years	
	Males	Females	Males	Females
Cereal and cereal products	3.1	3.2	2.9	3.1
Cereal-based products and dishes	20.1	18.9	20.7	21.1
Sweet biscuits	4.2	4.1	2.9	2.8
Savoury biscuits	2.2	1.6	1.2	1.1
Cakes, buns, muffins, scones, cake-type desserts	3.2	2.7	2.4	3.7
Pastries	4.6	6.0	7.9	7.2
Mixed dishes where cereal is the major ingredient	4.6	2.9	5.4	5.4
Batter-based products	1.3	1.6	0.9	0.9
Vegetable products and dishes	6.3	7.1	9.6	7.8
Potatoes	6.0	6.7	9.1	6.8
Milk products and dishes	38.9	38.3	34.3	31.2
Dairy milk	22.2	20.6	15.4	12.1
Cream	0.3	0.8	0.7	1.4
Cheese	6.6	6.8	7.2	7.6
Frozen milk products	6.7	6.3	7.8	6.9
Other dishes	1.5	1.9	0.9	0.6
Flavoured milks	1.1	1.1	1.8	1.6
Meat, poultry and game products and dishes	12.8	11.8	14.9	15.2
Muscle meat	2.7	2.2	4.4	4.1
Poultry and other feathered game	1.2	1.3	1.8	2.2
Sausages, frankfurts and saveloys	2.9	2.6	2.1	2.3
Mixed dishes where beef or veal is the major component	2.1	2.6	3.4	3.4
Mixed dishes where poultry or game is the major ingredient	2.3	2.1	2.2	2.3
Fish and seafood products and dishes	0.7	1.1	0.8	1.1
Egg products and dishes	0.9	1.1	1.0	0.8
Snack foods	4.0	4.4	3.5	4.2
Potato snacks	2.2	2.7	2.3	2.5
Confectionery	4.8	5.7	5.1	6.9
Chocolate and chocolate-based confectionery	3.4	4.6	4.5	6.2
Fats and oils	5.5	5.7	4.9	5.3
Dairy fats	2.1	2.5	2.0	2.5
Margarine	3.5	3.0	2.8	2.4
Savoury sauces and condiments	0.7	0.6	0.9	1.4

This table only shows major and sub-major food groups contributing 1.5% or more to any age (incl adults) by sex group. (Table 41. Nutrient Intakes, NNS 1995).

Table A1.4: Proportion of sugars from selected food groups to the diets of Australian children, by age and sex categories, NNS 1995

Selected major and sub-major food groups	2 to 11 years		12-18 years	
	Males	Females	Males	Females
Cereal and cereal products	6.0	5.2	6.7	5.0
Regular bread and rolls	1.5	1.4	1.5	1.7
Breakfast cereals, mixed source	3.4	2.7	4.2	2.7
Cereal-based products and dishes	8.5	9.2	7.4	9.1
Sweet biscuits	2.4	2.4	1.7	1.7
Cakes, buns, muffins, scones, cake-type desserts	3.9	4.6	3.0	4.5
Pastries	0.5	0.8	1.1	1.4
Fruit products and dishes	11.9	12.4	6.5	9.9
Pome fruit	5.1	5.0	2.9	4.8
Citrus fruit	1.0	1.3	0.8	0.8
Stone fruit	0.6	0.6	0.3	0.8
Tropical fruit	2.8	3.0	1.2	1.3
Other fruit	1.1	0.9	0.7	1.3
Vegetable products and dishes	1.6	1.9	2.2	2.7
Milk products and dishes	21.6	21.0	19.9	17.6
Dairy milk	11.4	10.7	9.5	7.5
Yoghurt	1.2	1.5	1.0	1.8
Frozen milk products	5.7	5.3	6.7	5.8
Other dishes where milk or a milk product is the major component	1.9	2.1	0.9	0.7
Flavoured milks	1.2	1.2	1.8	1.6
Meat, poultry and game products and dishes	0.8	1.0	1.0	1.1
Sugar products and dishes	7.5	6.2	6.6	7.2
Sugar, honey and syrups	3.4	3.5	4.8	4.2
Jam and lemon spreads, chocolate spreads	1.6	1.1	0.8	1.0
Dishes and products other than confectionery where sugar is the main component	2.4	1.6	1.1	2.0
Confectionery	7.0	8.2	6.9	8.2
Chocolate and chocolate-based confectionery	3.0	4.0	4.1	5.3
Other confectionery	2.7	3.0	2.2	2.5
Savoury sauces and condiments	1.4	1.2	2.0	1.6
Non-alcoholic beverages incl water	31.9	32.0	39.0	34.8
Fruit and vegetable juices and drinks	22.2	23.9	18.4	18.5
Soft drinks, flavoured mineral waters and electrolyte drinks	9.8	8.1	20.6	16.2
Alcoholic beverages	-	-	0.3	1.1

This table only shows major and sub-major food groups contributing 1.5% or more to any age (incl adults) by sex group. (Table 46. Nutrient Intakes, NNS 1995).

Appendix 2

Table A2.1: Summary of information about short dietary questions recommended for use in population surveys, in children, using data from CAPS (Lymer and Gill 2003)■

Policy relevance	Question	Relative validity (direct)	Relative validity (indirect)																														
Eat plenty of vegetables, legumes and fruits. (DG 3.1; EW NSW; AGHE)	How many serves of fruit does your child usually eat each day? (a serve=1 small piece or ½ cup of diced pieces)	<p style="text-align: center;">Comparison to serve (75g)</p> Rarely or never 15g 0.2 ≤ 1 serve 62g 0.8 2-3 serves 100g 1.3 4+ serves 157g 2.1 p<0.0001	Positive association with fibre Rarely or never 6.2 ≤ 1 serve 7.2 2-3 serves 8.5 4+ serves 10.1 p<0.001																														
Eat plenty of vegetables, legumes and fruits. (DG 3.1; EW NSW; AGHE)	How many serves of vegetables does your child usually eat each day? (a serve=1/4 cup cooked vegetables or ½ cup of salad vegetables)	<p style="text-align: center;">Comparison to serve (37.5g)</p> ≤ 1 serve 42g 1.1 2-3 serves 67g 1.8 4+ serves 112g 3.0 p<0.0001	Positive associations with B-carotene and fibre <table style="width: 100%; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;">B-carotene</th> <th style="text-align: center;">fibre</th> </tr> </thead> <tbody> <tr> <td>≤ 1 serve</td> <td style="text-align: center;">865</td> <td style="text-align: center;">7.5</td> </tr> <tr> <td>2-3 serves</td> <td style="text-align: center;">1064</td> <td style="text-align: center;">8.4</td> </tr> <tr> <td>4+ serves</td> <td style="text-align: center;">3027</td> <td style="text-align: center;">12.2</td> </tr> </tbody> </table> p <0.0001 <0.0005		B-carotene	fibre	≤ 1 serve	865	7.5	2-3 serves	1064	8.4	4+ serves	3027	12.2																		
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≤ 1 serve	865	7.5																															
2-3 serves	1064	8.4																															
4+ serves	3027	12.2																															
Include milks, yoghurts, cheese and/or alternatives. (DG 3.4; AGHE)	How many cups of milk does [child] usually drink in day? (1 cup=250 ml, a household teacup)	<p style="text-align: center;">Comparison to serve (250g)</p> < 1 cup 124g 0.5 1-2 cups 277g 1.1 2-3 cups 454g 1.8 >3 cups 696g 2.8 p<0.0001	Positive associations with energy, fat, saturated fat, protein and calcium <table style="width: 100%; border: none;"> <thead> <tr> <th></th> <th style="text-align: center;">Energy</th> <th style="text-align: center;">Fat</th> <th style="text-align: center;">Sat fat</th> <th style="text-align: center;">Protein</th> <th style="text-align: center;">Ca</th> </tr> </thead> <tbody> <tr> <td><1 c</td> <td style="text-align: center;">4042</td> <td style="text-align: center;">38</td> <td style="text-align: center;">16</td> <td style="text-align: center;">35</td> <td style="text-align: center;">520</td> </tr> <tr> <td>1-2 c</td> <td style="text-align: center;">4204</td> <td style="text-align: center;">40</td> <td style="text-align: center;">20</td> <td style="text-align: center;">37</td> <td style="text-align: center;">606</td> </tr> <tr> <td>2-3 c</td> <td style="text-align: center;">4522</td> <td style="text-align: center;">44</td> <td style="text-align: center;">23</td> <td style="text-align: center;">41</td> <td style="text-align: center;">812</td> </tr> <tr> <td>>3 c</td> <td style="text-align: center;">4591</td> <td style="text-align: center;">48</td> <td style="text-align: center;">27</td> <td style="text-align: center;">46</td> <td style="text-align: center;">1023</td> </tr> </tbody> </table> p <0.05 <0.001 <0.0001 <0.0001 <0.0001		Energy	Fat	Sat fat	Protein	Ca	<1 c	4042	38	16	35	520	1-2 c	4204	40	20	37	606	2-3 c	4522	44	23	41	812	>3 c	4591	48	27	46	1023
	Energy	Fat	Sat fat	Protein	Ca																												
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<p>Include milks, yoghurts, cheese and/or alternatives. (DG 3.4; AGHE) Limit saturated fat and moderate total fat (DG 3.6)</p>	<p>What type of milk does [child] usually consume?</p>	<p>92% of children reported usual consumption of whole milk by SQ, which was confirmed by the WFR. Similarly, children reported to consume other milk by SQ, consumed other milk by WFR.</p>	<p>Children who usually consumed whole milk had higher intakes of saturated fat (23g vs 16g) and sugars (78g vs 57g) and lower intakes of iron (5.2mg vs 7.9 mg) compared to children who usually consumed other milks.</p>																																																								
<p>Eat plenty of vegetables, legumes and fruits. (DG 3.1; EW NSW; AGHE) Consume only moderate amounts of sugars and foods containing added sugars. (DG 3.8)</p>	<p>How many cups of fruit juice does [child] usually drink in a day? (1 cup=250 ml, a household tea cup or 1 large popper)</p>	<table border="0"> <tr> <td></td> <td colspan="2" style="text-align: center;">Comparison to serve (250g)</td> </tr> <tr> <td>Rarely/never</td> <td>45g</td> <td>0.2</td> </tr> <tr> <td>1c/w-<1c/d</td> <td>97g</td> <td>0.4</td> </tr> <tr> <td>1-2 c/d</td> <td>133g</td> <td>0.5</td> </tr> <tr> <td>2-3 cups</td> <td>164g</td> <td>0.7</td> </tr> <tr> <td>>3 cups</td> <td>290g</td> <td>1.2</td> </tr> <tr> <td colspan="3" style="text-align: left;">p<0.0001</td> </tr> </table>		Comparison to serve (250g)		Rarely/never	45g	0.2	1c/w-<1c/d	97g	0.4	1-2 c/d	133g	0.5	2-3 cups	164g	0.7	>3 cups	290g	1.2	p<0.0001			<p>Positive associations with energy, carbohydrate, sugars and vitamin C.</p> <table border="0"> <tr> <td></td> <td style="text-align: center;">Energy</td> <td style="text-align: center;">Carb</td> <td style="text-align: center;">Sugars</td> <td style="text-align: center;">Vit C</td> </tr> <tr> <td>Rarely/never</td> <td style="text-align: center;">4098</td> <td style="text-align: center;">122</td> <td style="text-align: center;">67</td> <td style="text-align: center;">55</td> </tr> <tr> <td>1c/w-<1c/d</td> <td style="text-align: center;">4292</td> <td style="text-align: center;">124</td> <td style="text-align: center;">73</td> <td style="text-align: center;">74</td> </tr> <tr> <td>1-2 c/d</td> <td style="text-align: center;">4354</td> <td style="text-align: center;">127</td> <td style="text-align: center;">76</td> <td style="text-align: center;">83</td> </tr> <tr> <td>2-3 cups</td> <td style="text-align: center;">4563</td> <td style="text-align: center;">135</td> <td style="text-align: center;">79</td> <td style="text-align: center;">101</td> </tr> <tr> <td>>3 cups</td> <td style="text-align: center;">5113</td> <td style="text-align: center;">155</td> <td style="text-align: center;">95</td> <td style="text-align: center;">142</td> </tr> <tr> <td>p</td> <td style="text-align: center;"><0.05</td> <td style="text-align: center;"><0.01</td> <td style="text-align: center;"><0.01</td> <td style="text-align: center;"><0.0001</td> </tr> </table>		Energy	Carb	Sugars	Vit C	Rarely/never	4098	122	67	55	1c/w-<1c/d	4292	124	73	74	1-2 c/d	4354	127	76	83	2-3 cups	4563	135	79	101	>3 cups	5113	155	95	142	p	<0.05	<0.01	<0.01	<0.0001
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DG: Dietary Guideline for children and adolescents in Australia, 2003

EW NSW: Eat Well NSW: strategic directions for public health nutrition, 2004

AGHE: The Australian Guide to Healthy Eating, 1998

P values are for trend analyses

Table A2.2: Summary of information about short dietary questions recommended for use in population surveys, in adults ■
(Table from Marks et al 2001)

Policy Relevance	Question	Relative validity (direct) food intake ratio [†]	Relative validity (indirect) nutrient intake ratio [†]	Comments
Dietary Guideline Number 2 (1.1) ^{5*} Eat Well Aus ³ Priority: Veg & Fruit AGTHE ⁴	How many serves of vegetables do you usually eat each day? <i>Source: 1995 NNS¹</i>	≤1serve 1 (204g/d) 2-3 serves 1.25 ≥4 serves 1.65 p<0.001	Vit A, Folate & Vit C ↑ All p<0.001 eg Provitamin A: ≤1serve 1 (2.6mg/d) 2-3 serves 1.4 ≥4 serves 1.9	Useful for: - trends since 1995 - when only limited no of questions possible - an indicator of total vegetable intake including potato - an indicator of provitamin A intake
Dietary Guideline Number 2 (1.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	How many serves of fruit do you usually eat each day? <i>Source: 1995 NNS¹</i>	≤ 1 serve 1 (70g/d) 2-3 serves 2.7 ≥4 serves 5.3 p<0.001	Vit A, Folate & Vit C ↑ All p<0.001 eg Vit C: ≤1serve 1 (110mg/d) 2-3 serves 1.25 ≥4 serves 1.75	Useful for: - trends since 1995 - when only limited no of questions possible - an indicator of fruit intake (excluding juice)
Dietary Guideline Number 2 (1.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	How often do you eat salad? (salad includes mixed green salad and other mixtures of raw vegetables) <i>Source: 1996 Dietary Key Indicators Study²</i>	<1/wk 1 (10.7g/d) 1/wk-2/wk 2.6 3/wk-<7/wk 5.2 ≥7/wk 8.15 p<0.001	No significant correlations with Vit A, Vit C or Folate	Useful as: - an indicator of salad intake - a component of total veg intake
Dietary Guideline Number 2 (1.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	Not counting potatoes and salad, how often do you eat cooked vegetables? <i>Source: 1996 Dietary Key Indicators Study²</i>	<1/wk 1 (12.8g) 1/wk-2/wk 3.9 3/wk-<7/wk 5.75 ≥7/wk 8.0 p<0.001	Only Provitamin A: p<0.001 <1/wk 1 (1.0 mg/d) 1/wk-2/wk 2.4 3/wk-<7/wk 2.8 ≥7/wk 3.7	Useful as: - an indicator of cooked vegetable intake - a component of total veg intake - an indicator of provitamin A intake

■ Information summarised from Rutishauser et al 2001 and Riley et al 2001.

¹ Australian Bureau of Statistics 1998.

² Riley and Rutishauser 1998.

³ SIGNAL 2001.

⁴ Smith et al 1998.

⁵ NHMRC 1992.

* Numbers in brackets are draft dietary guidelines recently circulated for public consultation (NHMRC 2001).

Table A2.2: Continued

Policy Relevance	Question	Relative validity (direct) food intake ratio [†]	Relative validity (indirect) nutrient intake ratio [†]	Comments
Dietary Guideline Number 2 (1.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	How often do you eat potatoes? (not including chips, French fries, wedges, fried potatoes or crisps) <i>Source: 1996 Dietary Key Indicators Study²</i>	<1/wk 1 (26g/d) 1/wk-<3/wk 1.25 3/wk-<7/wk 2.4 ≥7/wk 3.35 p<0.001	Only Provitamin A: p<0.001 eg Provitamin A: <1/wk 1 (2.7 mg/d) 1/wk-2/wk 0.95 3/wk-<7/wk 1.15 ≥7/wk 1.35	Useful as: - an indicator of intake of potato without added fat - a component of total veg intake
Dietary Guideline Number 2,3 (1.1,2.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	How often do you eat chips, French fries, wedges, fried potatoes or crisps? <i>Source: 1996 Dietary Key Indicators Study²</i>	Rarely or never 1 (25g/d) <1/wk 1.7 1/wk-2wk 3.0 3/wk-<7/wk 4.1 ≥7/wk 6.65 p<0.001	Energy, Fat, Sat Fat ↑ Vit A ↓ p<0.001 also tested Vit C and folate	Useful as: - an indicator of intake of potato with added fat - a component of total veg intake
Dietary Guideline Number 2 (1.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	How often do you drink fruit juices such as orange, grapefruit or tomato? <i>Source: 1996 Dietary Key Indicators Study²</i>	<1/wk 1 (19.3g/d) 1/wk-2/wk 2.8 3/wk-<7/wk 4.2 ≥7/wk 8.1 p<0.001	Vit A and Vit C : p<0.001 Rarely/Never 1 (85mg/d) <1/wk 0.95 1/wk-2/wk 1.05 3/wk -<7/wk 1.35 ≥7/wk 1.70	Useful as: - an indicator of fruit juice intake - a component of total fruit intake - an indicator of vitamin C intake
Dietary Guideline Number 2 (1.1) ⁵ Eat Well Aus Priority: Veg & Fruit AGTHE ⁴	Not counting juice, how often do you eat fruit? (fruit includes fresh, canned, frozen, dried) <i>Source: 1996 Dietary Key Indicators Study²</i>	Rarely/Never 1 (11.9g/d) <2/wk 4.15 2/wk-<7/wk 8.5 ≥7/wk 14.1 p<0.001	Vit A, Vit C , Folate: p<0.001 Rarely/Never 1 (63mg/d) <2/wk 1.65 2/wk-<7/wk 1.65 ≥7/wk 1.8	Useful as: - an indicator of fruit intake (excluding juice) - an indicator of vitamin C intake
Dietary Guideline Number 2 (1.2) ⁵ AGTHE ⁴	How often do you eat bread? (include bread rolls, flat breads, crumpets, bagels, English or bread type muffins) <i>Source: 1996 Dietary Key Indicators Study²</i>	< 1/day 1 (69g/d) 1<2/day 1.6 2<4/day 1.95 ≥4/day 2.35 p<0.001	Fibre & Thiamin ↑ p<0.001 CHO, energy ↑ P<0.01 eg Thiamin: <1/day 1 (1.3 mg/d) 1-<2/day 1.25 2-<3/day 1.3 mg ≥3/day 1.45 mg	Useful as: - an indicator of bread intake - a component of total breads and cereals - an indicator of thiamin intake

Table A2.2: Continued

Policy Relevance	Question	Relative validity (direct) food intake ratio [†]	Relative validity (indirect) nutrient intake ratio [†]	Comments
Dietary Guideline Number 2 (1.2) ⁵ AGTHE ⁴	How often do you eat breakfast cereal? (ready-made, home-made or cooked) <i>Source: 1996 Dietary Key Indicators Study²</i>	<2/wk 1 (4.9g/d) 2wk<7/wk 7.4 ≥7/wk 12.8 p<0.001	Fibre, Thiamin & CHO ↑ p<0.001 eg Fibre: <2/wk 1 (17.6 g/d) 2/wk-<7/wk 1.2 ≥7/wk 1.4 Energy - Not Significant	Useful as: - an indicator of breakfast cereal consumption - a component of breads and cereals
Dietary Guideline Number 2 (1.2) ⁵ AGTHE ⁴	How often do you eat pasta, rice noodles or other cooked cereals? (not including cooked breakfast cereal) <i>Source: 1996 Dietary Key Indicators Study²</i>	Rarely/never 1 (23g/d) <1/wk-<2/wk 2.0 2wk<7/wk 3.3 ≥7/wk 4.35 p<0.001	Only Fibre p<0.001 eg Fibre: Rarely/never 1 (18.4 g/d) <1-<2/wk 1.05 2/wk-<7/wk 1.2 ≥7/wk 1.25	Useful as: - an indicator of pasta/rice intake - a component of breads and cereals
Dietary Guideline Number 3 (2.1) ⁵ AGTHE ⁴	How often do you eat meat products such as sausages, frankfurters, devon, salami, meat pies, bacon or ham? <i>Source: 1996 Dietary Key Indicators Study²</i>	Rarely/never 1 (12.9g/d) <2/wk 2.3 2wk-<7/wk 3.95 ≥7/wk 5.6 p<0.001	Sat fat Protein, Energy, Zn, Total Fat, energy % ↑ All p<0.001 eg Sat fat (g) Rarely/never 1 (24.8g/d) <2/wk 1.25 2/wk<7/wk 1.4 >7/wk 1.35	Useful as: - an indicator of processed meat intake
Dietary Guideline Number 3,10 (1.3) ⁵ AGTHE ⁴	How often do you eat red meat? (beef, lamb, liver and kidney but not pork or ham) <i>Source: 1996 Dietary Key Indicators Study²</i>	Rarely/never 1 (7.8g/d) <2/wk 5.4 2wk-<7/wk 10.1 ≥7/wk 15.5 p<0.001	Zn, Protein, Energy, Fat All p<0.001 Iron p<0.01 eg Zinc (mg): Rarely/never 1 (8mg/d) <1/wk-<2/wk 1.15 2/wk<7/wk 1.35 >7/wk 1.60	Useful as: - an indicator of red meat intake - an indicator of zinc intake

Table A2.2: Continued

Policy Relevance	Question	Relative validity (direct food intake ratio) [†]	Relative validity (indirect nutrient intake ratio) [†]	Comments
Dietary Guideline Number 3 (1.4,2.1) ⁵ AGTHE ⁴	What type of milk do you usually have? <i>Source: 1995 NNS¹</i>	WM 212gWM* and 22gRF/SK* RF/SK 183gRF/SK* and 9gWM* p<0.001	Percentage energy from total and Sat Fat : p<0.001 ↑ WM ↓ RF.SK eg Sat Fat (%): Whole milk 13.9% Skim/Reduced fat milk 11.7%	Useful for: - an assessment of trend since 1995 - a measure of main type of milk used - an indicator of % energy from sat fat
Dietary Guideline Number 3 (1.4,2.1) ⁵ AGTHE ⁴	About how much milk (in total do you usually have in a day?) <i>Source: 1996 Dietary Key Indicators Study²</i>	<150ml 115g 150-300ml 203g 301-600ml 293g >600ml 419g p<0.001	Calcium: p<0.001 eg <150ml 1 (640mg) 150-300ml 1.2 301-600ml 1.35 >600ml 1.75 Protein and Energy not significant	Useful as: - an indicator of volume of milk intake - an indicator of calcium intake
Eat Well Aus ³ Priority: Vulnerable Groups EWA & NATSINSAP ³ Action Area: Food Supply and Food Access	In the last 12 months, were there times that you ran out of food and couldn't afford to buy more? <i>Source: 1996 Dietary Key Indicators Study²</i> <i>Source: 1995 NNS¹</i>	% responding yes: 5.2% All (20 to 65yrs) % responding yes: 5.2% (19yrs and over) Yes response related to the following measures of SES: Employment status, SEIFA, main source of income and type of housing eg: Pays rent 15.8% Paying off house 4.3% Home owner 1.6%	Energy, EI/BMR, no significant difference Vit C, Fe, Folate all significantly lower among 'yes' responders Ca significantly higher among 'yes' responders Meat and poultry, Fruit ↓ all p<0.001 Milk and dairy ↑ p<.01 For 'yes' responders eg Fruit Dishes (g/day): Ran out of food 91.8g Did not run out 146.1 g	Useful as: - an indicator of possible food insecurity in population-based surveys

WM= usually consumes whole milk based on short question and WM* = amount consumed in 24-hour recall.

RF/SK= usually consumes reduced fat or skim milk based on short question and RF/SK* = amount consumed in 24-hour recall.

[†] Intake of food/nutrient expressed as a ratio relative to the lowest response category – in effect, a 'dose response'

Appendix 3:

Information about the validity of fruit and vegetable questions used in NSW CHS 2001, as tested in the CAPS study of 18 month old children:

These questions are **not** recommended in future CATI surveys.

1. How many serves of fruit does [child] usually eat in a day, including fresh, canned and dried fruit? (1 serve=1/2 piece fruit, 1/3 cup canned fruit, 1 tablespoon of dried fruit)

Used in NSW CHS 2001. To compare the serves to recommended serves, the responses were halved. However, the serve prompts do not all equal 1/2 serve sizes. The validity data on 18 month old children indicates strong direct validity ($p < 0.0001$) and indirect validity for fibre (< 0.05). However, the question was not validity tested with the serve size references. This question includes a prompt for dried fruit, unlike other fruit questions, which limits comparisons with other short fruit questions. These serve size prompts are also likely to be too low for older children.

2. How many serves of salads or raw vegetables does [child] usually eat each day? (1 serve= 1/4 cup salad or 4 vegetable sticks)

Used in NSW CHS 2001.

Validity in 18 month children:

Direct validity $p < 0.0001$:

Rarely/never	0.1g
1/week-<1 day	1.4 g
1/d-2/d	1.8 g
>2/day	5.7 g

Note: very small quantities were consumed.

Indirect validity: no significant associations for nutrients.

3. How many serves of other cooked vegetables including potato does [child] usually eat in a day? (1 serve=1/4 cup cooked vegetables)

Used in NSW CHS 2001. Asked after the question about hot chips, this question implies that hot chips are excluded.

Validity in 18 month old children:

Direct validity $p = 0.0065$

<1/day	19.9g
1/d-2/d	27.1g
>2/day	38.3g

Indirect: significant trend for fibre $p = 0.0115$

4. How many serves of hot chips or French fries does [child] usually eat in a day? (1 serve=1/2 cup hot chips or French fries)

_____ serves per day
_____ serves per week
Doesn't eat chips
Don't know

Source: NSW CHS 2001

Validity: In 18 month old children: 40% reported consuming hot chips 'rarely or never' and 60% reported consuming hot chips at least once per week. Mean daily intake of those who reported at least once per week was 14g and in those who reported rarely or never 7g ($p=0.0026$). There were no significant correlations with nutrients, though there was a non-significant trend for higher fat intake amongst those who had a serve at least once per week, compared to rarely or never (45 g vs 42g fat, $p=0.076$). The alternate hot chip question about frequency of consumption is recommended instead of this question, because of ease of answering.

Appendix 4: Overview of short questions used in Australia and other western countries

A4.1 Australian Secondary Students Alcohol and Drug Survey (ASSAD), 1996, 1999

This is a national survey on the use of alcohol and drugs by secondary school children in Australia, with individual state components. The sample is designed to represent students from all types of schools, and provides national and state-specific estimates by age and gender. The survey has been administered in 1996 and 1999 in NSW school by the NSW Cancer Council in cooperation with NSW Health.

The core questionnaire covers the use of tobacco, alcohol, over-the-counter medicines and illicit substances. The NSW version of the survey has a range of additional health-related questions added to the base survey.

See more information:

Schofield, WN, Lovelace KS, McKenzie JE. Self-reported behaviours of NSW secondary school students – sun protection, physical activity, injury and eating patterns. *The 1996 Australian School Students' Alcohol and Drugs Survey*. NSW Cancer Council, NSW Department of Health, 1998.

NSW Health. The Cancer Council NSW. Self-reported behaviours of NSW secondary school students – sun protection, physical activity, eating patterns, and injury: the 1999 Australian School Students' alcohol and drugs survey (ASSAD). Draft unpublished report 2002.

Nutrition questions in ASSAD survey:

1. How many serves of vegetables do you usually eat each day? (A serve is equal to ½ cup of cooked vegetables or 1 cup of salad vegetables)
 - 1 serve or less
 - 2-3 serves
 - 4-5 serves
 - 6 serves or more
 - I do not eat vegetables

2. How many serves of fruit do you usually eat each day? (A serve is equal to 1 medium piece or 2 small pieces of fruit or 1 cup of diced pieces of fruit)
 - 1 serve or less
 - 2-3 serves
 - 4-5 serves
 - 6 serves or more
 - I do not eat fruit

3. How many serves of bread and/or cereal do you usually eat each day?
(A serve is 1 slice of bread, ½ bread roll, ½ cup breakfast cereal, or ½ cup pasta, rice or noodles).
 - 1 serve or less

- 2-3 serves
- 4-5 serves
- 6 serves or more
- I do not eat bread or cereals

Nutrition questions in ASSAD Supplement B

1. How many days per week do you usually have something to eat for breakfast?
(Tick one box only)

- Rarely or never
- 1-2 days
- 3-4 days
- 5 or more days
- I don't know

2. What type of milk do you usually have?

(Tick one box only)

- Whole milk (including flavoured milk and full-cream soy milk)
- Reduced fat milk (eg. Lite White, Farmer's Best, Hi-Lite, So Good Lite, Oak and reduced fat flavoured milk)
- Skim milk (including Shape)
- Evaporated or sweetened condensed milk
- None of the above
- I don't know

3. In the past week, how many times have you eaten meals that were bought from fast food outlets like McDonalds, Hungry Jacks, Pizza Hut, Kentucky Fried Chicken (KFC) Red Rooster, Burger King, hamburger shops and fish and chips shops?

(Tick one box only)

- None
- Once
- 2-3 times
- 4-5 times
- 6 times or more
- I don't know

4. Do you think of yourself as being too thin, about the right weight or too fat?

- Too thin (underweight)
- About the right weight
- Too fat (overweight)

5. Which of the following are you trying to do about your weight?

(Tick one box only)

- Lose weight
- Gain weight
- Stay the same weight

- I am not trying to do anything about my weight

A4.2 NSW Schools Physical Activity and Nutrition Survey (SPANS)

A self-completed survey of adolescents in years 8 and 10, conducted in 2004.

These questions are about the types of food that you eat each day, in a normal week.....

1. How much milk in total do you usually drink each day? (Please shade one circle only)
(Include all types of milk including flavoured milk, and milk on cereal)

- I don't drink milk (skip to question 3)
 Less than 150ml
 150-300ml (300ml is a small carton)
 301-600ml
 More than 600ml

2. What type of milk do you usually drink? (Please shade one circle only)

(If you usually use more than one type of milk mark the one you use most often)

- Whole
 Low/reduced fat
 Skim
 Evaporated or sweetened condensed
 Soy
 None of the above
 Don't know

3. How many serves of vegetables do you usually eat each day? (Please shade one circle only) (a serve=1/2 cup cooked vegetables or 1 cup of salad vegetables)

- I don't eat vegetables
 1 serve or less
 2-3 serves
 4-5 serves
 6 serves or more

4. How many serves of fruit do you usually eat each day? (Please shade one circle only)
(a serve = 1 medium piece or two small pieces of fruit or 1 cup of diced pieces)

- I don't eat fruit
 1 serve or less
 2-3 serves
 4-5 serves
 6 serves or more

5. How much soft drink do you usually drink in a day? (Please shade one circle only)
(include all types of soft drink including fruit flavoured drinks and 'sport' drinks but exclude any fruit juice or plain water)

- I don't drink soft drinks
 Less than 250 ml
 Between 250 and 400 ml
 Between 400 and 1 Litre

More than 1 Litre

6. How many slices of bread do you usually eat each day? (Please shade one circle only)
(a bread roll counts as two slices of bread)

- I don't eat bread
- 2 slices or less
- 3-4 slices
- 5-6 slices
- more than 6 slices

7. How often do you usually do the following? (Please shade one circle on each row)

	<i>Never or rarely</i>	<i>Less than once/week</i>	<i>About 1-3 times/week</i>	<i>About 4-6 times/week</i>	<i>Every day</i>
a. Drink pure or 100% fruit juice? (such as orange, apple, pineapple, grapefruit, tomato)					
b. Eat pasta or rice?					
c. Eat 'red' meat, including lamb, beef, pork, goat, minced meat?					
d. Eat chicken?					
e. Eat fish, including canned fish?					
f. Eat confectionery? (including chocolate, confectionery bars and lollies)					
g. Eat hot chips, French fries, wedges or fried potatoes?					
h. Eat potato chips or other salty snacks?					
i. Have something to drink for breakfast?					
j. Have something to eat for breakfast?					
k. Have something to drink for lunch?					
l. Have something to eat for lunch?					

8. How many days each week do you usually buy something to eat on the way to school? (Please shade one circle only)

- Never or rarely
- Less than once/week
- 1-2 times/ week
- 3-4 times/ week
- Every day

9. On school days, where do you usually get your lunch? (Please shade one circle only)

- I don't eat lunch
- I usually bring food from home
- Usually from vending machines at school
- Usually from the school canteen
- Usually from a shop near school
- Usually from a fast food outlet

10. How often each week do you usually buy the following meal or snack from the school canteen? (Please shade one circle only)

- a. Breakfast Never/rarely Once/week Twice/week Daily
- b. Recess Never/rarely Once/week Twice/week Daily
- c. Lunch Never/rarely Once/week Twice/week Daily

11. What kind of drink do you usually buy from the canteen? (Please shade one circle only) (if you buy more than one type of drink, choose the one you buy most often)

- I don't buy drinks from the canteen
- Water
- 100% fruit juice
- Soft drink
- Sport drink
- Milk (plain or flavoured)

12. What kind of drink do you usually buy from the school vending machine? (Please shade one circle only) (If you buy more than one type of drink, choose the one you buy most often)

- Our school doesn't have a vending machine
- I don't buy drinks from the vending machine
- Water
- 100% fruit juice
- Soft drink
- Sport drink
- Milk (plain or flavoured)

13. How many days each week do you usually buy something to eat on the way home from school? (Please shade one circle only)

- Never or rarely
- Less than once/week
- 1-2 times/week
- 3-4 times/week
- Every day

14. How many days each week do you usually do the following? (Please shade one circle on each row)

	<i>Never or rarely</i>	<i>Less than once/week</i>	<i>About 1-3 times/week</i>	<i>About 4-6 times/week</i>	<i>Every day</i>
a. Have something to eat for dinner (tea or the evening meal)					
b. Prepare or help prepare your dinner?					
c. Eat dinner with most of your family?					
d. Eat dinner in front of the television?					
e. Eat food from a fast food outlet (like McDonalds, KFC, Burger King)?					

15. Thinking about yesterday, how many times did you have a snack between your main meals? (Please shade one circle only)

- Not at all
- Once or twice
- 3-4 times
- 5-6 times
- 7-8 times
- More than 8 times

The survey also includes some other questions about attitudes to food.

A4.3. Queensland DIAT Survey of Older Primary and Adolescents

This survey questions older primary and adolescents about food habits, and has been developed by researchers at the University of Queensland (Coyne et al 2004). It uses questions derived from a number of sources around Australia, and these are shown on the right hand side of the questions (listed below); on the left of the questions is a summary of the rationale for the questions.

Early testing of the questions amongst children and their health worker parents indicated that there was generally one category or less difference between children's responses and their parent's responses (personal communication: T. Coyne 2004). The repeatability and validity of the questionnaire are currently being conducted amongst a wider cohort.

Foods I Usually Eat –Background Information about Questions

- 1 What is your FIRST and LAST NAME?

- 2 Are you a BOY or a GIRL? Boy Girl
- 3 What YEAR were you born? _____
What MONTH were you born? _____

We are interested to learn about your recent eating habits, for instance over the past month. For the following questions please answer how many times a DAY do you USUALLY eat these foods? Tick only one answer for each question.

SOURCE	QUESTION	RATIONALE
<p>4 AF&NM</p>	<p>How often do you eat bread? (This includes bread rolls, flat breads, bagels, English muffins or bread-type muffins.)</p> <p><input type="checkbox"/> Never or rarely <input type="checkbox"/> About 1-3 times a day <input type="checkbox"/> About 4-5 times a day <input type="checkbox"/> 6 or more times a day</p>	<p>BREAD & CEREAL 1/3 DIVERSITY-B&C 1/3</p>
<p>5 8th grade post survey</p>	<p>How often do you have butter or margarine on your bread or rolls?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Not very often <input type="checkbox"/> Sometimes <input type="checkbox"/> Almost always <input type="checkbox"/> Always</p>	<p>MODERATION-FAT 1/2</p> <p><i>*this question has not been evaluated.</i></p>
<p>6 AF&NM AAHMS</p>	<p>How much milk (in total) do you <u>USUALLY</u> drink each day? (include all types of milk including flavoured milk and milk on cereal.)</p> <p><input type="checkbox"/> I don't drink milk <input type="checkbox"/> Less than one cup <input type="checkbox"/> About 1 to 2 cups <input type="checkbox"/> About 2 to 3 cups <input type="checkbox"/> 3 cups or more</p>	<p>DAIRY 1/1</p> <p>DIVERSITY-DAIRY 1/2</p>
<p>7 AF&NM NNS95 CATI core AAHMS AusDiab Lighten UP Healthy Weight QH Child Health QH Infant Nutr</p>	<p>What type of milk do you <u>USUALLY</u> drink? (Choose one type of milk only)</p> <p><input type="checkbox"/> I don't drink milk <input type="checkbox"/> Whole milk (full cream) <input type="checkbox"/> Low or reduced fat milk (1 or 2% fat) <input type="checkbox"/> Skim (non fat) milk <input type="checkbox"/> Flavoured Milk (such as chocolate, strawberry) <input type="checkbox"/> Other type milk (such as soy, rice, goat) <input type="checkbox"/> Not Sure</p>	<p>FAT 1/3</p>
<p>8 AF&NM ESU bio NNS95 CATI core AAHMS AusDiab Lighten</p>	<p>How many serves of vegetables do you <u>USUALLY</u> eat each day? (A 'serve' is a half-cup of cooked vegetables or 1 cup of salad vegetables). This includes all fresh, dried, frozen and tinned vegetables.</p> <p><input type="checkbox"/> I don't eat vegetables <input type="checkbox"/> 1 serve or less <input type="checkbox"/> 2 serves <input type="checkbox"/> 3 serves</p>	<p>VEGETABLE 1/1</p>

Up QH Child Health
QH Infant Nutr
Bowen Base, 16

- 4 serves
 5 serves or more

9
AF&NM, NNS95,
ESU bio,CATI
core
AAHMS,
AusDiab
LightenUP,
Bowen Baseline,
QH Child health,
QH Infant Nutr,
16

How many serves of fruit do you USUALLY eat each day? (A 'serve' is 1 medium piece or 2 small pieces of fruit, or a cup of diced pieces). This includes all fresh, dried, frozen, and tinned fruit.

- I don't eat fruit
 1 serve or less
 2 serves
 3 serves
 4 serves or more

FRUIT 1/2

**DIVERSITY-
FRUIT 1/2**

10
created this

How much water do you USUALLY drink each day? This can be plain tap water, mineral water or bottled water.

- I don't drink water
 Less than one cup
 About 1 to 2 cups
 About 2 to 3 cups
 3 cups or more

**For the next questions, think about what you USUALLY eat each WEEK. Remember to think back to what you usually ate over the past month.
Tick only one answer for each question.**

11
AF&NM
AAHMS

How often do you drink 100% fruit juices such as orange juice or apple juice?

- Never or rarely
 Less than once a week
 About 1-3 times a week
 About 4-6 times a week
 Everyday

FRUIT 2/2

**DIVERSITY-
FRUIT 2/2**

12
created this

How often do you eat cheese or yoghurt?

- Never or rarely
 Less than once a week
 About 1-3 times a week
 About 4-6 times a week
 Everyday

**DIVERSITY-
DAIRY 2/2**

***this question
has not been
evaluated.**

13 AF&NM

How often do you eat breakfast cereal? (ready-made, home-made or cooked)

- Never or rarely
 About 1-3 times a week
 About 4-6 times a week
 Once a day
 2 or more times a day

**BREAD &
CEREAL 2/3**

**DIVERSITY-
B&C 2/3**

14 AF&NM

How often do you eat pasta, rice, or noodles?

- Never or rarely
 About 1-3 times a week
 About 4-6 times a week
 Once a day
 2 or more times a day

**BREAD &
CEREAL 3/3**

**DIVERSITY-
B&C 3/3**

15
AF&NMAAH
MS

How often do you eat red meat such as beef, mince, lamb, pork, or ham?

- Never or rarely
 Less than once a week

MEAT 1/3

DIVERSITY-

	<input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Everyday	MEAT 1/3
16 AAHMS	<p>How often do you eat chicken or fish?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> Less than once a week <input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Everyday	MEAT 2/3 DIVERSITY- MEAT 2/3 * this question has not been evaluated.
17 Healthy Weight	<p>How often do you eat baked beans, three bean mix, lentils, split peas, or dried beans?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> Less than once a week <input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Everyday	MEAT 3/3 DIVERSITY- MEAT 3/3 * this question has not been evaluated.
18 AF&NMAAH MS	<p>How often do you eat meat products such as sausage rolls, hot dogs, devon, salami, meat pies, or bacon?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> Less than once a week <input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Everyday	SAT FAT 1/1
19 HE, EFNEP	<p>How often do you eat eggs?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Once a day <input type="checkbox"/> 2 or more times a day	CHOLESTERO L 1/1 * this question has not been evaluated
20 AF&NM AAHMS	<p>How often do you eat chips, wedges, or French fried potatoes?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> Less than once a week <input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Once a day <input type="checkbox"/> 2 or more times a day	FAT 2/3 * this question has not been evaluated
21 QH Child health QH Infant Nutr WAAS	<p>How often do you have meals or snacks such as burgers, pizza, chicken, or chips from places like McDonalds, Hungry Jacks, Pizza Hut, Red Rooster or local take-away food places?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> Less than once a week <input type="checkbox"/> About 1-3 times a week <input type="checkbox"/> About 4-6 times a week <input type="checkbox"/> Once a day <input type="checkbox"/> 2 or more times a day	FAT 3/3 MODERATION -FAT 2/2 * this question has not been evaluated
22 AAHMS	<p>How often do you eat potato crisps or other salty snacks (such as Twisties, Corn chips)?</p> <input type="checkbox"/> Never or rarely <input type="checkbox"/> Less than once a week <input type="checkbox"/> About 1-3 times a week	MOD-SALT 1/1 * this question has not been evaluated

- About 4-6 times a week
- Once a day
- 2 or more times a day

23
AAHMS

How often do you eat sweets (such as sweet biscuits, cakes, pies, lollies or chocolates)?

- Never or rarely
- Less than once a week
- About 1-3 times a week
- About 4-6 times a week
- Once a day
- 2 or more times a day

**MOD-SUGAR
1/2**
***this question
has not been
evaluated**

24
Similar to
QH Child
Health 2001,
AAHMS

How often do you drink soft drinks, fizzy drinks or sports drinks like soda, cordial, Coke, Lemonade, Gatorade?

- Never or rarely
- Less than once a week
- About 1-3 times a week
- About 4-6 times a week
- Once a day
- 2 or more times a day

**MOD-SUGAR
2/2**
***this question
has not been
evaluated.**

25
created this

Are there any other foods that you usually eat that are not listed here?
If yes, what are those foods:

- 1 –AF&NMU – short questions recommended for use in population dietary surveys 2001
- 2 – ESU Bio – QH Epidemiology Services Unit evaluated using biomarkers-carotenoid and red cell folate
- 3 - NNS - 1995 National Nutrition Survey – ‘short questions’
- 4 - CATI TRG core – (Source: 1995 national Nutrition Survey)
- 5 -CATI TRG – optional – highly recommended (Source: Dietary Key indicators Study, 1996, NHMRC)
- 6 - QH Child Health 2001
- 7 - QH Infant Nutrition
- 8 - AAHMS 2004-01-09
- 9 – AusDiab – Qld extra questions
- 10 - Well Person Health Check
- 11 - Lighten Up –“in the last few weeks”
- 12 - Healthy Weight – Indigenous Weight loss program
- 13 - Western Australia Adolescent Survey – short questions
- 14 - Bowen Baseline Survey
- 15 – Healthy Eating Index (HEI)- Kennedy (1995)
- 16-Expanded Food and Nutrition Education Program (EFNEP) and Food Stamp Nutrition Education Program (FSNEP)
- 17- post 8th Grade Survey- M. Buzzard (2001)

A4.4 South Australian Food Security questions

South Australia Health Department asks four food security questions using CATI. The questions are similar to that used by NSW Health, but include some added dimensions and indicators of periodicity and psychological aspects of food insecurity, e.g. stress or anxiety.

The food security questions are:

1. In the last 12 months were there any times that the food you had bought just didn't last and you didn't have any money to buy more?
2. How often did this happen?
3. How do you cope with feeding your child/children when this happens? (asked only if answered yes to question 1).
4. In the last 12 months have you felt stressed because of not having enough money for food?

A4.5 US Youth Risk Behaviour Survey (YRBS)

The Youth Risk Behaviour Survey (YRBS) collects data on health related behaviours of American schoolchildren including selected dietary behaviours. It is based on self-reported data from schoolchildren in 9th to 12th grade (approximately 14-18 years old). The YRBS currently uses seven short questions to measure food choices; six of the questions address fruit and vegetable consumption, and one addresses milk consumption. The fruit and vegetable questions are similar to questions asked of adults on CDC 's Behavioral Risk Factor Survey (BRFSS). In addition, there are nine questions about body weight, including the recent addition of two questions to assess self-reported weight and height, in order to address increasing concerns about obesity. This has occurred, despite concerns about under-reporting obesity from the self-reported data, as it is believed this information will be useful to track trends over time (CDC rationale, 2005). A study to assess the validity of all self-reported behaviours of the YRBS has not been conducted (CDC 2004).

A study to assess the validity of all self-reported behaviours of the YRBS has not been conducted (CDC 2004), although issues associated with the validity of self-reported dietary questions have been discussed by Brener et al (2003). These include cognitive factors (such as recall difficulties) and situational factors (such as interviewing conditions).

In addition, the validity of similar short questions on fruit and vegetable intake used in the YRBS and BRFSS have been assessed by Field et al (1998). The 4-item YRBS asked about past day intake whereas the two 6-item questionnaires from the BRFSS asked about past day and past year intake. All questionnaires were found to significantly underestimate the proportion of subjects consuming at least 5 serves of fruits and vegetables. Questionnaires asking subjects to recall their diet over the previous year were more effective in ranking subjects ($r > 0.42$) than those assessing the previous day's intake ($r > 0.30$). Underestimation was primarily due to underreporting of vegetable intake, in particular vegetables consumed in mixed dishes. The authors concluded that brief assessments of fruit and vegetable intake are more useful for ranking subjects than for estimating the prevalence of consumption of 5 or more serves per day.

Dietary questions currently used in the YRBS:

The next 7 questions ask about food you ate or drank during the past 7 days. Think about all the meals and snacks you had from the time you got up until you went to bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

1. During the past 7 days, how many times did you drink 100%fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)
2. During the past 7 days, how many times did you eat fruit? (Do not count fruit juice.)
3. During the past 7 days, how many times did you eat green salad?
4. During the past 7 days, how many times did you eat potatoes? (Do not count french fries, fried potatoes, or potato chips.)
5. During the past 7 days, how many times did you eat carrots?
6. During the past 7 days, how many times did you eat other vegetables? (Do not count green salad, potatoes, or carrots.)
7. During the past 7 days, how many glasses of milk did you drink? (Include the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)

The response options for fruit and vegetable items are:

- A.I did not eat this food during the past 7 days
- B.1 to 3 times during the past 7 days
- C.4 to 6 times during the past 7 days
- D.1 time per day
- E.2 times per day
- F.3 times per day
- G.4 or more times per day

The response options for milk intake are:

- A.I did not drink milk during the past 7 days
- B.1 to 3 glasses during the past 7 days
- C.4 to 6 glasses during the past 7 days
- D.1 glass per day
- E.2 glasses per day
- F.3 glasses per day
- G.4 or more glasses per day

A4.6 Short questions about fruit and vegetables, reported in the literature:

Relatively few validation studies have been undertaken on short questions. Prochaska and Sallis (2004) developed a brief, 2-item self-administered measure to assess adolescents' fruit and vegetable consumption on a typical day, using the following questions:

In a typical day, how many servings of fruit do you eat?

A serving is equal to:

- *1 medium piece of fruit*
- *½ cup of fruit salad*
- *¼ cup of raisins, apricots or other dried fruit*
- *6 oz of 100% orange, apple or grapefruit juice*

(Do not count fruit punch, lemonade, Gatorade, Sunny Delight or fruit drink)

Answer from 0, 1, 2, 3, 4 or more

In a typical day, how many servings of vegetables do you eat?

A serving is equal to:

- *1 medium carrot or other fresh vegetable*
- *1 small bowl of green salad*
- *1/2 cup of fresh or cooked vegetables*
- *¾ cup of vegetable soup*

(Do not count French fries, onion rings, potato chips, or fried okra)

Answer from 0, 1, 2, 3, 4 or more

This measure was found to be reliable and significantly correlated with 3-day food record data (not weighed). Correct classification and specificity were good (both 63%), indicating the measure's ability to correctly classify adolescents not meeting the 5-a-day guideline. Sensitivity, however, was low at 33%, indicating that some participants said to be achieving the guideline, were actually misclassified (Prochaska and Sallis, 2004).

Other validation studies of brief adolescent fruit and vegetable measures include studies by Cullen et al. (1999), Domel et al. (1994), and Baranowski et al. (1997). A 24-item FFQ compared with a 24-hour recall among middle-school youth found a mean discrepancy in reported consumption of 2.8 servings per day with a Spearman $r=0.34$ to 0.51 (Cullen et al., 1999). A 15-item FFQ evaluated against a 7-day food record with fourth to fifth graders produced correlations below 0.10 (Domel et al., 1994). A 7-item FFQ with third grade students' (≈ 9 year olds) provided much higher estimates of serves of fruit and vegetables,

compared to food records; 50.9 serves per week (FFQ) vs 15.9 per week (food record) (Spearman $r=0.22$) (Baranowski et al, 1997).

Appendix 5:

Meat intake among Australian children

Background

Young children tend to have low intakes of meat and low intakes are associated with low intakes of iron and zinc and with poor iron status.

CAPS Study (Webb et al 2005):

- n=429 children aged 16-24 months
- 3-day WFR, used NUTTAB95 (version 3) database
- meat was consumed, on average, just over once a day.
- 97% of children ate some meat during the study period
- The 30 most commonly eaten meats (and foods containing meats) are listed below and accounted for 66% of all meats consumed
 - beef mince, regular
 - chicken McNuggets
 - beef sausage, grilled
 - leg ham (lean only)
 - devon/fritz
 - chicken breast, baked (lean and skin)
 - Frankfurt, simmered
 - Hamburger/cheeseburger McDonalds
 - Chicken breast, baked (lean only)
 - Bacon breakfast rasher, fried
 - Chicken breast quarter rotisserie (l&s)
 - Chicken unspecified, baked (l&s)
 - Leg ham (l&f)
 - Chicken drumstick baked (lean only)
 - Sausage roll (individual)
 - Shoulder ham (l&f)
 - Chicken roll
 - Infant dinner (pasta, beef and tomato)
 - Beef, unspec, lean
 - Pizza supreme
 - Meat pie (individual)
 - Chicken unspec rotisserie (l&s)
 - Infant dinner (chicken and vegetable)
 - Pizza thick crust commercial
 - Infant dinner (steak and vegetable)
 - Ham, unspec (l&f)
 - Lamb, unspec (l&f)
- Foods classified as red meats (beef, lamb and organ meats) were consumed less than either white meats (pork, chicken) or processed meats (sausages, bacon, ham, deli meats).
- 58% of children had consumed red meat during the study period, compared to 62% who had consumed white meat and 54% processed meat.

- An average portion of red meat (29 g) contributed significantly less total and saturated fat, cholesterol and sodium and significantly more iron and zinc than a portion of white (38 g) or processed meat (28 g)

Baghurst et al, 2000:

- Red meat refers to beef, veal and lamb (not offal)
- White meat refers to pork, cured pork products, poultry, fish and seafood
- Meat cuts refer to steak, chops, roasts, chicken breast or thigh, fish fillet or minced or chopped without additions, eg meat patties
- Meat dishes and products refer to sausages, pies, casseroles, hamburgers, curries, stir fries, pasta, rice dishes and frozen dinners, tortilla, dim sim, meatloaf, spreads and pastes, gravy, stock and soup
- The NNS reported over 60% of young children (2-15 y) ate some red meat on the day of the survey
- Children aged 2-3 y consumed a mean of 25g red meat per day. This intake increased with age until adolescence. Boys continued to increase their intake until early adulthood (88g), whereas intake in girls peaked at 12-15 y (45g). This is a reflection of smaller portion sizes rather than fewer women consuming red meat.
- In early childhood (2-7 y), meat cuts (as opposed to meat products and mixed dishes) made up approx one third of red meat consumption but by adolescence (12-15 y) and into adulthood, cuts provided over half the red meat.
- The most popular red meats for children aged 2-11 y were sausages and processed meat (21-39%), stews, casseroles and curries (12-23%) and steak (6-14%) (see Table 8)
- In children aged 2-15 y, red meat contributed to 50% of total MFP (see Table 9)
- Schoolchildren under 8y consume 9-13% of meat outside the home, and preschool children consume 4% of their red meat at childcare centres.
- 85-95% of 2-15 y children consumed MFP on NNS day
- 61-74% of 2-15 y children consumed red meat on NNS day (see Table 10)
- 50-60% of red meat was consumed at dinner time by 2-15 yo and 30-40% was consumed at lunch
- the contribution of red meat to nutrient intake across age groups mirrored the consumption patterns with its contribution rising in early childhood and peaking in early adolescence for females but in early adulthood for males.
- In 2-15 yo, red meat contributes 10-14% of iron (51-58% of haem iron), 20-28% of zinc, 3-5% of energy, 5-7% of fat, and 4-6% of saturated fat.

Nutritional values of Australian meats

	Energy	Fat	Na	Fe	Zn
Beef					
Boneless, unspec, ck	827	8.3	59	3.1	6.4
Chuck steak, si	911	8.1	48	3.7	11.3
Fillet steak, gr	863	9.6	59	4.0	4.4
Rump steak, gr	804	6.7	54	3.9	5.2
Skirt steak, si	790	4.9	66	2.8	10.05
Topside roast, bkd	678	6.3	56	2.4	3.9
Mince, regular	764	9.8	57	2.3	5.2
Mince, lean, dry frd*	731	7.9		3.0	5.2
Sausage, regular, gr	1070	18.2	930	2.4	3.7
Sausage, lean, gr	556	8.0		1.6	Na
Lamb					
Boneless, unspec,ck	906	10.9	79	2.4	4.8
Chump chop, gr	941	10.8	75	3.4	4.6
Midloin chop, gr	1000	15.2	94	2.4	3.1
Leg, bkd	795	7.3	66	2.5	4.7
Shank, si	850	7.7	81	3.4	9.4
TrimLamb topside steak, gr*	745	5.7		3.7	4.8
TrimLamb round roast, mw*	639	5.2		2.8	6.2
Veal					
Boneless, unspec, ck	668	3.9	80	2.0	3.7
Shank, si	684	4.7	96	2.0	5.8
Leg steak, fr	647	3.1	81	2.1	3.3
Offal					
Liver, beef, si	923	11.7	70	6.5	5.3
Liver, lamb, fr	1010	13.7	100	11.1	5.0
Kidney, beef, si	566	2.7	110	7.6	2.7
Kidney, lamb, si	611	4.3	200	11.4	3.9
Kangaroo, stk, gr					
	556	1.2		4.2	3.2
Rabbit, stw					
	712	5.7		1.3	2.1
Pork					
Boneless, unspec, ck	872	10.3	61	1.3	2.9
Butterfly steak, gr	797	8.4	48	1.2	1.8
Forequarter chop, gr	976	14.4	77	1.5	4.1
Leg steak, gr	654	3.7	62	1.3	2.8
Leg, bkd	948	11.4	49	1.5	3.0
Medallion steak, gr	936	11.2	74	1.3	2.8
Sausage, gr	1190	21.7	950	1.6	2.4

Chicken					
Boneless, unspec, bkd	783	8.1	82	0.9	1.7
Breast, bkd	660	4.8	63	0.6	0.8
Drumstick, bkd	873	10.6	96	1.2	2.4
Unspec, rotiss, l&s	1010	15.4	185	0.9	1.0
KFC, unspec	1300	22.3	525	1.2	1.3
Chicken McNuggets	1180	18.2	370	0.9	1.0
Processed foods					
Bacon, middle, gr	1090	14.4	2300	1.2	3.4
Ham, non-canned, unspec	524	6.8	1390	1.3	2.1
Ham, leg, ln	453	3.6	1580	1.3	2.2
Salami, unspec	1800	37.6	1460	2.4	4.1
Devon/fritz	981	18.2	780	2.3	2.1
Chicken roll	665	9.3	745	0.8	0.5
Frankfurt, si	1040	19.9	770	2.3	2.4
Meat pie, ind	947	13.8	600	1.3	0.7
Sausage roll, ind	1200	17.7	630	1.4	1.0
Hamburger, plain	936	10.2	660	1.7	2.0
Hamburger, Jrnburger	1120	11.1	190	3.0	Na
Hamburger, Big Mac	1150	14.8	530	3.1	Na
Liverwurst	1380	28.8	770	4.4	2.9
Meat paste	861	13.9	870	2.6	1.9
Pate de foie	1240	24.7	970	9.3	3.6
Infant dinners					
Steak and veg, jn	323	2.5		0.8	1.2
Chicken and veg, cn	263	1.2		0.7	0.8
Pasta, beef and tomato, jn	341	2.5		1.1	1.7
Chicken noodle, jn	276	1.4		0.7	1.2

All values are from Nutritional Values of Australian Foods, ANZFA, 2001 unless otherwise indicated

Meat cuts chosen are 75% trimmed or lean (no fat or skin), unless otherwise indicated

*MLA data

Nutritional values of Australian meats based on portion sizes consumed by 18 months (Webb et al 2005)

	Portion (g)	Energy	Fat	Na	Fe	Zn
Beef						
Boneless, unspec, ck	21	174	1.7	12	0.7	1.3
Mince, regular	27	206	2.6	15	0.6	1.4
Sausage, regular, gr	42	449	7.6	391	1.0	1.6
Lamb						
Boneless, unspec,ck	15	136	1.6	12	0.4	0.7
Chicken						
Boneless, unspec, bkd	26	204	2.1	21	0.2	0.4
Drumstick, bkd	39	340	4.1	37	0.5	0.9
Unspec, rotiss, l&s	33	333	5.1	61	0.3	0.3
Chicken McNuggets	48	566	8.7	177	0.4	0.5
Processed foods						
Bacon, middle, gr	12	131	1.7	276	0.1	0.4
Ham, leg, ln	15	68	0.6	237	0.2	0.3
Devon/fritz	24	235	4.4	187	0.6	0.5
Chicken roll	18	120	1.7	134	0.1	0.1
Frankfurt, si	39	4.6	7.8	300	0.9	0.9
Meat pie, ind	45	426	6.2	270	0.6	0.3
Sausage roll, ind	57	684	10.1	359	0.8	0.6
Hamburger, Jnrburger	57	638	6.3	108	1.7	na

All values are from Nutritional Values of Australian Foods, ANZFA, 2001 unless otherwise indicated

Meat cuts chosen are 75% trimmed or lean (no fat or skin), unless otherwise indicated

*MLA data

Original questions:

1. How often do you eat red meat? (beef, lamb, liver and kidney but not pork or ham). (In this category include all minimally processed forms of red meat such as chops, steaks, roasts, rissoles, hamburgers, mince, stir fries and casseroles).

- This question (validity tested using DKIS) showed an association between the frequency of red meat consumed and energy, protein, fat, sat fat, iron, zinc and zinc density in adults.

2. How often do you eat meat products such as sausages, frankfurters, devon, salami, meat pies, bacon or ham?

Suggestions for updated meat questions:

1. How often does <child> eat red meat such as beef, or lamb? Include all steaks, chops, roasts, mince, stir fries, and casseroles. Do not include pork or chicken.

Longer list: Veal, Offal (liver, kidney), Mutton, Game (buffalo, crocodile, frog, goanna, goat, hare, kangaroo, possum, rabbit, snake, venison, wild boar, witchetty grubs)

- This question includes all minimally processed red meats.
- Fat content of these meats is generally below 10g/100g (assuming 75% trimmed or lean cuts)
- The iron content of beef, veal and lamb range from 2.0-4.0 mg/100g with a haem iron content of approx 55-60%.
- The zinc content for beef, veal and lamb range from 3.0-11.3 mg/100g
- The fat content per median serve size is below 3g/ serve
- The sodium content is less than 50mg per serve
- The iron content is about 0.5mg and the zinc content about 1mg per serve.

2. How often does <child> eat meat products such as sausages, frankfurters, devon, ham, hamburgers or chicken nuggets?

Longer list: frankfurters, salami, bacon, chicken roll, luncheon meats, delicatessen meats, meat paste, liver paste, pate, meat pies, sausage rolls, hamburger, saveloys, cheerios, hotdogs, rissoles, chorizo, canned meats, smoked chicken, other smoked meats

- This question asks about processed meats high in fat and saturated fat and/or sodium. Fat contents range from 10g/100g for plain hamburgers to 38g/100g for salami;
- The fat content per median serve size is generally above 5g/serve (except ham);
- The sodium content is generally above 200mg/serve;

- The iron content is generally <0.5g/serve and the zinc content is generally <1.0mg/serve;
- Chicken nuggets, sausage rolls and hamburgers have been added to the main list;
- The fat content of ham is quite low (approx 4-7%), however it has a high sodium content and has been included in the list of processed foods.
- Sausages have been retained in processed meat category as they are high in fat and sodium content, however, they also contain higher quantities of iron and zinc, unlike most of the other processed meats.

Appendix 6:

Table 6.1: Soy milks available in New South Wales

Brand name	Manufacturer	KJ/ 100 g	Fat/ 100 g	Ca/ 100 g
Full fat				
So Good*	Sanitarium	270	3.4	120
So Good Chocolate flavour		310	3.2	115
So Good Vanilla flavour		320	3.2	115
Organics Simply Soy		210	3.1	120
So Natural Original	So Natural Foods Aust	250	2.9	nf
So Natural Calci Forte		287	2.9	120
Smooth White		264	3.4	120
Smooth White, White choc		408	5.6	120
Soy Life Original*	Parmalat Aust	291	3.4	120
Vitasoy Creamy Original	Vitasoy Austr Products	271	3.0	nf
Vitasoy Calci-plus*		269	3.0	120
Vitasoy So Milky Regular*		220	3.0	120
Sungold Soy drink	Dairy Farmers	266	3.4	120
Nature's Soy Certified Organic	Pure Harvest	280	2.9	120
Soy Goodness	Hillcrest, ALDI	265	3.3	96
Homebrand Soy drink	Woolworths	293	4.7	120
Coles Regular Soy drink	Coles	200	3.1	96
Modified fat				
So Good Lite*	Sanitarium	170	0.9	120
So Good Fat Free		150	0	120
So Good Essential*		220	1.5	150
So Good Soyachino		240	1.5	115
So Natural Light	So Natural Foods Aust	230	1.5	120
Vitalife Low fat		213	1.5	120
Soy Life Low fat*	Parmalat Aust	194	0.9	120
Vitasoy Light Original	Vitasoy Austr Products	118	0.7	nf
Vitasoy Calci-plus high fibre		202	1.5	120
Vitasoy So Milky Lite*		159	1.5	120
Vitasoy Lush Chocolate		306	1.5	120
Vitasoy Vanilla Delite		257	1.8	nf
Coles Lite Soy drink	Coles	140	1.5	96

* also available as fresh, refrigerated product

nf not fortified