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Enquiries about this publication should be directed to Cathy Baker, Epidemiology Branch, Building 5 level 1, The Canberra Hospital, PO Box 11, Woden ACT 2606, or via email to cathy.baker@act.gov.au or healthinfo@act.gov.au.

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FOREWORD

Physical activity and nutrition are key components for young people's healthy development and wellbeing. Children who are not sufficiently active and who do not have a proper diet are at risk of becoming overweight or obese.

In the past few decades the prevalence of childhood overweight and obesity has increased markedly in many parts of the world, including Australia. Childhood obesity is a major public health concern because it is hard to treat and has adverse physical and psychological outcomes both in the short and long term with many overweight and obese children becoming obese in adulthood.

The ACT Year 6 Physical Activity and Nutrition Survey (ACTPANS) was administered throughout primary schools within the ACT for the first time in 2006. Its aim was to provide information on a range of healthy weight priority areas in ACT year 6 children, including weight status, participation in physical activity, eating patterns and environments, attitudes and psychosocial outcomes.

This report presents results from the second ACTPAN survey conducted in 2009 as well as describing trends in healthy weight indicators since the 2006 survey.

Results from the latest ACTPANS show some encouraging trends; notably that the proportion of overweight or obese Year 6 children in the ACT has plateaued, overall physical activity has increased, and children are eating more fruit, but less calories from fast-foods and energy dense foods.

The findings also highlight areas where further health gains could be achieved. In 2009 fewer children walked or cycled to and from school and time spent on sedentary activities (e.g. computer games, internet and television viewing) increased, particularly for boys. In addition, children are eating fewer vegetables and drinking coke and other sugary drinks regularly.

More detailed findings can be found in this report.

The ACT Government is committed to taking action to improve the health of children in the ACT. The results from the ACTPANS will help inform initiatives targeting childhood overweight and obesity, and will guide future policy and programs aimed at promoting physical activity, good nutrition and healthy weight in children.

Katy Gallagher MLA
Minister for Health

KEY FINDINGS

1.1. Physical activity

General physical activity

- Over 1 in 5 children (22.6%) reported being moderately to vigorously physically active for at least 60 minutes every day, indicating that only a minority of children met the Australian Government Physical Activity Recommendations.
- The proportion of children that reported being moderately to vigorously active for at least 60 minutes every day increased in 2009 to 22.6% compared to 19.0% in 2006 ($p<.05$).

Physical activity at school

- Almost one third of Year 6 students reported being moderately to vigorously physically active at school outside of class time (lunch-time, recess and PE classes) for four hours or more a week in 2009 (30.0%) and 2006 (31.1%). In 2009, children were more likely to report being physically active for two to three hours a week at school (36.1%) than in 2006 (28.9%) ($p<.01$).

Physical activity outside of school

- Sixty-one percent of children reported being physically active outside of school hours for 3 hours or less in a usual week. This statistic was similar to 2006.
- Almost three-quarters of children reported participating in an organised sport (such as soccer, dance, running or swimming) outside of school hours during the current school term. This finding was similar to 2006.
- Fewer children reported either walking or cycling to school every day in 2009 (24.3%) compared to 2006 (30.5%) and home from school (2009: 27.5%; 2006: 33.7%) ($p<.01$).

Sedentary activity

- In 2009, two-thirds of all children met the national guidelines of using electronic media for no more than two hours a day during weekdays, but less than half (46%) met these guidelines during weekends.
- In 2009, children were more likely to report using the computer for more than two hours a day on weekdays and weekends compared to children in 2006 (weekdays: 2009 12.7%, 2006 9.0%; weekends: 2009 24.4%, 2006 20.0%) ($p<.01$).

Attitudes to physical activity

- In 2009, over 80% of children either strongly agreed or agreed with the statement “I do a lot of physical activity”.
- More children strongly agreed or agreed with the statements “I look funny when I am physically active” in 2009 (24.4%) compared to 2006 (21.0%), and “I have an injury that prevents me from being physically active” (2009: 8.4%; 2006: 6.1%) ($p<.05$).

1.2. Nutrition

General food intake

- The proportion of children that reported eating 2–3 serves of fruit a day increased in 2009 (59.5%) compared to 2006 (53.0%) ($p<.01$).
- There was a decrease in the proportion of children that reported eating 4 or more serves of vegetables each day in 2009 (31.1%) compared to 2006 (41.1%) ($p<.01$).
- Fewer children reported drinking fruit juice every day in 2009 (25.7%) compared to 2006 (30.4%) ($p<.01$).

- There was an increase in the proportion of children that reported drinking water every day in 2009 (83.2%) compared to 2006 (77.2%) (p<.01).

Consumption of 'extra foods' (energy dense)

- In 2009, 64% of boys and 56% of girls reported eating extra foods 4 or more times a week. One-quarter of boys (25%) and 21% of girls reporting eating these foods every day.
- Fewer children reported eating extra foods every day in 2009 (22.8%) compared to 2006 (29.1%), specifically fewer children reported eating energy bars 4 or more times a week compared to 2006 (2009 26.5%, 2006 36.5%) (p<.01), eating crisps and salty snacks (2009: 20.9%, 2006: 24.6%) and eating ice-cream and ice-blocks (2009 18.1%, 2006 21.4%) 4 or more times a week (p<.01).
- In 2009, almost one-half (48.0%) of boys and 36.6% of girls reported drinking sugary soft-drinks once a week or more. This finding was similar to 2006.
- In 2009, 26% of boys and 17% of girls reported eating food from a fast-food outlet once a week or more. This was less than in 2006 when 30% of boys and 20% of girls reported eating from a fast-food outlet once a week.

Meal patterns

- In 2009, 80%, 87% and 96% of children reported eating breakfast, lunch and dinner every day respectively during a typical week. Fewer than 1 in 10 children reported eating a main meal 3 or less times a week.
- There was no difference in the reported regularity of eating breakfast, lunch and dinner by children in 2009 and 2006.

Children's eating environments

- In 2009, nine in ten children agreed with the statements: "In my home fruit is available at any time", "In my home vegetables are usually served with dinner", and "My parent/carer insists that I eat something for breakfast".
- In 2009, over one-quarter (26.6%) of children agreed with the statement "Soft-drinks are usually available in my home", and over half (52.2%) agreed that "I go to fast food outlets with my family".
- There was similar agreement to the statements about eating environments by children in 2009 and 2006, except that in 2009 more children (18.6%) agreed with the statement "I never eat food from a fast food outlet" than in 2006 (15.7%) (p<.05).

Attitudes to food

- In 2009, boys were less likely to agree with statements indicating preferences for healthy foods than girls and instead were more likely than girls to agree with statements indicating preferences for soft-drink and fast food.
- Fewer children agreed with the statements "I usually choose soft-drinks instead of water or milk" in 2009 (18.8%) compared to 2006 (24.3%) (p<.01), and "I choose soft-drinks with the best TV ads" in (2009: 10.1%; 2006: 12.8%) (p<.05).
- Less children agreed with that statement "I go to fast food outlets because I like the taste of the food" in 2009 (47.5%) than they did in 2006 (57.4%) (p<.01).
- In addition, in 2009 fewer children (13.2%) agreed with their 2006 counterparts (21.9%) with the statement "At fast food outlets if I can upsize I usually do" (p<.01).

1.3. BMI Status and psychological outcomes

BMI status

- One-quarter of all children were categorised as overweight or obese in 2009 (25%) and 2006 (25.8%).
- Boys were more likely to be categorised as having an unhealthy weight, with 26.8% of boys considered overweight (20.8%) or obese (6.0%), compared to 23.3% of girls (overweight: 18.9%, obese: 4.4%) in 2009.

Self-rated health

- Children who were classified as overweight or obese were more than twice as likely to describe their health as 'fair' or 'poor'.
- Both normal weight and overweight and obese children were more likely to describe their health as ''fair' or 'poor' in 2009 compared to 2006. In 2009, 14% of normal weight children described their health as ''fair' or 'poor' compared to 12% in 2006, and 37% of overweight or obese children rated their health this way in 2009 compared to 29% in 2006 ($p<.05$).

Self-esteem

- In 2009, 84% of children who were classified as normal weight either 'agreed' or 'strongly agreed' with the statement "I feel good about myself", compared to 69.3% of overweight or obese children ($p<.01$). These statistics are similar to 2006.

Body image

- Almost 1 in 4 children who were overweight or obese (27.3%) reported that they were either 'fairly unhappy' or 'extremely unhappy' with their weight in 2009, compared to less than 1 in 10 children who were a normal weight (7.4%). These statistics are similar to 2006.
- There was a mismatch between children's perceptions of and the reality of their weight status. Over one-third of overweight or obese children described themselves as being either normal weight (32%) or underweight/slightly underweight (4%) in 2009. Of the normal weight children, 12% described themselves as slightly overweight/overweight and 26% as underweight/slightly underweight.
- While, slightly more children reported being unhappy with their weight in 2009 than they did in 2006, these differences were not found to be statistically significant and therefore should be interpreted with caution.

Teasing and bullying

- In 2009, children who were overweight or obese were three times as likely to report being teased about their weight 'often' or 'very often' (19%), compared to children of normal weight (6%).
- Furthermore, a greater proportion of overweight and obese children reported being teased 'often' or 'very often' in 2009 (19%) compared to 2006 (13%) ($p<.05$).

BMI status and characteristics related to physical activity and nutrition

- In 2009, normal weight children were more likely to report taking part in "moderate to vigorous physical activity for 4 hours or more" outside of school hours in a typical week than overweight or obese children (normal weight: 42%; overweight or obese: 32%) ($p<.05$).
- There was a decrease in the proportion of overweight or obese children that reported taking part in "moderate to vigorous physical activity outside of school for 4 hours or more in a week" in 2009 (32.4%) compared to 40.6% of overweight or obese children in 2006 ($p<.05$).
- In 2009, over two thirds of overweight and obese children (66%) reported taking part in PE classes three or more times during a typical week at school compared to 59% of normal weight children.

- Higher proportions of both normal weight and overweight or obese children reported participating in 3 or more hours of PE class in a week in 2009 compared to 2006 (normal weight: 2009 59.2%; 2006 53.6%) ($p<.05$); (overweight or obese: 2009 65.8%; 2006 48.4%) ($p<.01$).
- Increases were observed in the proportion of normal weight children that reported "using a computer for more than 2 hours a day on weekdays" in 2009 (11.3%) compared to normal weight children in 2006 (8.3%); "using a computer for more than 2 hours a day on weekends" (normal weight: 2009 23.1%; 2006 18.5%); and "TV viewing for more than 2 hours a day on weekends" (normal weight: 2009 48.4%; 2006 43.0%) ($p<.05$).
- A higher proportion of overweight or obese children reported "using a computer for more than 2 hours a day on weekdays" in 2009 (15.1%) compared to 2006 (10.5%). However, the proportion of overweight or obese children that reported "using a computer for more than 2 hours a day on weekends" decreased to 27.0% in 2009 from 24.0% in 2006, and the proportion that reported "TV viewing for more than 2 hours a day on weekends" decreased to 50.8% in 2009 from 54.2% in 2006. None of these differences were statistically significant.
- In 2009, children who were overweight or obese were more likely than normal weight children to report not being very good at physical activity, not having anyone to be active with, disliking how physical activity makes them feel and preferring to do sedentary activities. Overweight or obese children were also more likely to report having an injury or health issue that prevented them from being active. Normal weight children were more likely to 'agree' or 'strongly agree' with the statement "I do a lot of physical activity".
- In 2009, more overweight or obese children reported having a health problem (8%) that prevented them from being physically active compared to 2006 (6%), and an injury (2009: 13%) that prevented them from being active (2006: 8%) ($p<.05$).
- In 2009, fewer overweight or obese children reported eating bread (34%) and drinking milk (40%) everyday compared to normal weight children (bread: 48%, milk: 49%) ($p<.01$). Furthermore, there was a decrease in the proportion of overweight or obese children that reported eating these foods in 2009 compared to overweight or obese children in 2006 (bread: 47%, milk: 44%) ($p<.01$).
- In 2009, children who were overweight or obese were more likely than normal weight children to 'agree' or 'strongly agree' with the statement "I choose soft-drinks with the best TV ads" (overweight or obese: 13.3%; normal weight: 9.1%).
- In 2009, the proportion of overweight or obese children who reported eating fast-food every day decreased to less than one per cent* compared to 3.1%* in 2006 ($p<.01$).

* This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

2. Introduction

Physical activity and proper nutrition play a key part in young people's physical, social and mental development and wellbeing. A physically active lifestyle in children brings benefits such as strengthening of bones and joints;[1] cardio-vascular fitness;[2] healthy lifestyle behaviours that may continue into adulthood;[3] as well as gains in social and emotional development.[4] Similarly, optimal nutrition in children is necessary for brain development, strong bones and healthy body functioning, and sets the stage for healthy eating in adulthood.[5]

Children who are not sufficiently physically active and do not have a balanced, well-proportioned diet are at risk of becoming overweight and obese.

Increases in childhood overweight and obesity are now emerging as a serious global public health issue with the World Health Organisation (WHO) describing this increase as an epidemic in some countries.[6] In the United States the number of overweight children has doubled and the number of overweight adolescents has trebled in the last two decades.[7] A similar pattern is emerging in Australia.

Between 1985 and 1995, overweight and obesity in Australian children almost doubled. Since 1995, levels of overweight and obesity in boys and girls have continued to increase, but less dramatically. There is currently debate in Australia as to whether these increases are still continuing or have stabilised. However, data from comparable sources with a larger number of data points is needed to confirm any new trends with any degree of confidence.[8]

Estimates from the National Health Survey in 2007–08 indicate that 25% of children aged 5–17 years were classified as overweight (17%) or obese (8%),[9] an increase from 1985, where 10–12% of boys and girls were estimated to be overweight (9–11%) or obese (1–1.5%).[10]

The 2008 Western Australia (WA) Child and Adolescent Physical Activity and Nutrition Survey (CAPANS) found that 26.7% of boys and 18.7% of girls in years three, five and seven in WA were classified as overweight or obese, and these estimates were similar to the 2003 survey.[11] Similarly, results from the New South Wales (NSW) School Children's Physical activity and Nutrition Survey (SPANS) in 2010 estimate that 30.0% of boys and 19–20% of girls in NSW in year six were considered overweight or obese, and these estimates were similar to the 2003 survey.[12]

3. Survey results

3.1. Sample demographics

Table 1: Characteristics of survey participants, 2009

Characteristic		Sample %	Population %
Sex	Male	48.5	[a]50.5
	Female	51.5	49.5
	Total	**100.0**	**100.0**
Age	10 years	1.9	–
	11 years	79.1	–
	12 years	18.8	–
	13 years	0.2	–
	Total	**100.0**	**–**
School type	Catholic	22.3	[b]23.3
	Independent	11.9	13.3
	Public	65.8	63.5
	Total	**100.0**	**100.0**
Main language spoken at	English	85.2	[c]87.5
	Non-English	13.6	12.5
	Not stated	1.2	–
	Total	**100.0**	**100.0**
Country of birth	Australia	88.1	[c]81.9
	Other	11.1	11.7
	Not stated	0.8	6.5
	Total	**100.0**	**100.0**
Indigenous status	Aboriginal or TSI*	4.1	[a]1.6
	No	92.7	94.9
	Don't know	3.2	–
	Total	**100.0**	**100.0**
Area of residence	North Canberra	6.2	[d]7.9
	South Canberra	4.8	9.0
	Woden	5.8	11.6
	Belconnen	25.3	11.7
	Weston	2.5	11.1
	Tuggeranong	31.0	14.7
	Gungahlin	17.7	15.1
	NSW	3.2	–
	Not stated, other	1.6	–
	Total	**100.0**	**100.0**

Note: (a) ABS ERP by single year of age, December 2010, percent aged 10–14 years.
(b) ACT School Census 2009.
(c) ABS Census 2006, percent relates to total population.
(d) ABS Census 2006, percent relates to all children aged 5–14 years.
*TSI – Torres Strait Islander.

A total of 1,374 children in Year 6 from 34 ACT schools participated in the survey in 2009. The survey was administered over two different dates within each school – one date for the questionnaire and another date for the height and weight measure. As a result, not all students were able to participate in both activities. This resulted in 60 students participating in only one activity and 1,314 participating in both activities.

Table 1 details participant characteristics and compares them with the general ACT population.

It can be seen that equal proportions of boys and girls participated in the survey with the most common age being 11 years. The proportion of students in each school type reflects the pattern seen in the wider population. There was, however, some variation between the sample and population in regards to area of residence, with an overestimation of children from Belconnen and Tuggeranong and a slight underestimation of children from South Canberra, Woden and Weston. Children's status in regards to language spoken at home was similar to the population. In the sample children were slightly more likely to state their country of birth as Australia in the survey than in the general population.

3.2. Physical Activity

Physical activity in young people includes formal and informal involvement in sports and play, physical education classes in school, active transport such as walking or cycling to school, and other activities that increase the heart rate.

The Australian Government Physical Activity Recommendations for children and young people[13] state that:

- Children and young people should participate in at least 60 minutes (and up to several hours) of moderate to vigorous intensity physical activity every day.
- Children and young people should not spend more than 2 hours a day using electronic media for entertainment (e.g. computer games, internet, TV), particularly during daylight hours.

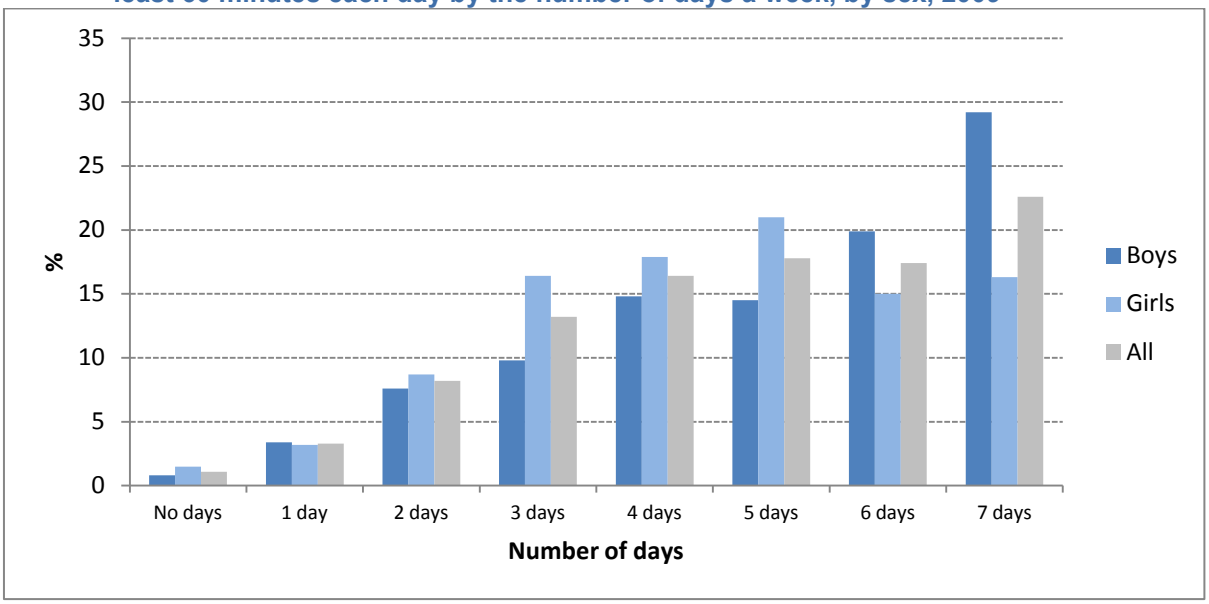
The methods used to measure physical activity behaviour and attitudes in this survey, including their validity and reliability, are described in this section in the 2006 ACTPANS report.

The following sections present findings from the ACTPANS in relation to children's participation in physical activity. Information is included on children's general activity levels – both in school and outside of school, involvement in organised sport, active transport, and levels of sedentary activity. Information is also included on children's attitudes toward physical activity.

3.2.1. General physical activity

Figure 1 shows the percentage of boys and girls who were moderately to vigorously physically active for at least 60 minutes each day by the number of days in a week. It can be seen that over 1 in 5 children (22.6%) reported being moderately to vigorously physically active for at least 60 minutes every day and are thus meeting the Australian Government Physical Activity Recommendations. More boys (29.2%) than girls (16.3%) reported being moderately to vigorously physically active for at least 60 minutes every day with this difference being statistically significant ($p<.01$).

Figure 1: Percentage of children who were moderately to vigorously physically active for at least 60 minutes each day by the number of days a week, by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Around three-quarters of children reported being moderately to vigorously physically active for at least 60 minutes on 4 or more days of the week, with a larger proportion of boys (78.4%) than girls (70.2%) reporting this level of activity. This difference was found to be statistically significant (p<.01).

The mean number of days that children reported being moderately to vigorously physically active for at least 60 minutes a day was 5 days per week for boys and 4.5 days per week for girls.

Trends

The proportion of children that reported being moderately to vigorously active for at least 60 minutes every day increased in 2009 to 22.6% compared to 19.0% in 2006, and this difference was statistically significant (p<.05).

Similarly, a greater proportion of children reported being moderately to vigorously active for at least 60 minutes on 4 or more days of the week in 2009 (74.2%) compared to 2006 (70.7%) and this difference was also statistically significant (p<.05).

3.2.2. Physical activity at school

Schools provide many opportunities for children to engage in physical activity and can play an important role in motivating young people to stay active.

Physical education and sports classes

An appropriately designed and delivered PE curriculum in schools can enhance overall physical activity and improve skills and ability.[14] Findings from the ACTPANS show that children reported participating in physical activity or sports classes during class-time an average of 3.1 times a week (boys: 3.0 times, girls: 3.2 times).

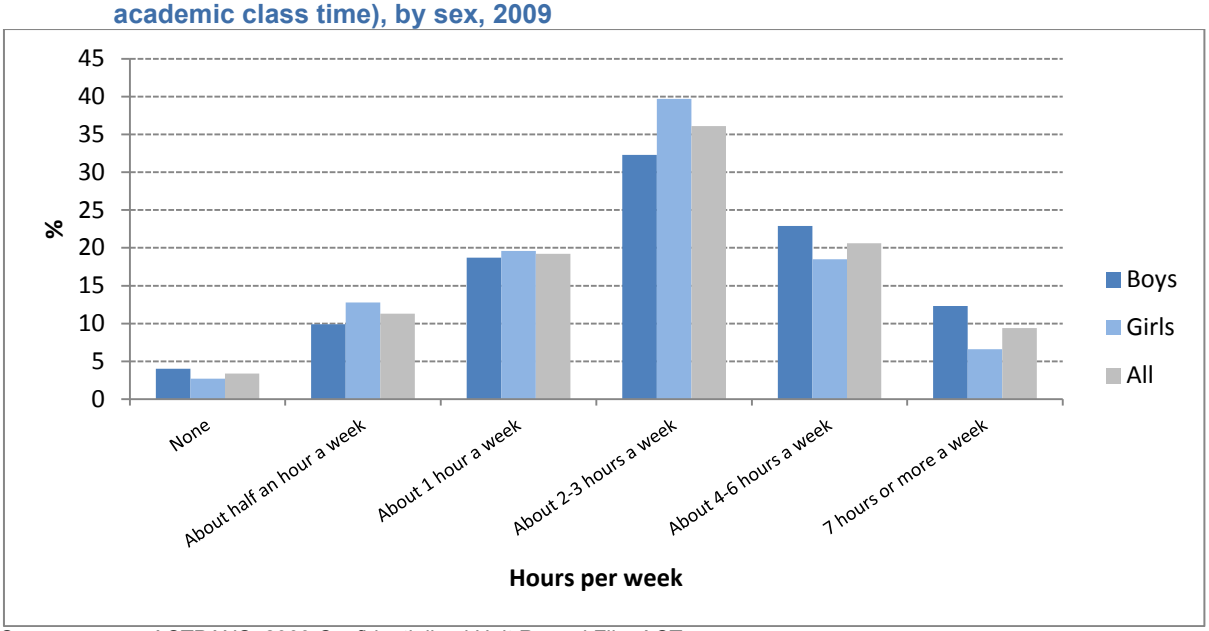
Physical activity during school hours

Children were asked to report how many hours in a week they were moderately to vigorously physically active during school hours. This included physical activity in PE classes as well as play and sports at recess and lunchtimes, and excluded academic class time.

Figure 2 shows the number of hours that children were moderately to vigorously physically active at school in a usual week during PE classes and during play and sports at recess and lunchtimes (excluding academic class time). Almost one-third (30.0%) of children reported being physically active at school for 4 hours or more, with a higher proportion of boys (35.2%) compared to girls (25.1%) reporting being active for this amount of time. Thirty-six percent of children reported being

physically active for two to three hours a week, with more girls (39.7%) reporting this amount of activity than boys (32.3%). These differences were found to be statistically significant (p<.01). Over one-third of children (33.9%) reported being physically active for one hour or less a week, with similar proportions of boys (32.6%) and girls (35.1%) reporting this amount of time.

Figure 2: Number of hours physically active during school hours in a week (excluding academic class time), by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

A comparison of findings from the 2009 and 2006 surveys indicate that the number of hours children took part in moderate to vigorous physical activity in a usual week during school time may have increased. While, similar proportions of children reported being physically active for four hours or more in 2009 (30.0%) as in 2006 (31.1%), more children reported being physically active for two to three hours a week in 2009 (36.1%) compared to 2006 (28.9%), and less children reported being physically active for 1 hour or less in 2009 (33.9%) compared to 2006 (40.1%). These two latter differences were found to be statistically significant (p<.01).

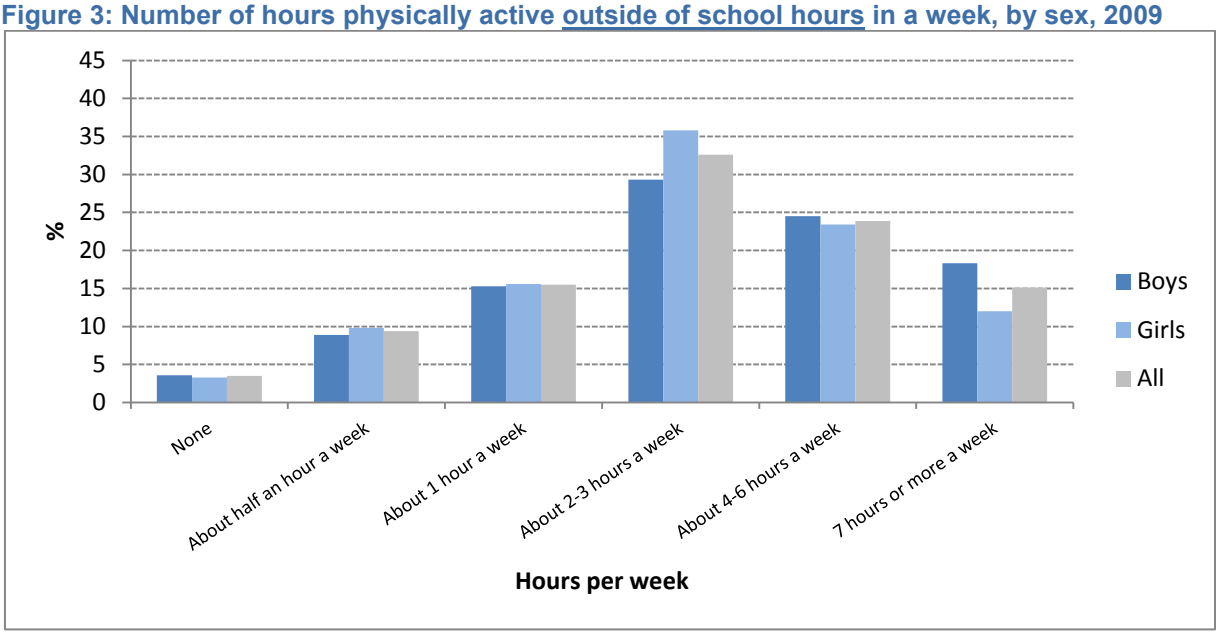
3.2.3. Physical activity outside of school

Active play and involvement in organised sport as well as active transport are key components of a physically active lifestyle in children. This section investigates these three components.

Children were asked to report how many hours they spent being moderately to vigorously physically active outside of school hours in a usual week. This included time spent playing outside and involvement in sports training and games.

Figure 3 shows that 61% of children were physically active outside of school hours for 3 hours or less in a usual week, with more girls reporting this level of activity (64.5%) than boys (57.1%). This difference was found to be statistically significant (p<.01). Over one-quarter (28.4%) of all children reported being physically active for one hour or less in a week, with similar proportions of boys (27.8%) and girls (28.7%) reporting this level of activity. Thirty nine percent of children reported being physically active outside of school hours for at least 4 hours or more in a week, with a higher proportion of boys (42.8%) than girls (35.4%) reporting this level of activity. This difference was found to be statistically significant (p<.01).

Figure 3: Number of hours physically active outside of school hours in a week, by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

Overall, there was no difference in the proportion of children that reported being physically active outside of school hours in a usual week in 2009 compared to 2006.

3.2.4. Organised sport

Involvement in organised sport is popular among young people, bestowing additional benefits such as sporting and team building skills, social connectedness and motor skill development. Children were asked to report what organised sport they had been involved in during the current school term. Involvement included all training, games and matches.

Almost three-quarters of children (girls: 74.3%, boys: 72.6%) reported participating in an organised sport outside of school hours during the current school term. This included taking part in training, games and matches.

On average, in a typical week during the school term, children participated in up to two different types of organised sports (all children: 1.4 types; boys: 1.5 types; girls: 1.3 types).

Table 2 presents the top 10 organised sports children participated in during the current school term. Soccer was the most popular form of organised sport for boys (26.7%) with over one-quarter reporting taking part. Rugby league (15.6%) was the second most popular with boys followed by running (13.2%). For girls, dance (20.2%) was the most popular organised sport. Netball (19.9%) was also popular with girls, and soccer (16.1%) and swimming (16.1) were similarly popular.

On average, in a typical week during the school term, children participated in up to two different types of organised sports (all children: 1.4 types; boys: 1.5 types; girls: 1.3 types).

Table 2: Top 10 organised sports children participated in during the current school term, by sex, 2009

Boys	%	Girls	%
Soccer	26.7	Dance	20.2
Rugby league	15.6	Netball	19.9
Running	13.2	Soccer	16.1
Swimming	12.3	Swimming	16.1
Rugby Union	10.5	Running	11.4
AFL	10.2	Horse-riding	7.1
Cycling	9.2	Cycling	6.1
Basketball	8.9	Gymnastics	5.4
Martial Arts	8.3	Basketball	5.1
Cricket	6.7	Martial Arts	5.1

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Children taking part in an organised sport in a typical week during the school term reported attending training, classes, games or matches, an average of 3.6 times per week. Boys reported participating in organised sport an average of 3.9 times a week, compared to an average of 3.3 times a week for girls.

Trends

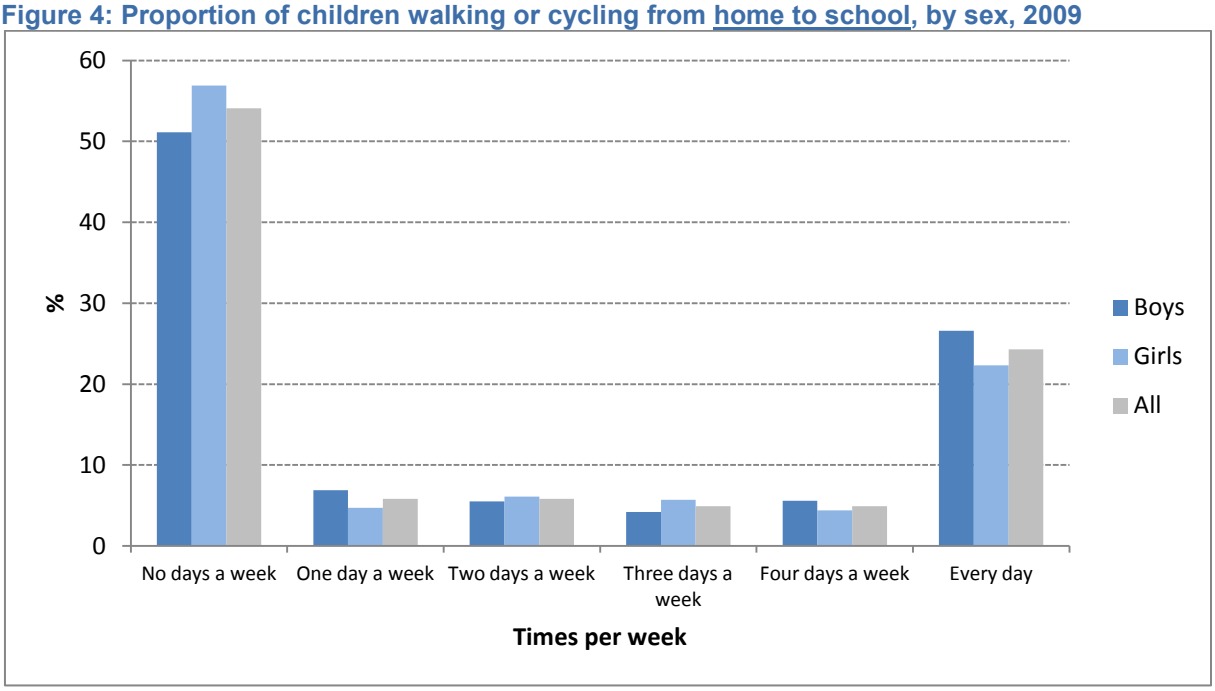
Participation in organised sport by boys and girls during the current school term in 2009 was unchanged compared to 2006. Soccer remained the most popular sport for boys, while dance remained the most popular activity for girls. Swimming was slightly less popular with boys and girls in 2009 compared to 2006, while running was slightly more popular among both sexes. Overall, the average number of times per week that children reported taking part in an organised sport during school term was the same in 2009 as for 2006.

3.2.5. Active transport

Active transport is an ideal way of increasing incidental physical activity and involves modes of travel such as walking and riding a bicycle. Children were asked what mode of transport they used to and from school in a typical week and how often they used each mode of transport. Figures 4 and 5 present findings on the proportion of children who reported walking or riding a bicycle to and from school during a usual week.

Figure 4 shows that 24.3% of children reported either walking or riding their bicycle to school every day, with more boys (26.6%) reporting this than girls (22.3%). Just under half (45.7%) of all children reported either walking or cycling to school at least once a week, with more boys (48.8%) than girls (43.2%) reporting travelling this way. This difference was found to be statistically significant ($p<.05$). Over half (54.1%) of all children reported never walking or cycling to school during a typical week, with more girls (56.9%) reporting this than boys (51.1%). This difference was also found to be statistically significant ($p<.05$).

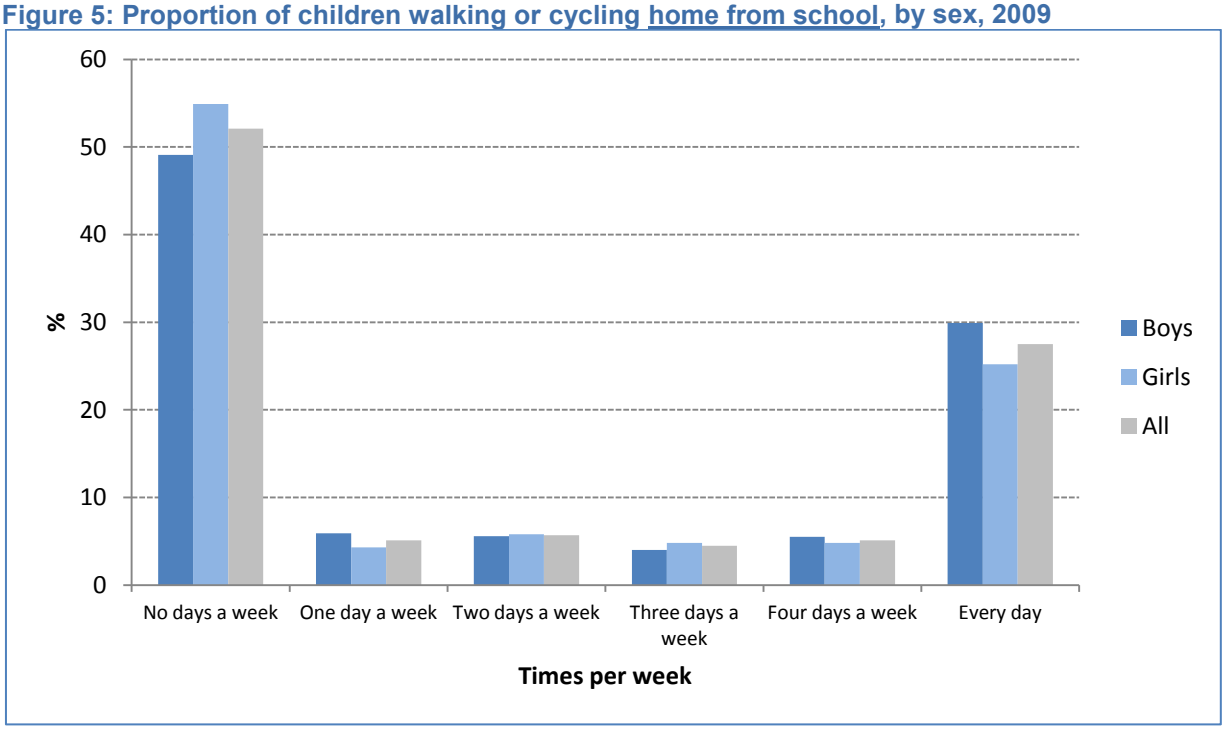
Figure 4: Proportion of children walking or cycling from home to school, by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 5 shows that 27.5% of children reported either walking or riding their bicycle home from school every day, with more boys (29.9%) reporting this than girls (25.2%). Almost half (47.9%) of all children reported either walking or cycling home from school at least once a week, with more boys (50.9%) than girls (44.9%) reporting travelling this way. This difference was found to be statistically significant ($p<.05$). Over half of all children (52.1%) reported never walking or cycling home from school during a typical week, with more girls (54.9%) reporting this than boys (49.1%). This difference was found to be statistically significant ($p<.05$).

Figure 5: Proportion of children walking or cycling home from school, by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Children reported walking or riding their bike to school an average of 1.7 days a week, with boys travelling to school this way an average of 1.9 days a week, while girls had an average of 1.6 days a week. The average number of days a week that children walked or rode their bike home from school was 1.9 for all children (2.0 for boys, and 1.8 for girls).

Trends

Travel to school

Fewer children reported either walking or cycling to school from home in 2009 compared to 2006:

- Fewer children reported either walking or cycling to school every day in 2009 (24.3%) compared to 2006 (30.5%),
- Less children reported either walking or cycling to school at least once a week in 2009 (45.7%) compared to 2006 (52%), and
- More children reported never walking or cycling to school in 2009 (54.1%) compared to 2006 (48%).

These difference were all found to be statistically significant (p<.01).

Travel from school

- Fewer children reported either walking or cycling home from school every day in 2009 (27.5%) than in 2006 (33.7%),
- Less children reported either walking or cycling home from school at least once a week in 2009 (47.9%) compared to 2006 (55.4%), and
- More children reported never walking or cycling home from school in 2009 (52.1%) compared to 2006 (44.5%).

These difference were all found to be statistically significant (p<.01).

3.2.6. Sedentary activity

Sedentary activity is linked to obesity in children and adolescents.[15 16 17] It is, however, unclear what the mechanism behind this link is. Being sedentary may mean less time to spend being physically active and may also lead to poor eating habits in terms of both the quantity and type of food consumed. In addition, sedentary behaviours involving TV viewing can lead to constant exposure to junk food advertising which in turn may influence children's food preferences. The Australian Government Physical Activity Recommendations state that children and young people should not spend more than 2 hours a day using electronic media for entertainment, e.g. computer games, internet, and TV, particularly during daylight hours.

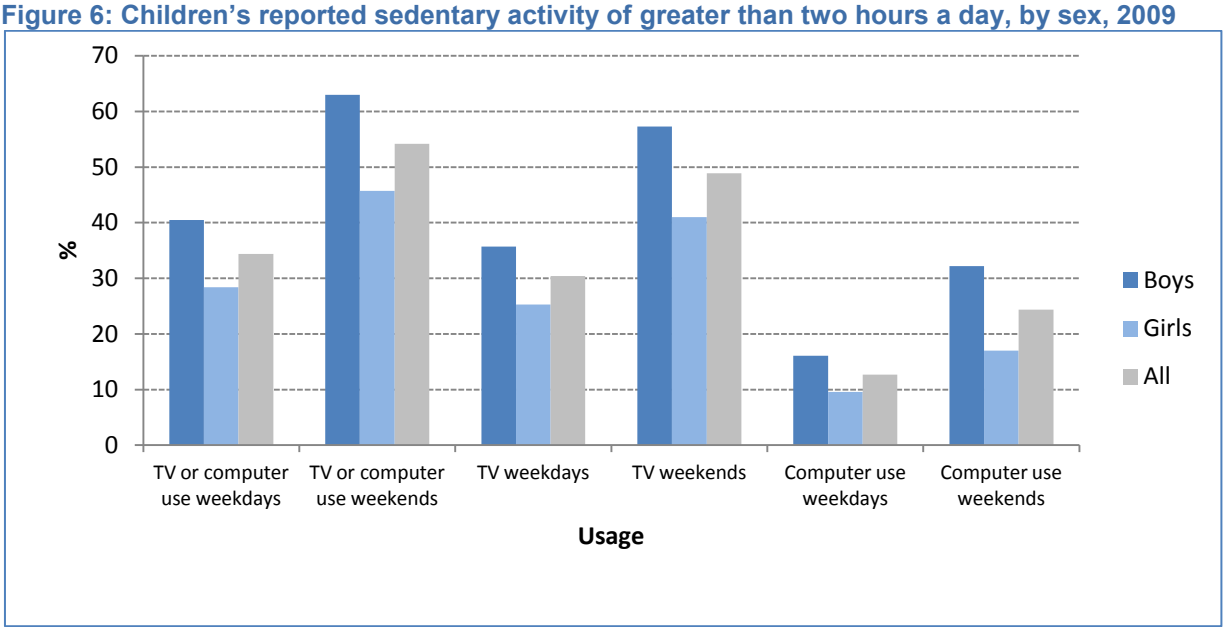
Weekdays

Figure 6 shows that approximately one-third of all children (34.4%) usually spent time using electronic media (defined by TV viewing and computer use) for more than two hours a day on weekdays. A higher proportion of boys (40.5%) reported spending greater than two hours a day on weekdays using electronic media compared to girls (28.4%). This difference was found to be statistically significant (p<.01). Conversely, two-thirds of children were found to be meeting the guidelines during weekdays.

Weekends

Over half of all children (54.2%) reported using electronic media for more than two hours each day on weekends, with a higher proportion of boys (63.0%) reporting this behaviour compared to girls (45.7%). This difference was found to be statistically significant (p<.01). Overall, TV viewing was more popular with children than using the computer for more than two hours on weekdays (TV: 30.4%, Computer: 12.7%) and on weekends (TV: 48.9%, Computer: 24.4%). Less than 10% of children reporting not watching any TV on weekdays and less than 5% reported not watching it on weekends. Twenty percent of children reported not using the computer on weekdays and 13.4% reported not using the computer on weekends.

Figure 6: Children's reported sedentary activity of greater than two hours a day, by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

In 2009, children were more likely to report using the computer for more than two hours a day on weekdays and weekends compared to children in 2006 (weekdays: 2009 12.7%, 2006 9.0%; weekends: 2009 24.4%, 2006 20.0%). These differences were statistically significant (p<.01).

The increase in children's sedentary activity in 2009 compared to 2006 may be largely attributable to an increase in boys reported TV and computer use for more than two hours a day:

- A higher proportion of boys reported watching TV for more than two hours a day on weekends in 2009 (57.3%) compared to 2006 (50.8%) and this difference was found to be statistically significant (p<.05);
- In 2009, there was a statistically significant (p<.01) increase in the proportion of boys that reported using the computer for more than 2 hours a day on weekdays and weekends compared to 2006 (Computer use on weekdays – 2009: 16.1%, 2006: 10.3%; Computer use on weekends – 2009: 32.2%, 2006: 24.7);
- However, fewer girls reported watching TV for more than two hours a day on weekdays in 2009 (25.3%) compared to 2006 (33.4%) and this difference was found to be statistically significant (p<.01).

3.2.7. Attitudes to physical activity

Investigating attitudes to physical activity may provide insights for understanding the issues associated with supporting and encouraging children's involvement in physical activity. In the ACTPANS, children were presented with a number of statements describing their attitudes to physical activity. They were required to nominate how much they agreed or disagreed with these statements.

Children were asked how much they agree with the statement "I do a lot of physical activity". Responses indicated that over 80% of children either agreed or strongly agreed with this statement (boys: 84.5%, girls: 80.7%).

Table 3 describes statements that reflect attitudes that may represent potential barriers to physical activity for children. Results are ranked from the highest to lowest proportion of children that agreed or strongly agreed with the statements.

It can be seen that for boys, agreement with the statement "I prefer to watch television or play electronic games" (26.3%) was more common than agreement with the other statements. This was followed by agreement with the statements "I look funny when I am physically active" (21.1%) and "I don't have anyone to be physically active with" (18.9%).

For girls, agreement with the statement "I look funny when I am physically active" (27.7%) was more common than agreement with other statements. This was followed by agreement with the statements "I don't think I am very good at physical activity" (18.4%) and "I don't have anyone to be physically active with" (16.8%).

There was a difference between boys and girls in their agreement with almost half of the statements. A higher proportion of boys than girls were in agreement with the statements: "I prefer to watch TV or play electronic games" (boys: 26.3%, girls: 15.1%) and "There are no parks or sports grounds near where I live" (boys: 11.3%, girls: 6.8%). These differences were found to be statistically significant ($p<.01$).

A higher proportion of girls than boys were in agreement with the statements: "I look funny when I am physically active" (boys:21.1 %, girls: 27.7 %), "I don't think I am very good at physical activity" (boys: 12.5%, girls: 18.4%) , "I am scared that I might get hurt if I played sport" (boys: 6.7%, girls: 11.1%), and "I have an injury that prevents me from being physically active" (boys: 6.9%, girls: 9.9%). These differences were found to be statistically significant ($p<.01$), with the difference in agreement for the statement "I have an injury that prevents me from being physically active" statistically significant at $p<.05$.

Table 3: Attitudes to physical activity: Percentage of boys & girls who strongly agreed or agreed with the statements, 2009

	Boys (%)	Girls (%)	All (%)
I look funny when I am physically active	21.1	27.7	24.4
I prefer to watch TV or play electronic games	26.3	15.1	20.5
I don't have anyone to be physically active with	18.9	16.8	17.8
I don't think I am very good at physical activity	12.5	18.4	15.5
I don't like how being active physically makes me feel	14.7	16.1	15.4
There are no parks or sports grounds near where I live	11.3	6.8	9.9
I am scared that I might get hurt if I played sport	6.7	11.1	8.9
I have an injury that prevents me from being physically active	6.9	9.9	8.4
Other kids make fun of me when I am physically active	9.0	6.6	7.8
I don't have enough time for physical activity	7.5	6.6	7.0
I have a health problem that prevents me from being physically active	6.1	4.5	5.3
I don't have proper clothing or shoes to play sport	5.6	4.9	5.2
I don't like physical activity	4.8	5.1	5.0

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

Changes in attitude towards physical activity can be seen for four statements reported by children in 2009 compared to 2006:

- More children strongly agreed or agreed with the statements "I look funny when I am physically active" in 2009 (24.4%) compared to 2006 (21.0%), and "I have an injury that prevents me from being physically active" (2009: 8.4%; 2006: 6.1%).
- Fewer children strongly agreed or agreed with the statements "I don't have proper clothing or shoes to play sport" in 2009 (5.2%) compared to 2006 (7.1%), and "I don't like physical activity" (2009: 5.0%; 2006:7.1%).

All these differences were found to be statistically significant ($p<.05$).

3.3. Nutrition

The NHMRC Dietary Guidelines[18] state that children and adolescents need sufficient nutritious foods to grow and develop normally. This means they should enjoy a wide variety of nutritious foods and drink plenty of water. The guidelines describe the number of serves of these foods children should eat on an average day.

A balanced diet, coupled with regular exercise is central to a healthy lifestyle in children. The ratio between energy intake and expenditure also plays a key role in healthy living. When energy intake exceeds energy expenditure, the development of overweight and obesity can follow.[19] Dietary factors that promote excessive energy intake can often lead to excessive weight gain.[20] Research has delineated several dietary factors that promote excessive energy intake in children. These include food habits such as:

- low fruit and vegetable intake;[18]
- frequency and quality of consumption of energy dense foods;[21]
- portion size;[22]
- the frequency of fast food restaurant visits;[23]
- home food environments;[24] and
- food preferences.[19]

The following sections include findings from the survey related to these factors as well as food intake in general. Due to measurement difficulties, information on portion size was not collected in this survey.

3.3.1. General food intake

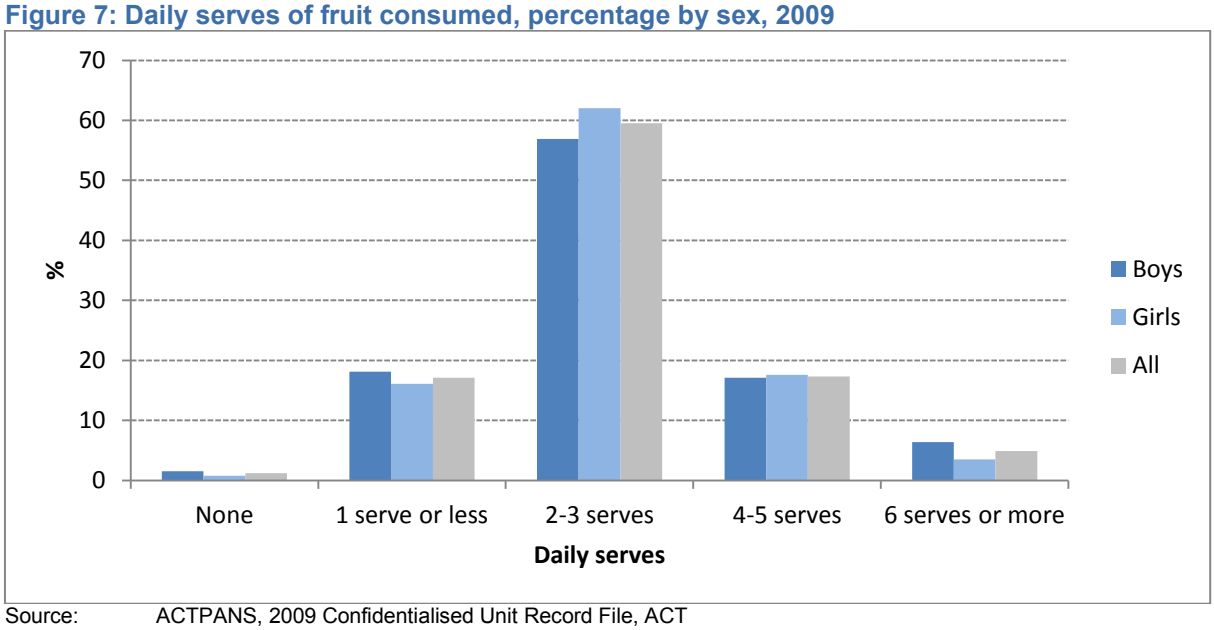
This section looks at children's patterns of consumption in relation to general food intake. The ACTPANS investigated several additional food items, selected on the basis of their high energy density and popularity with children. These food items include pies and sausage rolls, pastries, cakes and biscuits, energy bars, ice-creams, soft-drinks and fast food items.

Fruit and vegetable consumption

Eating fruit and vegetables is essential for a healthy diet. Research indicates that a diet high in these foods provides protection against a range of chronic diseases including cardiovascular disease, cancer, stroke, cataracts, macular degeneration, and Type 2 diabetes.[18] In addition, due to their high water and fibre content, incorporating fruit and vegetables in the diet can reduce energy density, promote satiety, and decrease energy intake.[18]

Figure 7 shows the number of serves of fruit eaten by boys and girls in a usual day. Over three-quarters (77.8%) of children reported eating at least 2–3 serves of fruit daily. However, almost 1 in 6 children (17.1%) reported eating 1 serve or less.

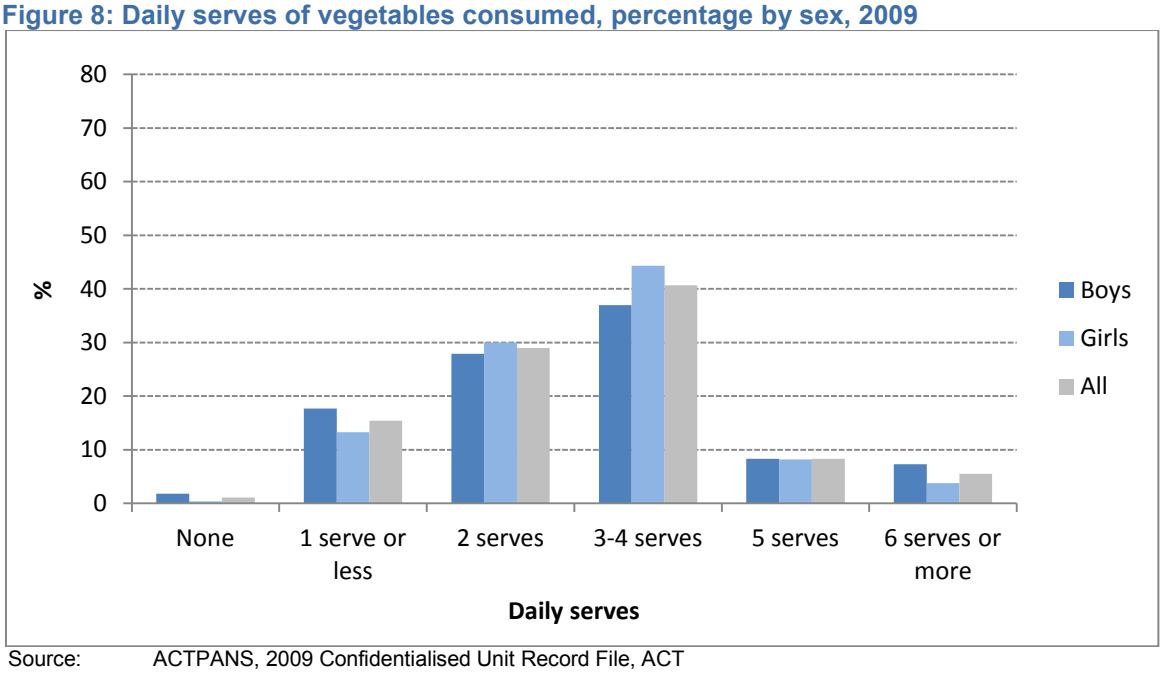
Figure 7: Daily serves of fruit consumed, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 8 shows the number of serves of vegetables eaten by boys and girls in a usual day. Forty one percent of children reported eating 3-4 serves of vegetables in a usual day; with a higher proportion of girls (44.3%) than boys (37.0%) reporting this level of daily vegetable consumption. This difference was found to be statistically significant ($p<.01$). Fifteen percent of children reported eating 1 or less serves of vegetables in a usual day, with more boys (17.7%) than girls (13.3%) reporting this. This difference was also found to be statistically significant ($p<.05$). Almost 30% of children reported eating 2 serves of vegetables (boys: 27.9%, girls: 30.0%). One percent of children reported not eating vegetables at all on a usual day (Boys: 1.8%*, Girls 0.4%*), and less than 15% (13.8%) reported eating 5 or more serves of vegetables daily (Boys: 15.6%, Girls: 12.0%).

Figure 8: Daily serves of vegetables consumed, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

* This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

Trends

Fewer children reported not eating fruit in a typical day in 2009 (1.2%*) compared to 2006 (2.5%). This difference was found to be statistically significant (p<.05). The proportion of children that reported eating 2–3 serves of fruit a day increased in 2009 (59.5%) compared to 2006 (53.0%), with this difference being statistically significant (p<.01). However, fewer children reported eating 6 or more serves of fruit each day in 2009 (4.9%) compared to 2006 (6.9%), with this difference being statistically significant (p<.05).

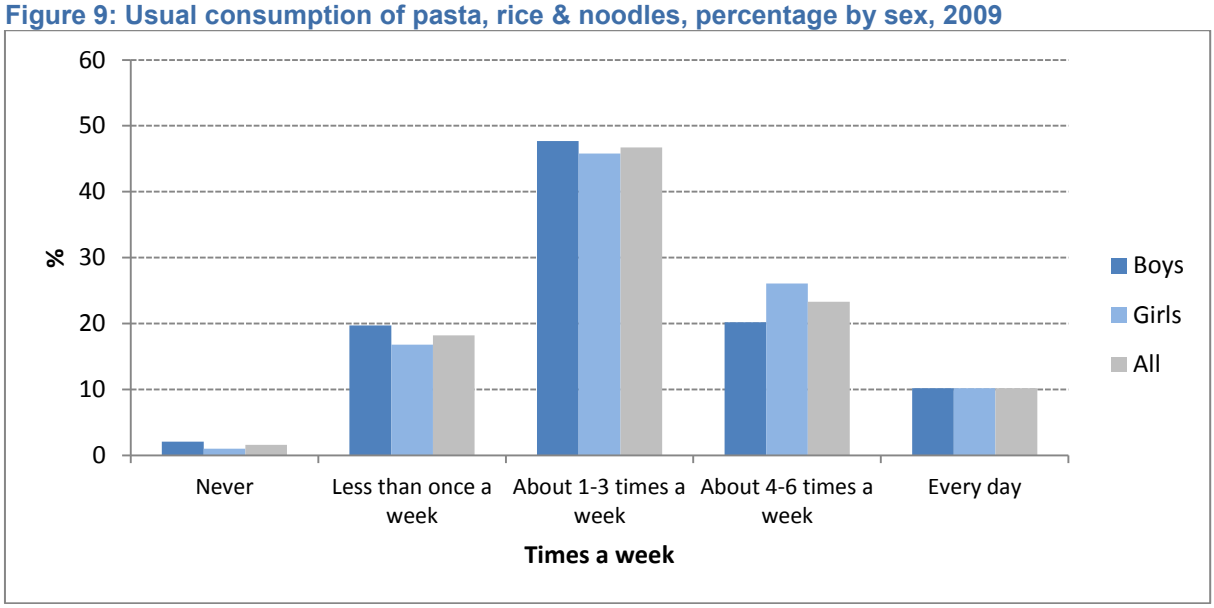
There was a decrease in the proportion of children that reported eating 4 or more serves of vegetables each day in 2009 (31.1%) compared to 2006 (41.1%). This difference was found to be statistically significant (p<.01). As in 2006, the most common response category for vegetable consumption in 2009 was 2–3 serves in a usual day (2009: 52.3%; 2006: 44%). Fewer children reported not eating vegetables at all on a usual day in 2009 (1.2%) compared to 2006 (2.2%), and this difference was statistically significant (p<.05).

Pasta, rice and noodle and bread consumption

The Australian Guide to Healthy Eating recommends that these foods form the main part of the diet of children aged 8–11 years as they tend to be nutrient dense.[25]

Figure 9 shows the usual consumption of pasta, rice and noodles by sex. Boys and girls generally consumed these food items on a similar number of occasions in a usual week, but a higher proportion of girls (26.1%) compared to boys (20.2%) reported consuming pasta, rice and noodles 4–6 times in a usual week. This difference was found to be statistically significant (p<.01). Close to half of all boys and girls reported consuming these foods 1–3 times a week. Overall, 80.2% of children reported eating pasta, rice or noodles once a week or more, including 10.2% of children consuming this food every day.

Figure 9: Usual consumption of pasta, rice & noodles, percentage by sex, 2009

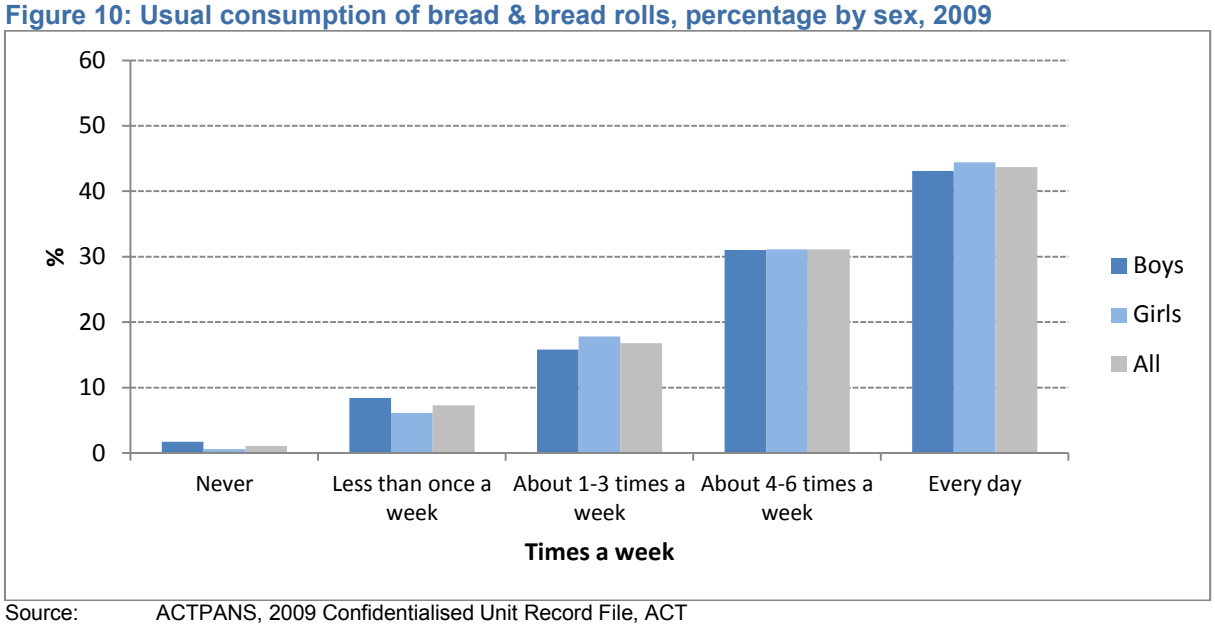


Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 10 shows the usual consumption of bread and bread rolls by sex. Boys and girls generally consumed this food on a similar number of occasions in a usual week. Seventeen percent of children reported eating bread or bread rolls one to three times a week, 31% ate this food four to six times a week and 43.7% ate bread products every day.

* Due to small numbers this percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

Figure 10: Usual consumption of bread & bread rolls, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

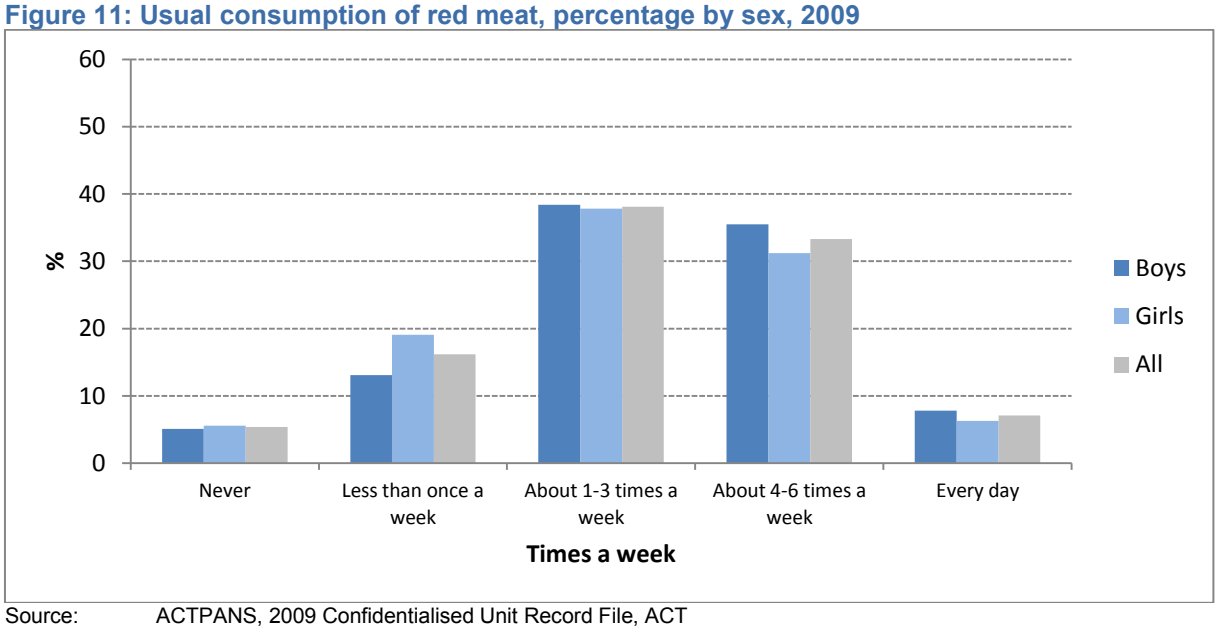
The number of times a week that children reported usually eating pasta, rice and noodles, and bread and bread rolls in 2009 remained unchanged from 2006.

Meat, fish and poultry consumption

Meat, fish and poultry contribute important nutrients to an Australian diet.[18 26 27]

Figure 11 shows the usual consumption of red meat by sex. Boys and girls generally reported eating red meat on a similar number of occasions in a usual week. Thirty eight per cent of children reported eating it 1–3 times a week. About 1 in 7 children (boys; 7.8%: girls; 6.3%) reported eating it every day. Overall, 43.3% of boys and 37.5% of girls reported eating red meat 4 or more times a week and this difference was found to be statistically significant ($p<.05$). A lower proportion of boys (13.1%) than girls (19.1%) reported eating red meat less than once a week and this difference was also found to be statistically significant ($p<.01$).

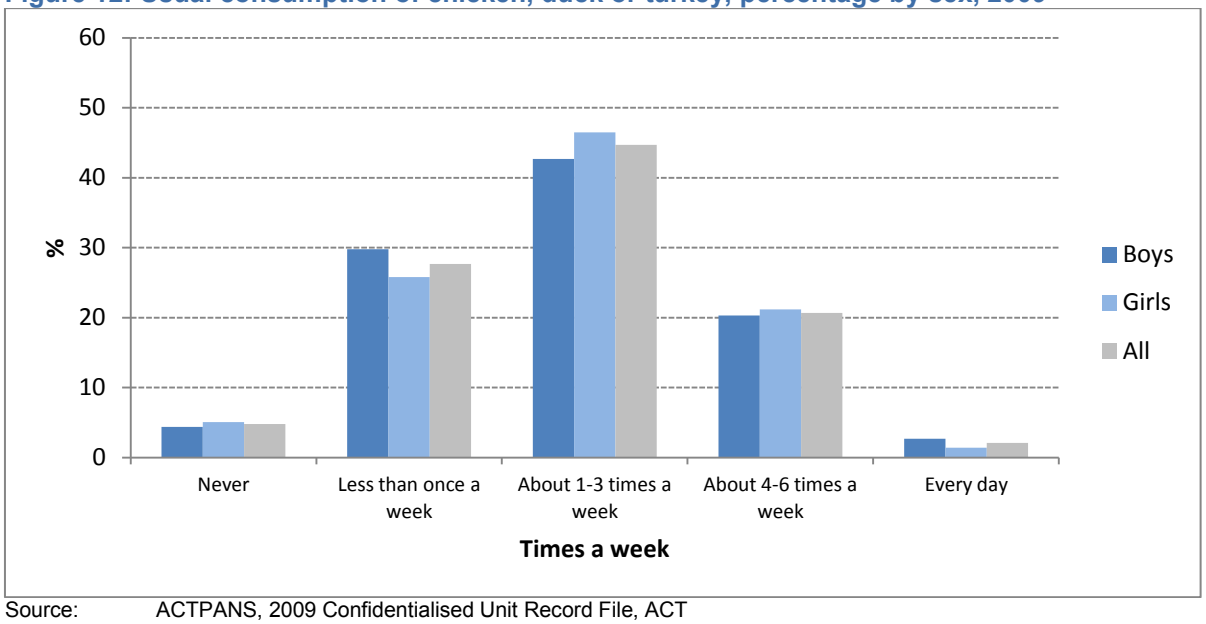
Figure 11: Usual consumption of red meat, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 12 shows the usual consumption of chicken, turkey and duck by sex. Boys and girls generally tended to eat these meats on a similar number of occasions in a usual week. Forty-six percent of children reported eating chicken, duck or turkey about 1–3 times a week. Two percent reported eating poultry every day. Overall, 23% of children reported eating chicken, duck or turkey 4 or more times a week.

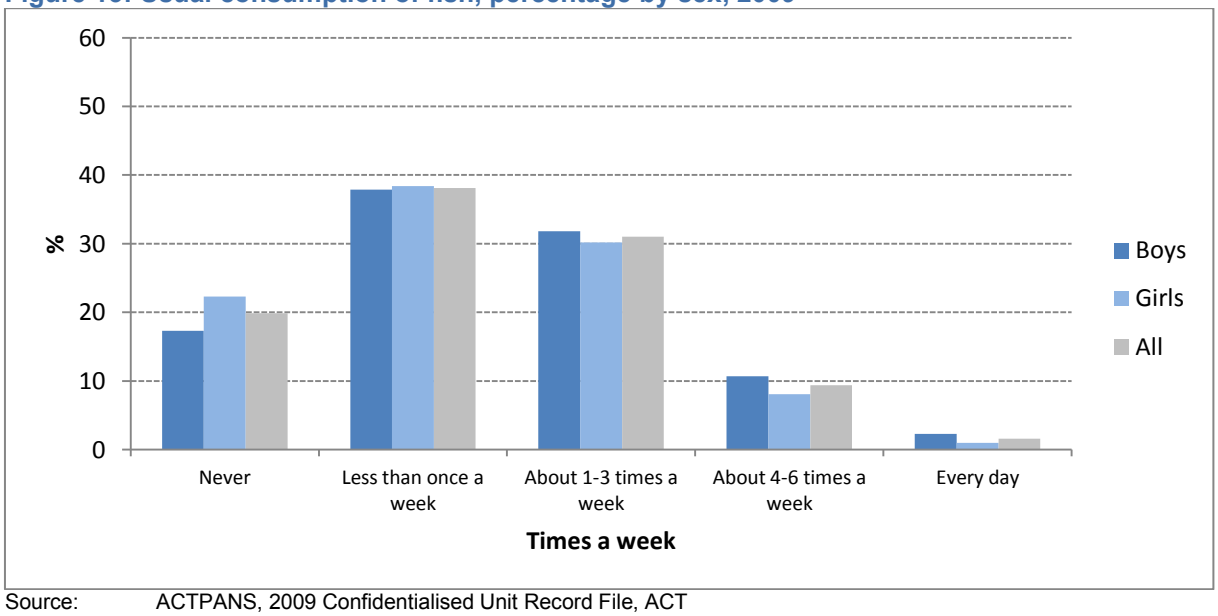
Figure 12: Usual consumption of chicken, duck or turkey, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 13 shows the usual consumption of fish by sex. As with red and white meat consumption, there was little difference between boys and girls in their patterns of eating fish. Over half of all children (58%) reported either eating fish less than once a week or not at all. Less than 2%* of children reported eating fish every day. Thirty-two per cent of boys and 30% of girls reported eating fish 1–3 times a week. Overall, 89% of children reported eating fish no more than 3 times a week. Girls (22.3%) were more likely than boys (17.3%) to report never eating fish, with this difference being statistically significant ($p<.05$).

Figure 13: Usual consumption of fish, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

* This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

Trends

The number of times a week that children reported usually eating red meat in 2009 remained unchanged from 2006.

Less children reported eating chicken, duck or turkey 1–3 times a week in 2009 (27.8%) compared to 2006 (31.3%) with this difference being statistically significant (p<.05). Conversely, there was an increase in the proportion of children that reported eating these meats 4–6 times a week in 2009 (20.8%) compared to 2006 (16.4%). This difference was found to be statistically significant at the p<.01 level.

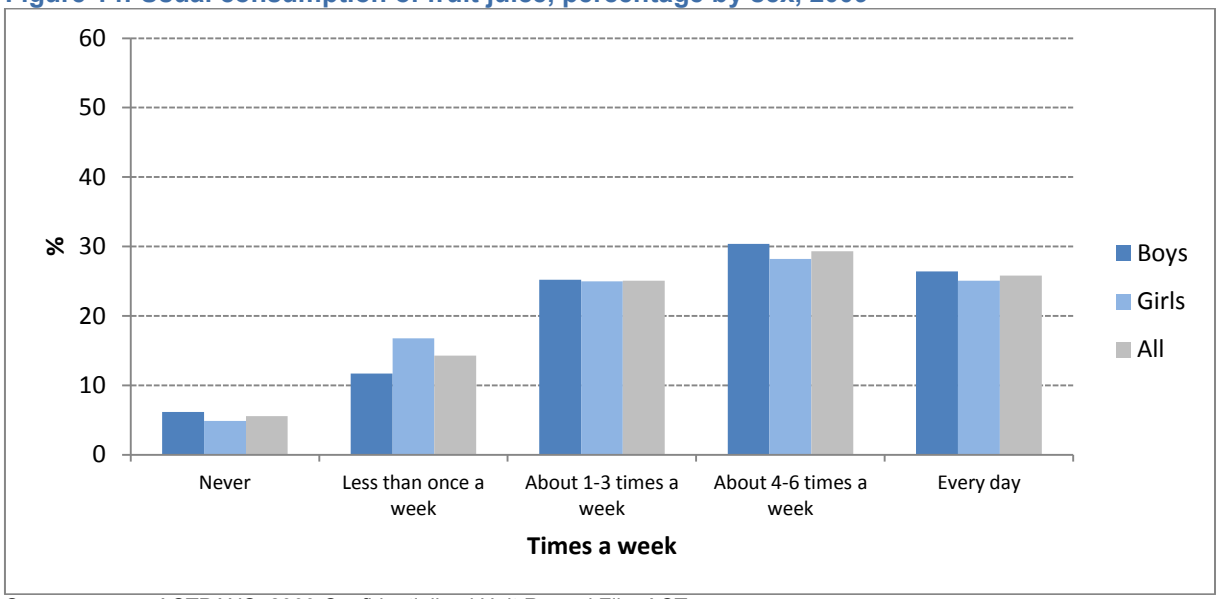
The proportion of children that reported eating fish about 1–3 times a week increased slightly to 31.0% in 2009 compared to 27.4% in 2006. This difference was found to be statistically significant (p<.05).

Fruit juice consumption

Fruit juice can represent a good source of vitamin C, but is high in sugar and can lead to excess energy intake if consumed in large quantities. Distinctions between 100% fruit juice and non-pure fruit juice were not investigated given difficulties in children's ability to identify the difference.

Figure 14 shows the usual consumption of fruit juice by sex. Over half of all children (55%) reported drinking fruit juice 4 or more times a week, with one-quarter (25.8%) drinking it every day. Of those reporting to drink fruit juice every day the average consumption was 2.2 times per day. Patterns of fruit juice consumption were largely similar for boys and girls.

Figure 14: Usual consumption of fruit juice, percentage by sex, 2009



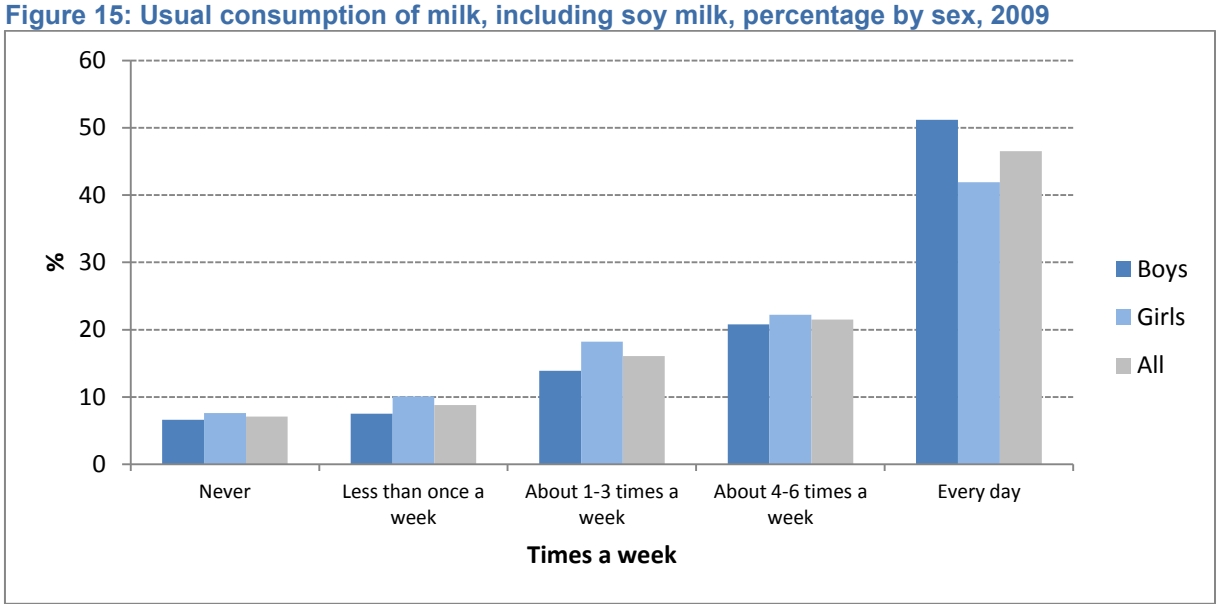
Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT
Note: Distinctions between 100% fruit juice and non-pure fruit juice were not investigated given difficulties in children's ability to identify the difference.

Milk consumption

Milk is a major source of key nutrients, including calcium, vitamin A, riboflavin, vitamin B and zinc. It also provides around 20% of the saturated fat intake of children and 14% of adolescents. The NH&MRC therefore recommends that children over two years of age consume mainly low fat milk products.[18] Presented below are the findings related to children's milk consumption. As it is difficult for children to identify the fat content in the milk they consume information on this was not collected.

Figure 15 shows that boys reported drinking milk more frequently than girls. Over half of all boys (51.2%) compared to 41.9% of girls reported drinking milk every day. This difference was found to be statistically significant (p<0.01). Of the children that reported drinking milk every day the average frequency of consumption was 2.2 times per day. Twenty five percent of children reported drinking milk 3 or less times a week, with girls more likely to report drinking milk 3 or less times a week (28.3%) compared to boys (21.4%). This difference was found to be statistically significant (p<.01). Only seven percent of children reported never drinking milk.

Figure 15: Usual consumption of milk, including soy milk, percentage by sex, 2009



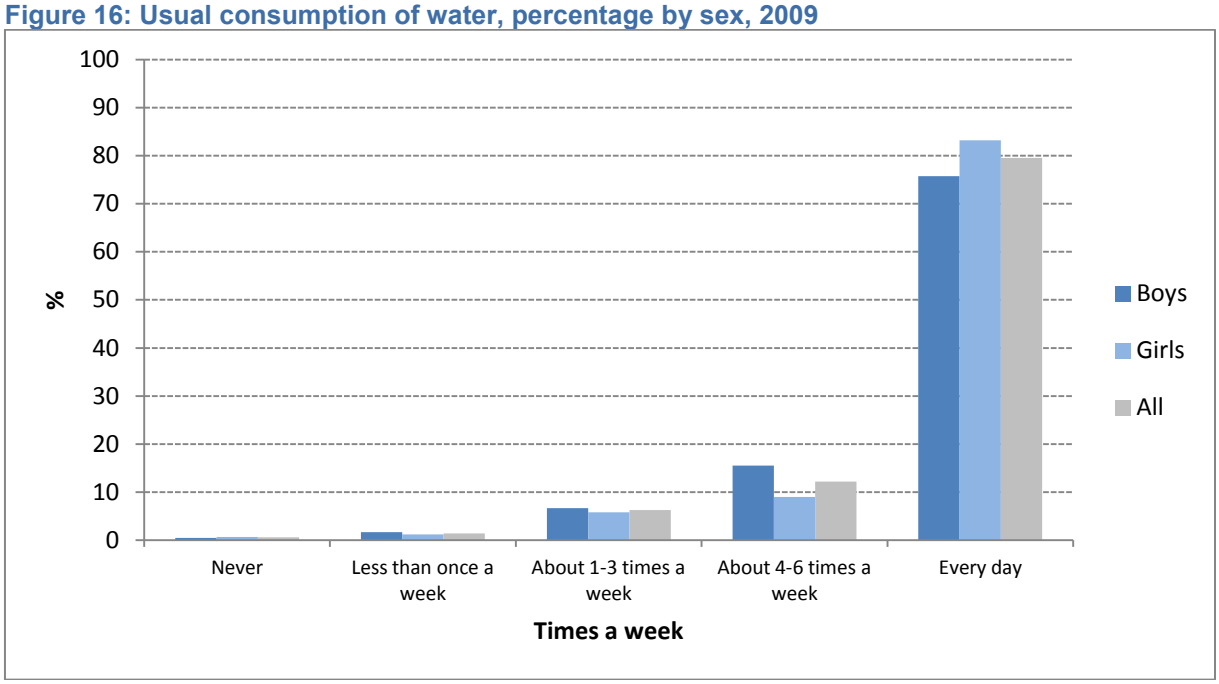
Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Water consumption

Adequate fluid intake is essential for maintaining a healthy body. To avoid excessive sugars and fats the NH&MRC recommends that children drink water as their main source of fluid intake.[18]

Figure 16 shows the usual consumption of water by sex. Almost 80% of children reported drinking water every day, with more girls (83.2%) compared to boys (75.7%), reporting this frequency of water consumption. This difference was found to be statistically significant (p<.01). Twelve percent of children reported drinking water four to six times a week; however 7.7% reported drinking it three or less times a week. Less than 1%* of children reported never drinking water. Children who drank water every day reported drinking it 5.1 times a day on average.

Figure 16: Usual consumption of water, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

* This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

Trends

In general children reported drinking less fruit juice and drinking more water in 2009 compared to results from the 2006 survey.

There was a decrease in the proportion of children (both boys and girls) that reported drinking fruit juice every day in 2009 (25.7%) compared to 2006 (30.4%) and this was statistically significant (p<.01). In addition, there was an increase in the proportion of children that reported never drinking fruit juice in 2009 (5.6%) compared to 2006 (3.8%) (p<.05).

The number of times a week that children reported usually drinking milk in 2009 was similar to that reported in 2006.

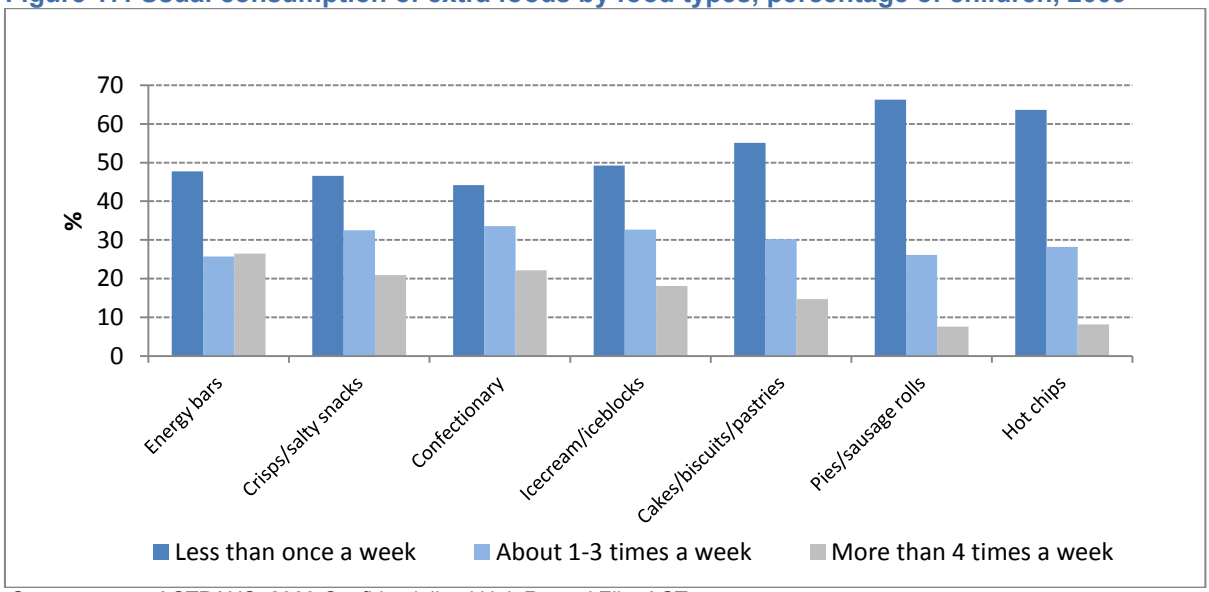
There was an increase in the proportion of children that reported drinking water every day in 2009 (80.0%) compared to 2006 (77.2%) and this difference was statistically significant (p<.01).

Extra food consumption

The Australian Guide to Healthy Eating describes foods that do not fit into a main food group as "extra foods". These tend to be foods that are non-essential for providing the nutrients required in a healthy diet and also tend to be energy dense with high fat, salt or sugar content.[28] This section looks at several "extra foods" that are popular among children.

Figure 17 shows the usual consumption of extra foods for Year 6 student by food type. Confectionary was the most frequently consumed extra food type, with 55.8% of children eating this food one or more times a week. This includes 22.2% of children eating confectionary 4 or more times a week. Crisps and salty snacks were the second most frequently consumed extra food, with 53.5% of children eating them one or more times a week, including 20.9% of children reporting eating them 4 or more times a week. Energy bars were the third most frequently consumed of the extra foods, with over half (52.2%) of children eating them one or more times a week. This includes over one quarter (26.5%) of children reporting eating energy bars 4 or more times a week. Pies and sausage rolls and hot chips were the least frequently consumed of the extra foods with less than 10% of children reporting eating them 4 or more times a week (pies/sausage rolls: 7.6%, hot chips: 8.2%).

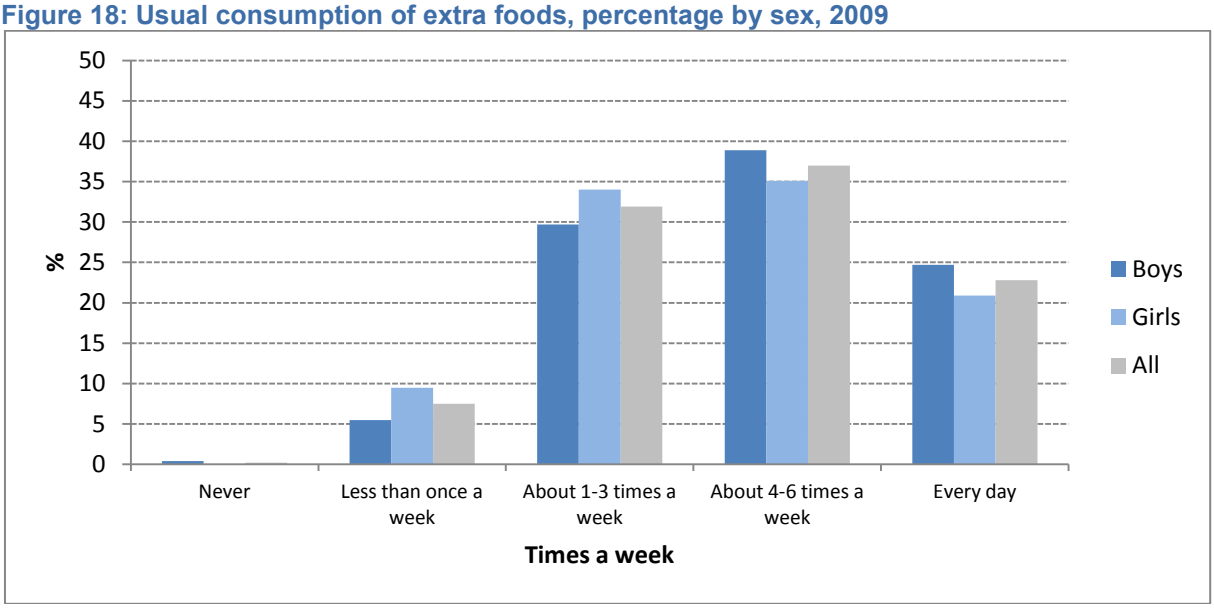
Figure 17: Usual consumption of extra foods by food types, percentage of children, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 18 shows the usual consumption of at least one extra food in a usual week by sex. Boys reported consuming extra foods more frequently than girls during a typical week. Sixty four per cent of boys and 56% of girls reported eating extra foods 4 or more times a week. This difference was found to be statistically significant (p<.01). Of this group, 25% of boys and 21% of girls reporting eating these foods every day.

Figure 18: Usual consumption of extra foods, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

Generally, fewer children reported eating extra foods during a usual week in 2009 compared to 2006.

Fewer children reported eating energy bars 4 or more times a week in 2009 (26.5%) compared to 36.5% in 2006, with this difference being statistically significant ($p<.01$).

Fewer children also reported eating crisps and salty snacks (2009: 20.9%, 2006: 24.6%) and ice-cream and ice-blocks (2009 18.1%, 2006 21.4%) 4 or more times a week, with these differences being statistically significant ($p<.05$).

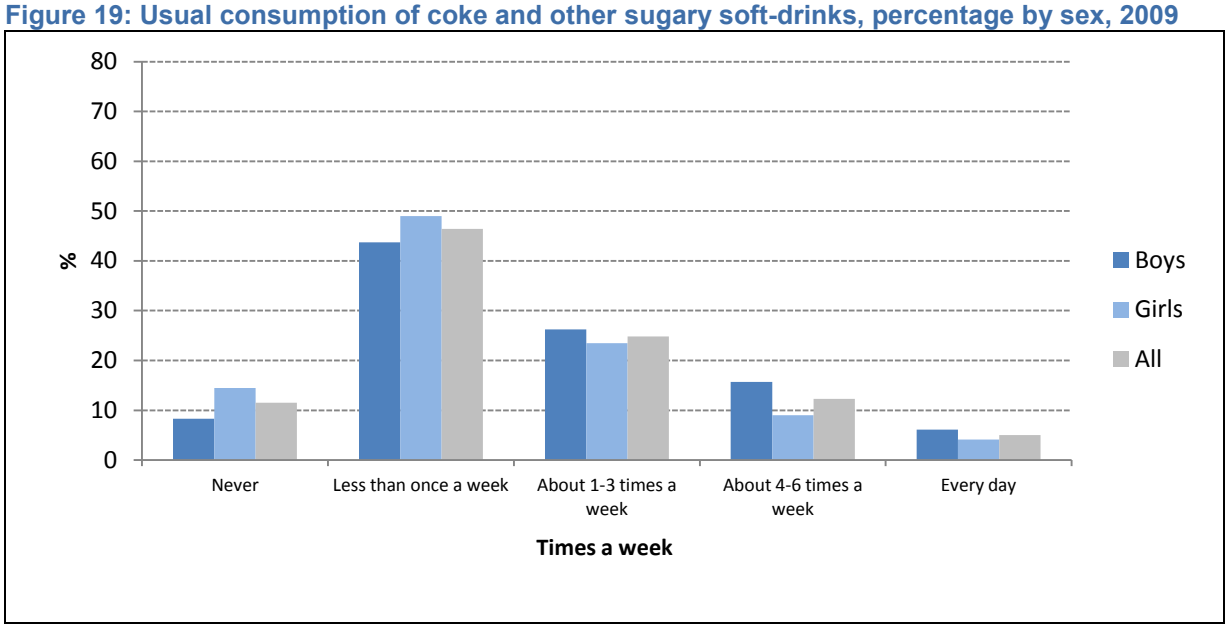
Fewer children reported eating extra foods every day in 2009 (22.8%) compared to 2006 (29.1%), with this difference being statistically significant ($p<.01$).

Soft drink consumption

Sugary soft-drinks tend to be low in nutrients, high in sugar, and provide low satiety when consumed. They are associated with overweight and obesity as well as dental caries in young children.[29 30]

Figure 19 shows that overall boys were more likely to drink sugary soft-drinks than girls. Almost one-half (48.0%) of boys reported drinking sugary soft-drinks once a week or more compared to 36.6% of girls with this difference being statistically significant ($p<.01$). Slightly more boys (6.1%) reported drinking these drinks ever day compared to girls (4.1%).

Figure 19: Usual consumption of coke and other sugary soft-drinks, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

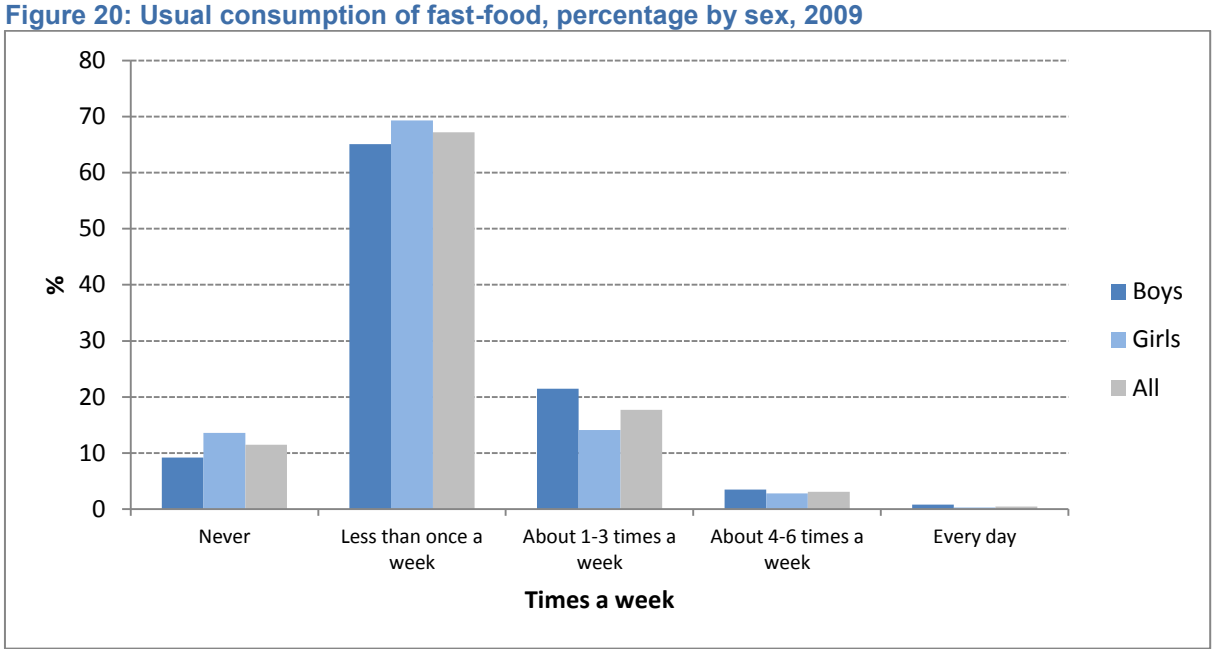
The number of times a week that children reported usually drinking coke and other sugary drinks 2009 was unchanged from 2006.

Fast-food consumption

Fast-food is a growing phenomenon in many developed countries with statistics indicating that consumption by children has increased by 300% over the last two decades.[31] National household expenditure survey data in Australia indicate that average weekly expenditure on meals out and fast food increased from 18% in 1975-76 to 30.8% in 2009-10 as a proportion of total average weekly expenditure on all food and non-alcoholic beverages. Industry data support this trend with recent data showing that the fast food industry has continued to grow in Australia since the 1980s.[32] [33] Fast-foods tend to be energy dense with high sugar and fat content. Current dietary guidelines recommend limiting the consumption of these types of foods.[34]

Figure 20 shows that overall boys were more likely to consume fast-food than girls. Twenty-six per cent of boys compared to 17% of girls reported eating food from a fast-food outlet once a week or more, with this difference being statistically significant ($p<.01$). However, only 3.6% of children reported eating food from a fast-food outlet 4 or more times a week. Sixty-seven per cent of children ate from these outlets less than once a week, and 11.5% reported never eating from these outlets, with girls (13.6%) more likely to report never eating from fast food outlets than boys (9.2%). This difference was found to be statistically significant ($p<.05$).

Figure 20: Usual consumption of fast-food, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

There was little difference in the proportions of children that reported eating food from a fast-food outlet one or more times a week in 2009 compared to 2006. However, in 2009 more children (67.2%) reported eating fast food less than once a week than in 2006 (63.5%), with this difference being statistically significant ($p<.05$). In addition, fewer children in 2009 (0.5%*) reported eating fast food everyday compared to 2006 (1.9%). While this difference was found to be statistically significant ($p<.01$), these proportions were very small.

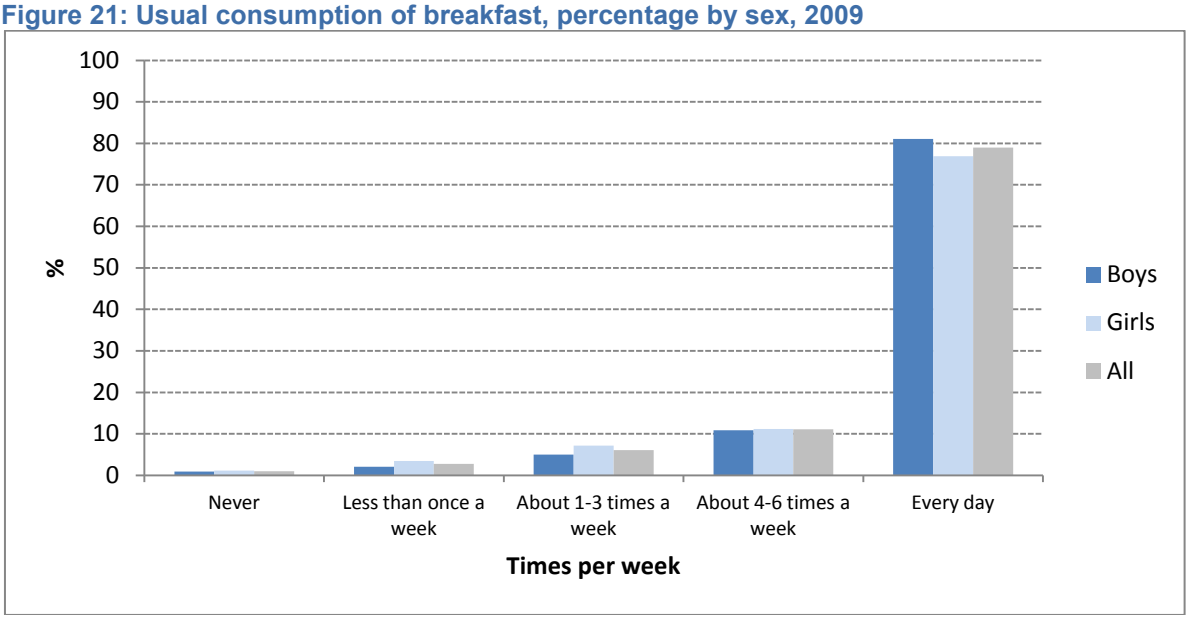
Meal patterns

Eating regular meals is important for ensuring children maintain a well balanced diet and healthy weight.[35 36] In addition, behaviours such as eating around the table and eating three meals a day may also influence the type and quantity of food that children consume. Presented below are findings related to children's consumption of breakfast, lunch and dinner.

Figure 21 shows the usual consumption of food for breakfast in a usual week for boys and girls. Overall, there was little difference between boys and girls in their regularity of eating breakfast. Almost 80% of children reported eating breakfast every day. Six percent of children reported only eating breakfast 3 times or less a week.

* This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

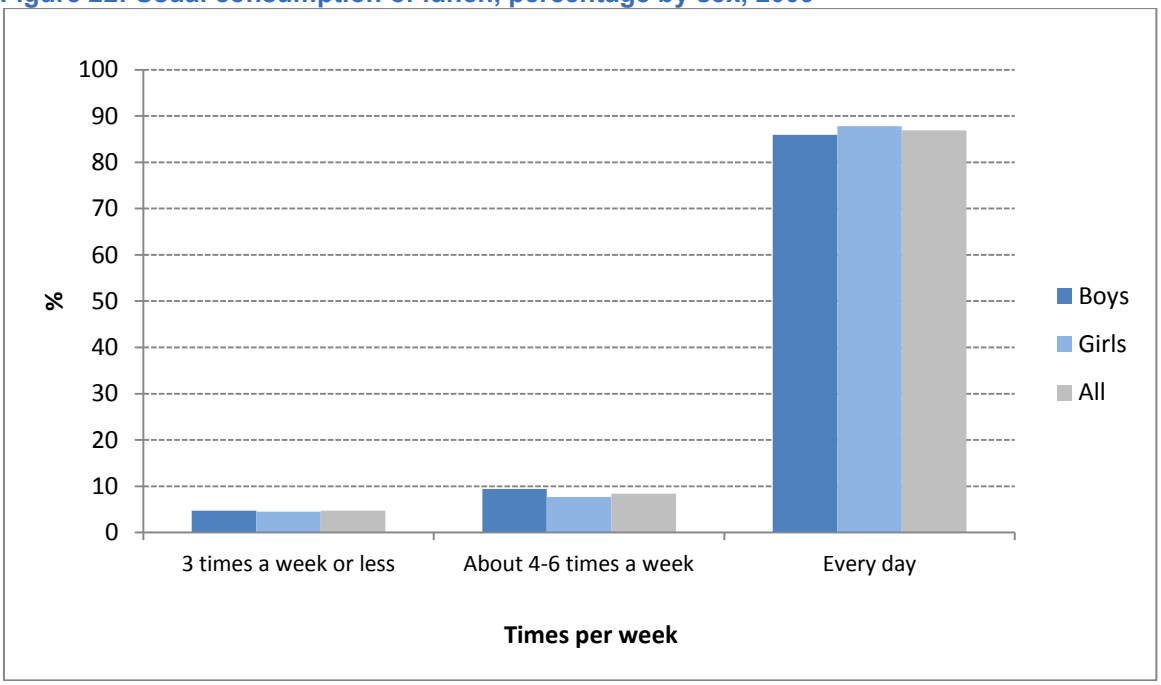
Figure 21: Usual consumption of breakfast, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 22 shows the usual consumption of food for lunch for boys and girls. As with breakfast there was little difference between boys and girls in their regularity of eating lunch. Eighty-seven percent of children reported eating lunch every day. Fewer than 5% of children reported eating lunch 3 times or less a week.

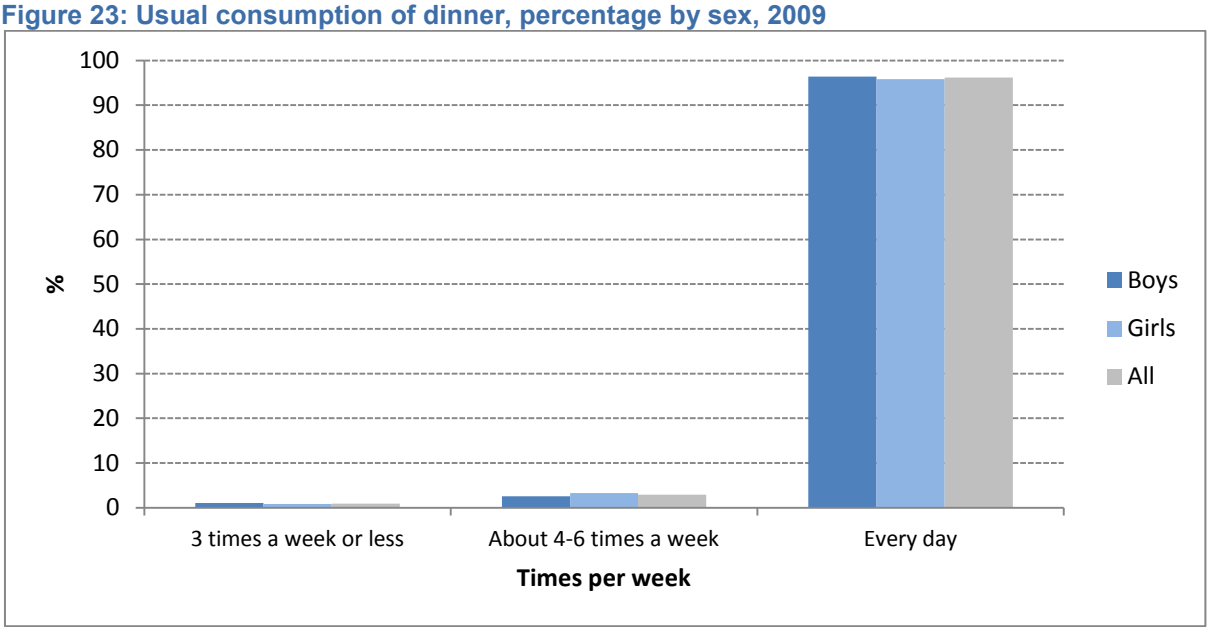
Figure 22: Usual consumption of lunch, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Figure 23 shows the usual consumption of food for dinner for boys and girls. Nearly every child (96.2%) reported eating dinner every day. Fewer than 4% of children reported not eating dinner every day. There was no difference between boys and girls in their regularity of eating dinner.

Figure 23: Usual consumption of dinner, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

There was no difference in the reported regularity of eating breakfast, lunch and dinner by children in 2009 and 2006.

3.3.2. Children's eating environments

Children's eating environments are determined by the availability of foods and the composition of their diet as well as patterns and behaviours around eating. Parents and caregivers influence the eating environment in which children's preferences and intake patterns may develop. Having healthy or unhealthy foods readily available in the home may increase the likelihood that these foods will be consumed.

Presented below are findings in relation to several questions that investigate children's eating environments.

Table 4 shows that overall the statements the children were most likely to agree with are "In my home fruit is available at any time", "In my home vegetables are usually served with dinner", and "My parent/carer insists that I eat something for breakfast" with over 90% of children agreeing with these statements. This table also shows that over one-quarter (26.6%) of children agree with the statement "Soft-drinks are usually available in my home", and over half (52.2%) of children agree that "I go to fast food outlets with my family".

There were differences in agreement between boys and girls for some statements. Girls (94.5%) were more likely than boys (90.5%) to agree that "In my home vegetables are usually served with dinner". Girls (70.6%) were also more likely than their male peers (56.0%) to agree with the statement "I help prepare meals for my family". Conversely, boys (30.8%) were more likely than girls (21.2%) to agree that "Soft drinks are usually available in my home". Boys (42.2%) were also more likely than their female peers (34.0%) to agree that "On weekends in my family we eat dinner in front of the TV". These differences were all found to be statistically significant at the $p<.01$ level.

Slightly more boys (29.9%) than girls (25.0%) agreed with the statement "On school nights in my family we eat dinner in front of the TV", and slighter fewer boys (89.0%) than girls (92.9%) agreed that "My parent/carer insists that I eat something for breakfast before school". These differences were found to be statistically significant at the $p<.05$ level.

Table 4: Children's eating environments: Percentage of boys & girls who strongly agreed or agreed with the statements, 2009

	Boys	Girls	All
In my home fruit is available at any time	92.5	94.7	93.5
In my home vegetables are usually served with dinner	90.5	94.5	92.4
Soft-drinks are usually available in my home	30.8	21.2	26.6
I never eat food from a fast food outlet	17.6	19.6	18.6
I go to fast food outlets with my family	53.4	51.9	52.2
My parent/carer insists that I eat something for breakfast before school	89.0	92.9	91.0
I help prepare meals for my family	56.0	70.6	63.0
On school nights in my family we eat dinner in front of the TV	29.9	25.0	28.0
On weekends in my family we eat dinner in front of the TV	42.2	34.0	38.2

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

There was little difference in children's agreement with the statements about their eating environments in 2009 compared to 2006. The exception to this was that more children in 2009 (18.6%) agreed with the statement "I never eat food from a fast food outlet" compared to 2006 (15.7%), and this difference was statistically significant ($p<.05$).

3.3.3. Attitudes to food

Attitudes which may indicate likes and dislikes to food can reflect important barriers and motivations to the types of food children consume and the frequency in which they are consumed.

Presented below are selected questions that investigate children's attitudes to fruit and vegetables, soft-drinks and fast-food.

Table 5 shows that boys were less likely to agree with statements indicating preferences for healthy foods than girls. Instead, boys were more likely than girls to agree with statements indicating preferences for soft-drink and fast food. A higher proportion of boys than girls agreed with all the statements about attitudes to food and all of these difference were found to be statistically significant ($p<.01$).

Table 5: Attitudes to selected foods: Percentage of boys & girls who strongly agreed or agreed with the statements, 2009

	Boys	Girls	All
Eating vegetables makes me feel healthy	76.3	85.3	80.9
I enjoy the taste of many vegetables	59.4	67.6	63.6
Eating fruit makes me feel healthy	84.7	90.8	87.8
I enjoy the taste of most fruit	88.0	92.5	90.3
I usually choose soft-drinks instead of water or milk	22.6	15.1	18.8
I choose soft-drinks with the best TV ads	13.9	6.4	10.1
I go to fast food outlets because I like the taste of the food	51.3	43.8	47.5
At fast food outlets if I can upsize I usually do	18.7	8.0	13.2
I choose the fast food outlet with the coolest TV ads	11.3	4.3	7.7

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT
Note: Sex differences were statistically significant for all attitude statements (agree, strongly agree) to p<0.01.

Trends

There was a change in children's attitudes towards soft-drink and fast-food between 2009 and 2006. Fewer children agreed with the statement "I usually choose soft-drinks instead of water milk" in 2009 (18.8%) than in 2006 (24.3%), and this difference was statistically significant (p<.01). Similarly, fewer children agreed that they "choose soft-drinks with the best TV ads" in 2009 (10.1%) compared to 2006 (12.8%), and this difference was also statistically significant (p<.05).

In regards to attitudes to fast-food, less children agreed with that statement "I go to fast food outlets because I like the taste of the food" in 2009 (47.5%) than they did in 2006 (57.4%). In addition, in 2009 fewer children (13.2%) agreed with their 2006 counterparts (21.9%) with the statement "At fast food outlets if I can upsize I usually do". Both these difference were found to be statistically significant (p<.01).

3.4. BMI status, psychosocial outcomes and behavioural associates

Obesity and overweight in children are risk factors for a number of serious health conditions including: asthma, sleep apnoea, fatty liver disease, type 2 diabetes, and hypertension and dyslipidaemi.[37] Overweight and obese children are also more likely to show more immediate physical health outcomes such as tiredness, breathlessness on exertion and heat intolerance.[37] In addition, these children can suffer from poor self-esteem[38] and body image,[39] and are more likely to be teased and bullied.[40]

The burden of poor health associated with overweight and obesity in childhood escalates in adulthood with dramatically increased risk of heart disease, diabetes, certain cancers and a host of other conditions. With the current epidemic of childhood obesity predicted to travel into adulthood there is concern that gains in life-expectancy seen over the last 200 years will soon reverse as a direct consequence of overweight and obesity.[41]

This section presents findings in relation to children's BMI status as well as comparisons with several psycho-social indicators such as self-rated health, body image, self-esteem, experiences of bullying and teasing. In addition, comparisons are made between children's BMI status and behaviours related to physical activity and nutrition.

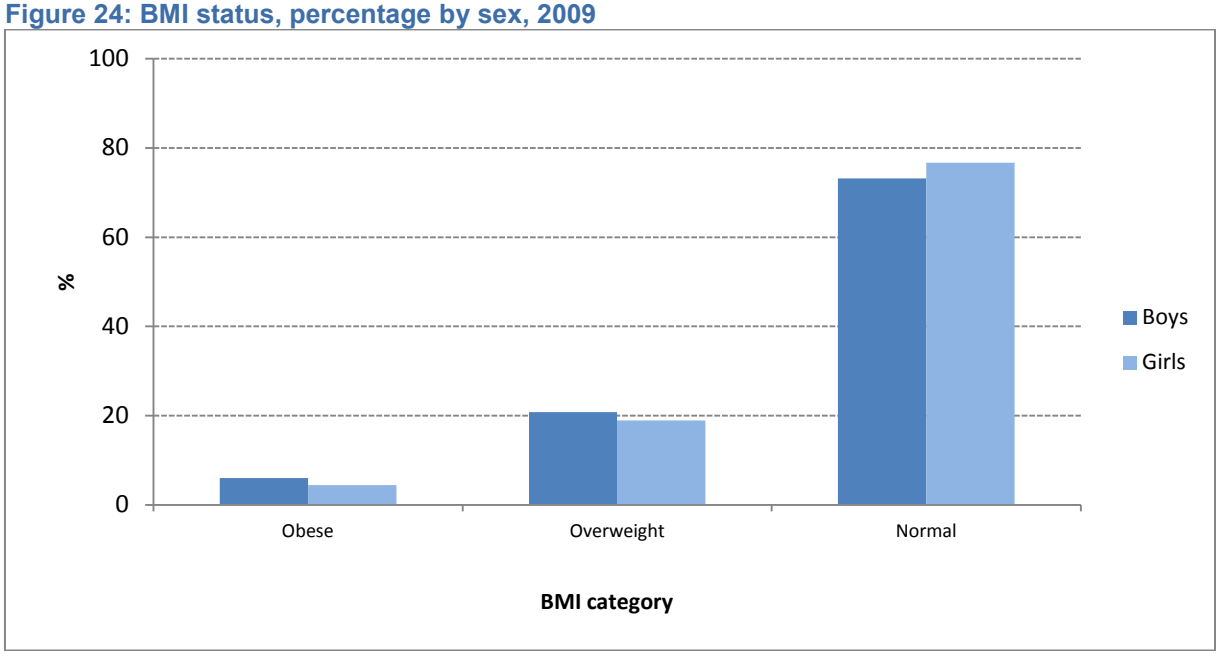
3.4.1. BMI status

The NH&MRC recommends the Body Mass Index (BMI) as a reasonable and easily determined measure of overweight and obesity in children and adolescents and should be used as the standard measure of persons aged 2 to 18 years in Australia for population health surveillance.[37] BMI is determined by dividing a person's weight in kilograms by height in metres.[2] Children's BMI scores are compared to an 'age by sex' reference chart to obtain the equivalent BMI value used for adults.[42]

As part of the ACTPANS study, children's heights and weights were measured by ACT Health child health nurses who recorded these measures using calibrated scales and measuring equipment.

Figure 24 shows the BMI status for boys and girls. Overall, one-quarter (25%) of all children were categorised as having an unhealthy weight by being classified as either overweight (19.8%) or obese (5.2%). Boys were more likely to be categorised as having an unhealthy weight than girls, with 26.8% of boys considered overweight (20.8%) or obese (6.0%), compared to 23.3% of girls (overweight: 18.9%, obese: 4.4%).

Figure 24: BMI status, percentage by sex, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

The proportions of children who were categorised as overweight (19.8%) or obese (5.2%) in 2009 were no different to 2006 (overweight: 20.5%, obese: 5.3%). Similar proportions of boys and girls were overweight or obese in 2009 and 2006.

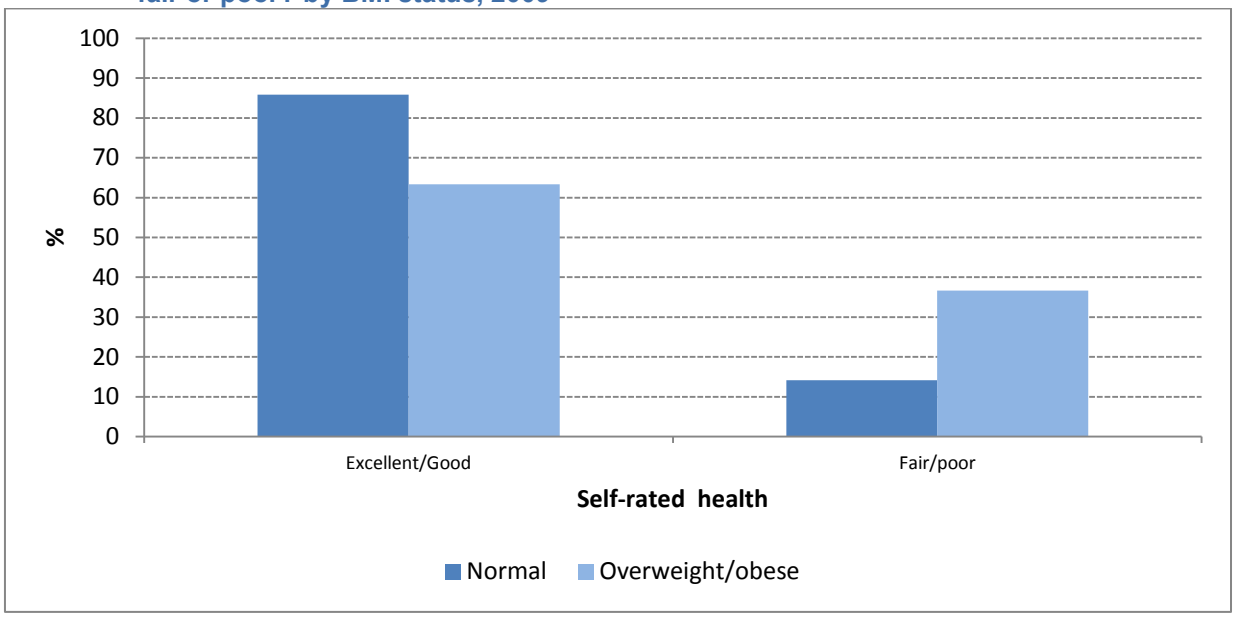
3.4.2. BMI, self-rated health and psycho-social outcomes

Self-rated health

Evidence shows that children who are overweight or obese are at greater risk of developing a number of serious health conditions.[21] Although the ACTPANS did not collect specific information on children's physical health, children were asked to rate their own health. Self-rated health is not necessarily indicative of the presence or absence of disease, but reflects children's perceptions of their own health, including what they might physically feel and also what they think conforms to societal mores around good health.

Figure 25 shows children's response to the question "Would you say your health is excellent, good, fair or poor". Children who were classified as overweight or obese were more than twice as likely to describe their health as 'fair' or 'poor' (36.7%) compared to children who were of normal weight (14.2%). Over eighty percent (85.8%) of children who were normal weight described their health as 'excellent' or 'good', compared to only (63.3%) of children who were overweight or obese. These differences were all found to be statistically significant ($p<.01$).

Figure 25: Children's response to the question "Would you say your health is excellent, good, fair or poor? by BMI status, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

In 2009 normal weight children (85.8%) were less likely to describe their health as 'good' or 'excellent' compared to normal weight children in 2006 (87.9%). Conversely, normal weight children were more likely to describe their health as 'fair' or 'poor' in 2009 (14.2%) compared to 2006 (12.1%). However, these differences were not statistically significant.

This pattern was also reflected in responses to this question by overweight or obese children, where fewer overweight or obese children described their health as 'good' or 'excellent' in 2009 (63.3%) compared to 2006 (70.9%). Overweight or obese children were also much more likely to describe their health as 'fair' or 'poor' in 2009 (36.7%) compared to 2006 (29%). These differences were statistically significant ($p<.05$).

Psycho-social outcomes

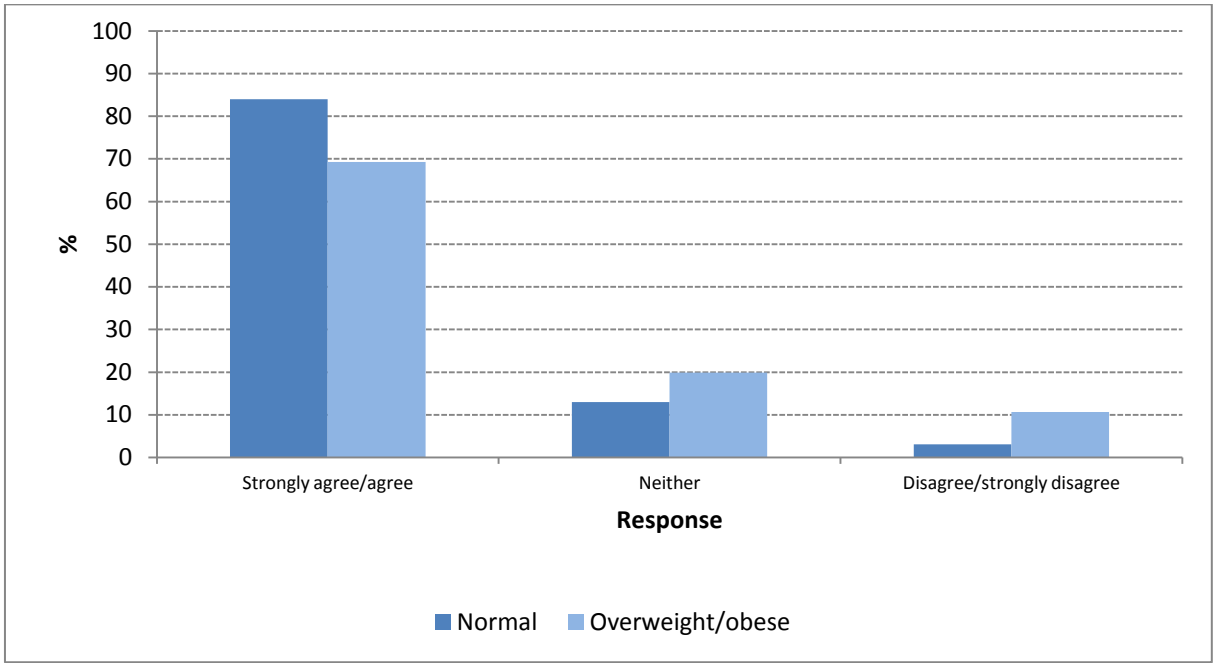
Several questions were included in the ACTPANS that investigate psychosocial outcomes for children including self-esteem, body image, bullying and teasing; which may lead to long term negative psychological and social outcomes.

Self-esteem

Self-esteem is a difficult concept to measure as it can vary across different domains such as home, school, peers, and sport. The ACTPANS included one question as a general measure of self-esteem which asks children whether they feel good about themselves.

Figure 26 shows children's level of agreement with the statement "I feel good about myself". Children who were classified as normal weight (84.0%) were more likely to either 'agree' or 'strongly agree' with the statement "I feel good about myself", compared to 69.3% of overweight or obese children. This difference was found to be statistically significant ($p<.01$). However, a higher proportion of overweight or obese children (19.9%) 'Neither agreed nor disagreed' with this statement, compared to normal weight children (13.0%). This difference was also statistically significant ($p<.01$). Children who were overweight or obese (10.7%) were more than twice as likely to 'disagree' or 'strongly disagree' with the statement, compared to children who were normal weight (3.1%). This difference was also statistically significant ($p<.01$).

Figure 26: Children's agreement with the statement "I feel good about myself", by BMI status, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

As in 2009, a higher proportion of normal weight children agreed with the statement "I feel good about myself" than overweight or obese children in 2006.

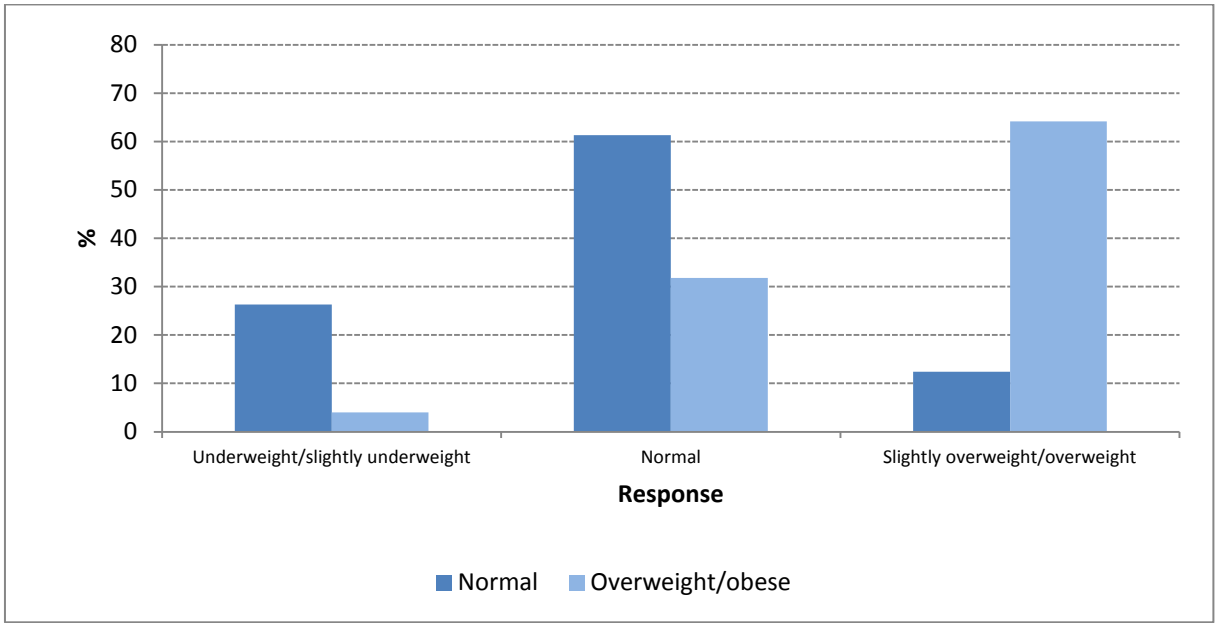
Body Image

As a measure of body image children were asked about their perception of their weight status. Children were also asked how happy they were with their weight.

Figure 27 describes children's responses to the question "How would you describe your weight status"? In general, these results indicate a mismatch between children's perceptions and the reality of their weight status.

Over one-third of children who were overweight or obese described themselves as being either normal weight (31.8%) or underweight/slightly underweight (4.0%). Of the normal weight children, 12.4% described themselves as slightly overweight/overweight and 26.3% as underweight/slightly underweight. Similar proportions of overweight or obese children and normal weight children held perceptions about their weight status that generally matched their true weight status. Sixty-four percent of overweight or obese children described themselves as slightly overweight/overweight and 61.3% of normal weight children described their weight status as normal.

Figure 27: Children's response to the question "How would you describe your weight", by BMI, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

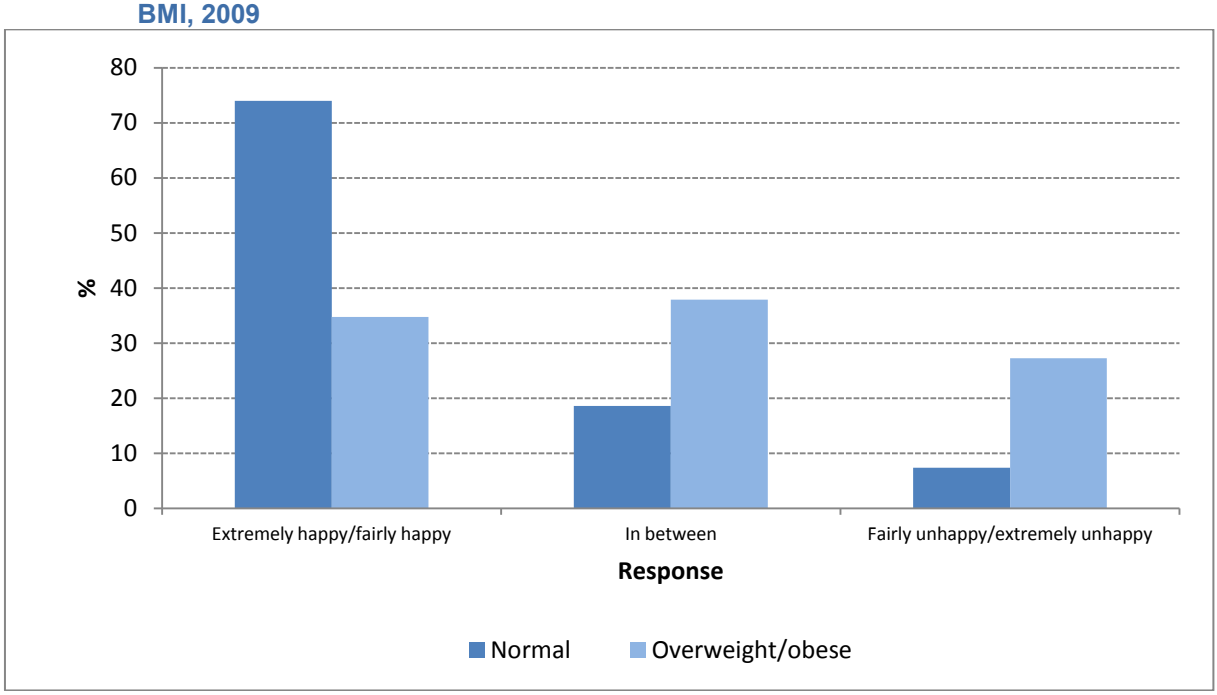
The only difference in children's response to the question "How would you describe your weight?" between the two surveys was that overweight or obese children were less likely to describe their weight status as underweight/slightly underweight in 2009 (4.0%*) than overweight or obese children in 2006 (9.1%). This difference was statistically significant (p<.01).

Figure 28 shows children's responses to the question "Are you happy about your weight"? Overall, children who were normal weight were more likely to report being happy with their weight than children who were overweight or obese. Almost 1 in 4 children who were overweight or obese (27.3%) responded that they were either 'fairly unhappy' or 'extremely unhappy' with their weight. This compares to only 7.4% of normal weight children who felt the same. This difference was found to be statistically significant (p<.01).

Conversely, fewer children who were overweight or obese (34.8%) reported being 'happy' or 'extremely happy' with their weight, compared to children who were normal weight (74.0%). This difference was statistically significant (p<.01). Over one-third of children who were overweight or obese (37.9%) were 'in between' in response to the question about how happy they were with their weight, compared to less than 20% of normal weight children who responded this way (18.6%). This difference was also found to be statistically significant (p<.01).

* This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

Figure 28: Children's agreement with the statement "Are you happy about your weight?", by BMI, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

More children reported being unhappy with their weight in 2009 than they did 2006.

In 2009, 7.4% of normal weight children reported being 'fairly' or 'extremely' unhappy with their weight compared to 5.6% of normal weight children in 2006. Similarly, 27.3% of overweight or obese children reported being unhappy with their weight in 2009 compared to 24.9% in 2006.

Conversely, fewer overweight or obese children reported being 'extremely' or 'fairly' happy with their weight in 2009 (34.8%) compared to these children in 2006 (41.2%). However, slightly more normal weight children reported being happy with their weight in 2009 (74.0%) compared to 2006 (70.3%).

A greater proportion of both normal and overweight or obese children reported being neither happy nor unhappy with their weight in 2009 than children in 2006 (normal weight children: 2009 18.6%, 2006 13.9%; overweight/obese children: 2009 37.9%, 2006 32.2 %).

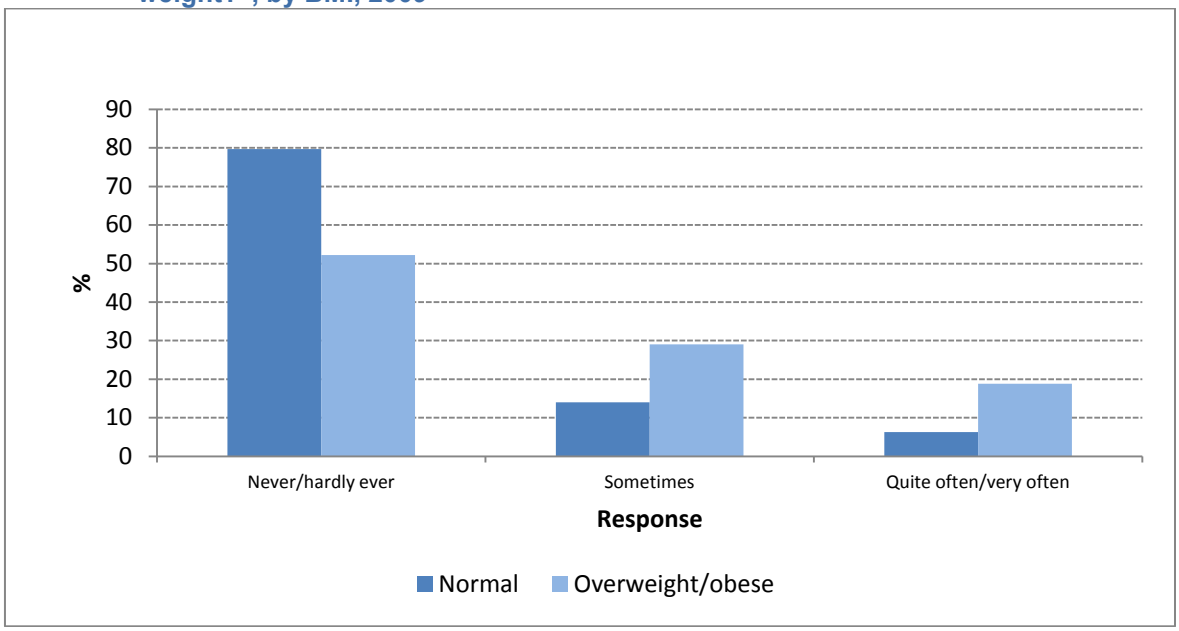
While, differences were seen none of them were found to be statistically significant and therefore should be interpreted with caution.

Teasing and bullying

Children who are overweight or obese may be stigmatised and may therefore be at risk of being teased or bullied by other children. Children were asked whether they were teased about their weight and also how often they had been bullied.

Figure 29 shows children's responses to the question "Have you ever been teased about your weight?" Overall, children who were overweight or obese reporting being teased more often than normal weight children. Nineteen percent of children who were overweight or obese responded that they were teased about their weight 'often' or 'very often', compared to less than half of this proportion of normal weight children (6.3%). This difference was found to be statistically significant ($p<.01$). In addition, almost one-third of overweight or obese children (29.0%) reported that they were teased about their weight 'sometimes', compared to only 14.0% of normal weight children. This difference was also found to be statistically significant ($p<.01$).

Figure 29: Children's agreement with the statement "Have you ever been teased about your weight?", by BMI, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

A greater proportion of all children responded that they were teased about their weight 'often' or 'very often' in 2009, compared to 2006. Nineteen percent of overweight or obese children responded this way in 2009 compared to 13% in 2006. This difference was found to be statistically significant ($p<.05$).

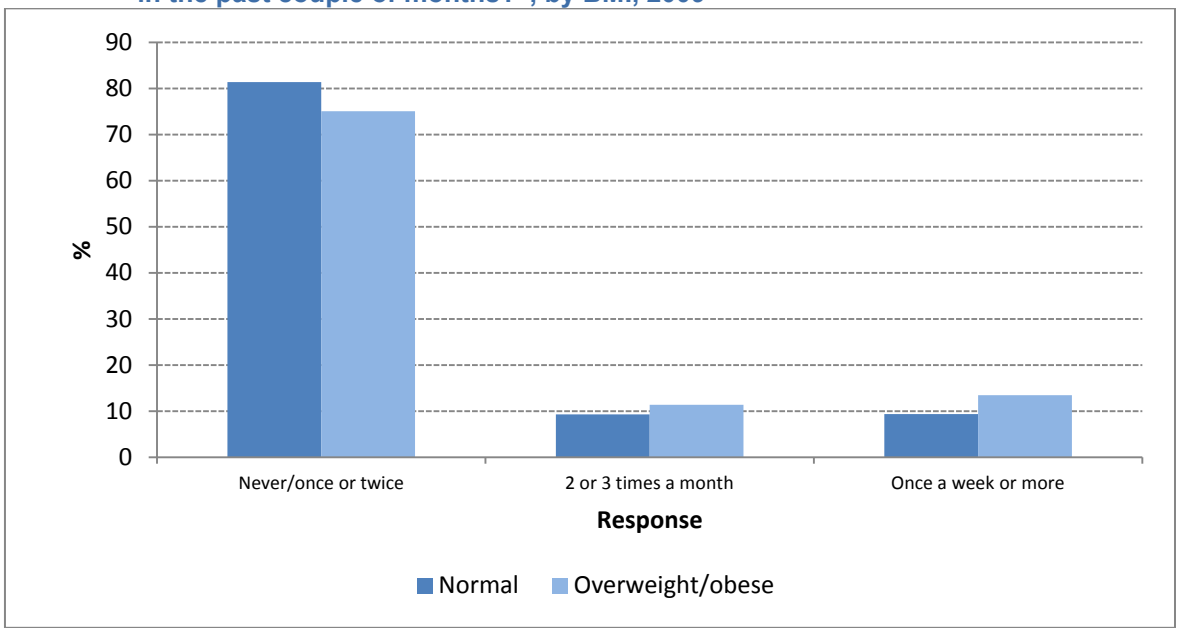
Slightly more normal weight children reported being teased about their weight 'often' or 'very often' in 2009 (6.3%) compared to 2006 (5.1%). There was no significant difference between the proportion of children of any weight status who reported being teased about their weight 'sometimes' in 2009 compared to 2006.

Figure 30 shows children's responses to the question "Have often have you been bullied at school in the past couple of months"?

Overall, children who were overweight or obese were somewhat more likely to report being bullied at school than children who were a normal weight. Of the children that reported being bullied at school once a week or more, 13.5% were overweight or obese and 9.4% were normal weight. This difference was found to be statistically significant ($p<.05$).

Over 10% of overweight or obese children reported being bullied at school two or three times a month (11.4%), while less than 10% of normal weight children (9.3%) reported being bullied at school this often. Overweight or obese children were less likely (75.1%) to report 'never' or only 'once or twice' been bullied at school, compared to 81.4% of normal weight children. This difference was also statistically significant ($p<.05$).

Figure 30: Children's agreement with the question "How often have you been bullied at school in the past couple of months?", by BMI, 2009



Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Trends

There was little difference in children's responses to the question asking how often they had been bullied at school between the two surveys in 2009 and 2006.

3.4.3. BMI status and characteristics related to physical activity, and nutrition

Children's BMI status is directly influenced by their physical activity levels and eating patterns. This section investigates difference between children who are overweight or obese and children who are a normal weight in regards to their physical activity, and nutrition behaviours and attitudes.

BMI status and physical activity

Table 6 shows selected physical activity characteristics for children according to their BMI status.

A higher proportion of normal weight children reported taking part in moderate to vigorous physical activity for 4 hours or more outside of school hours in a typical week (41.7%) compared to overweight or obese children (32.4%). This difference was statistically significant ($p<.01$).

Contrary to this finding, overweight and obese children were more likely to report taking part in PE classes three or more times (65.8%) during a typical week at school compared to 59.2% of normal weight children. This difference was also found to be statistically significant ($p<.05$).

Although, overweight or obese children reported being more sedentary than normal weight children, these differences were not statistically significant.

Table 6: Selected physical activity characteristics, percentage of children by BMI status, 2009

	Normal weight	Overweight or obese	P
Moderate to vigorous physical activity for minimum of 60 minutes every day	23.8	19.3	NS
Moderate to vigorous physical activity at school for 4 or more hours in a week	30.7	26.7	NS
Moderate to vigorous physical activity outside of school for 4 or more hours in a week	41.7	32.4	p<.01
Participation in PE classes 3 or more times a week	59.2	65.8	p<.05
Never walks or rides bike to school	53.0	57.5	NS
Not involved in an organised sport during the school term[#]	26.3	27.5	NS
TV viewing for more than 2 hours a day on weekdays	29.0	34.2	NS
Using a computer for more than 2 hours a day on weekdays	11.3	15.1	NS
TV viewing for more than 2 hours a day on weekends	48.4	50.8	NS
Using a computer for more than 2 hours a day on weekends	23.1	27.0	NS

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT

Notes: The p value is the probability that the difference observed could have occurred by chance if the groups were really alike. NS (Not Significant) denotes values that are greater than .05 and therefore are not statistically significant. The p value was obtained from the chi-square test.

[#]excludes organised sports not listed in the questionnaire that children may have taken part in during the school term.

Trends

While there was no difference in the proportions of normal weight, overweight or obese children that reported taking part in moderate to vigorous physical activity for 60 minutes every day in 2009 compared to 2006; the data suggest that there was an increase in all children's physical activity levels at school, and a decrease in activity levels of overweight or obese children outside of school. Normal weight children were more likely to report sedentary behaviours in 2009 compared to 2006.

A higher proportion of both normal weight and overweight or obese children reported participating in 3 or more hours of PE class in a week in 2009 compared to 2006 (2009: normal weight 59.2%, overweight or obese 65.8%; 2006: normal weight 53.6%, overweight or obese 48.4%), and these differences were found to be statistically significant (p<.05 and p<.01), respectively.

There was a decrease in the proportion of overweight or obese children who reported taking part in "moderate to vigorous physical activity outside of school for 4 hours or more in a week" in 2009 (32.4%) compared to 2006 (40.6%). This difference was found to be statistically significant (p<.05).

A higher proportion of both normal weight and overweight or obese children reported "never walking or riding their bike to school" in 2009 compared to 2006 (2009: normal 53.0%, overweight or obese 57.5%; 2006: normal 44.9%, overweight or obese 48.7%). These differences were found to be statistically significant (p<.01 and p<.05), respectively.

At the same time, statistically significant (p<.05) increases were observed in the proportion of normal weight children that reported "using a computer for more than 2 hours a day on weekdays" in 2009 (11.3%) compared to normal weight children in 2006 (8.3%); "using a computer for more than 2 hours a day on weekends" (2009 23.1%; 2006 18.5%); and "TV viewing for more than 2 hours a day on weekends" (2009 48.4%; 2006 43.0%).

Similarly, a higher proportion of overweight or obese children reported "using a computer for more than 2 hours a day on weekdays" in 2009 (15.1%) compared to 2006 (10.5%). In contrast, the proportion of overweight or obese children that reported "using a computer for more than 2 hours a

day on weekends" decreased to 27.0% in 2009 from 24.0% in 2006, and the proportion that reported "TV viewing for more than 2 hours a day on weekends" decreased to 50.8% in 2009 from 54.2% in 2006. However, none of these differences were statistically significant.

BMI status and attitudes to physical activity

Table 7 shows differences between children's attitudes to physical activity on the basis of their BMI status. Children who were overweight or obese were more likely than normal weight children to report not being very good at physical activity, not having anyone to be active with, disliking how physical activity makes them feel and preferring to do sedentary activities. Overweight or obese children were also more likely to report having an injury or health issue that prevents them from being active. Normal weight children were more likely to 'agree' or 'strongly agree' with the statement "I do a lot of physical activity". Many of these differences were statistically significant (p<.05 or p>.01).

Table 7: Attitudes to physical activity by BMI status for children who 'agreed' or 'strongly agreed' with the following statements, 2009

	Normal weight	Overweight or obese	P
I do a lot of physical activity	85.3	76.1	p<.01
I look funny when I am physically active	21.3	31.5	p<.01
I prefer to watch TV or play electronic games	17.9	27.8	p<.01
I don't have anyone to be physically active with	15.5	22.4	p<.01
I don't like how being physically active makes me feel	13.5	19.0	p<.05
I don't think I am very good at physical activity	12.3	23.7	p<.01
There are no parks or sports grounds near where I live	9.3	11.5	NS
I am scared I might get hurt if I played sport	9.0	8.7	NS
I have an injury that prevents me from being physically active	6.9	12.9	p<.01
I don't have enough time for physical activity	6.3	8.6	NS
Other kids make fun of me when I am physically active	6.0	12.3	p<.01
I don't have proper clothing or shoes to play sport in	5.0	5.7	NS
I have a health problem that prevents me from being physically active	4.6	7.6	p<.05
I don't like physical activity	3.9	7.8	p<.01

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT
Notes: The p value is the probability that the difference observed could have occurred by chance if the groups were really alike. NS (Not Significant) denotes values that are greater than .05 and therefore are not statistically significant. The p value was obtained from the chi-square test.

Trends

There was little change in children's attitudes to physical activity between 2009 and 2006, although in 2009 more overweight or obese children reported having a health problem (2009, 7.6%: 2006, 6.0%) or an injury (2009, 12.9%: 2006, 7.5%) that prevented them from being physically active. The difference in the proportions of children reporting having a health problem that prevented them for being physically active in 2009 compared to 2006 was statistically significant (p<.05).

BMI status and nutrition characteristics

Table 8 describes children's usual daily food intake by BMI status. In general, children ate similar foods irrespective of their BMI status. However, children who were overweight or obese were less likely to report eating bread (33.9%) and drinking milk (40.1%) everyday compared to children who were a normal weight (bread: 47.7%, milk: 48.8%). These differences were found to be statistically significant (p<.01). It should be noted that, while these data describe the types of foods and drinks

consumed by children every day it does not describe the quantity consumed (with the exception of daily serves of fruit and vegetables).

Table 8: Food intake characteristics, percentage of children by BMI status, 2009

Foods eaten or drank every day	Normal weight	Overweight or obese	P
Bread or bread rolls	47.7	33.9	p<.01
Pasta, rice or noodles	10.5	10.5	NS
Red meat	6.3	9.0	NS
Chicken, duck or turkey	2.3	1.3	NS
Fish	1.5	1.9	NS
Fruit juice	26.8	23.7	NS
Milk, including soy milk	48.8	40.1	p<.01
Water	79.8	81.5	NS
Cakes, biscuits and pastries	3.9	1.9	NS
Pies and sausage rolls	1.4	0.9	NS
Chocolate and lollies	7.4	5.2	NS
Hot chips	1.4	1.6	NS
Crisps and salty snacks	6.6	5.6	NS
Energy or fruit bars	10.0	10.2	NS
Ice-cream and iceblocks	4.6	4.3	NS
Fast-food	0.5	0.6	NS
Sugary soft-drinks	4.2	6.2	NS
Fruit (eaten 2–3 times a day)	58.3	63.3	NS
Vegetables (eaten 3–4 times a day)	41.2	39.2	NS

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT
Note: The p value is the probability that the difference observed could have occurred by chance if the groups were really alike. NS (Not Significant) denotes values that are greater than .05 and therefore are not statistically significant. The p value was obtained from the chi-square test.

Trends

In 2009, the proportion of overweight or obese children who reported eating fast-food every day decreased to less than 1%[*] from 3.1%[*] in 2006. This difference was statistically significant (p<.05). However, as these proportions are very small these findings should be interpreted with caution.

Less overweight or obese children reported eating bread (33.9%) and drinking milk (40.1%) every day in 2009 compared to 2006 (bread: 47.4%, milk: 44.3%), with this difference being statistically significant for bread (p<.01).

BMI status, eating environments and attitudes

Table 9 describes characteristics of children's eating environments by their BMI status. While some slight differences can be seen in eating environmental characteristics between children who were overweight or obese and children who were a normal weight, none of these differences were found to be statistically significant.

[*] This percentage yields a relative standard error of greater than 25% and thus should be interpreted with caution.

Table 9: Eating environment characteristics by BMI status for children who 'agreed' or 'strongly agreed' with the following statements, 2009

	Normal weight	Overweight or obese	P
In my home fruit is available at any time	94.4	91.5	NS
In my home vegetables are usually served with dinner	93.3	90.6	NS
Soft-drinks are usually available in my home	24.8	29.3	NS
I never eat food from a fast food outlet	19.4	16.3	NS
I go to fast food outlets with my family	53.5	52.6	NS
My parent/carer insists that I eat something for breakfast	91.6	90.6	NS
I help prepare meals for my family	63.3	65.6	NS
On school nights in my family we eat dinner in front of the TV	26.6	30.3	NS
On weekends in my family we eat dinner in front of the TV	36.9	40.3	NS

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT
Note: The p value is the probability that the difference observed could have occurred by chance if the groups were really alike. NS (Not Significant) denotes values that are greater than .05 and therefore are not statistically significant. The p value was obtained from the chi-square test.

Trends

There were no notable differences in the proportion of normal weight, overweight or obese children who agreed with the above statements describing characteristics of their eating environments between 2009 and 2006.

Table 10 describes children's attitudes to selected foods by their BMI status. In general, normal weight and overweight or obese children had similar attitudes about these foods. The exception was that children who were overweight or obese were more likely than normal weight children to 'agree' or 'strongly agree' with the statement "I choose soft-drinks with the best TV ads" (overweight or obese: 13.3%; normal weight: 9.1%). This difference was found to be statistically significant (p<.05).

Table 10: Attitudes to selected foods by BMI status for children who 'agreed' or 'strongly agreed' with the following statements, 2009

	Normal weight	Overweight or obese	P
Eating vegetables makes me feel healthy	82.0	78.9	NS
I enjoy the taste of many vegetables	63.0	65.6	NS
Eating fruit makes me feel healthy	88.9	85.5	NS
I enjoy the taste of most fruit	90.9	89.4	NS
I usually choose soft-drinks instead of water or milk	17.6	21.5	NS
I choose soft-drinks with the best TV ads	9.1	13.3	p<.01
I go to fast food outlets because I like the taste of the food	48.7	43.2	NS
At fast food outlets if I can upsize I usually do	14.1	10.6	NS
I choose the fast food outlets with the coolest TV ads	7.4	8.8	NS

Source: ACTPANS, 2009 Confidentialised Unit Record File, ACT
Note: The p value is the probability that the difference observed could have occurred by chance if the groups were really alike. NS (Not Significant) denotes values that are greater than .05 and therefore are not statistically significant. The p value was obtained from the chi-square test.

Trends

Overall, the proportions of normal weight and overweight or obese children that held the above attitudes about selected foods remained unchanged between 2009 and 2006.

4. Survey methods

4.1. Sampling framework

4.1.1. Target population

The target population was all children enrolled in Year 6 classes in ACT primary schools in 2009.

4.1.2. Sampling Procedures

The sample design involved a stratified random sampling procedure. Schools were stratified by school type (i.e. independent, Catholic and government), in order to ensure sufficient representation of children from different socio-economic backgrounds in the final sample. Schools were then randomly selected from within each school stratum. Within each school, all Year 6 children were invited to participate in the study.

In total, 34 schools participated in the survey (3 independent, 9 Catholic, 22 public schools). Thirty eight schools were invited to participate and 4 schools declined.

4.1.3. Sample size and response rate

The survey sample size was calculated on the basis that the sample would yield relative standard error of less than 25% for all BMI classifications. The sample size estimation included adjustment for clustering within schools. This increased the sample size by a factor of 1.3, which in turn yielded a sample size estimation of approximately 1,000.

A participation rate of 80% was sought. The sample for participation in the questionnaire component of the survey was 1,579 students with a final number of 1,374 children participating. The number of children who participated in the height and weight measure component was 1,328. This disparity was a result of height and weight measures and questionnaire administration taking place at different times and on different days. This could not be avoided due to the logistic difficulties of arranging these two events to occur on the same day within schools. There were also a few refusals to participate. With a total of 1,579 students invited to participate in the survey, a participation rate of 84% for completing both components and 87% for completing at least one component was achieved.

4.1.4. Ethics approval and consent

Prior to approaching schools and parents of grade 6 children to take part, ethics approval to conduct the survey was sought from and granted by ACT Health, ACT Department of Education and Training and the Catholic Education Office Ethics Committees.

A letter from the ACT Health Chief Health Officer was then sent to principals of schools selected for the survey explaining the study and seeking permission to conduct the survey within their school. Principals were requested to sign a consent form prior to participation in the study and give the name of a contact teacher who would be responsible for further liaison and organisation of the survey within the school.

Once permission to conduct the survey within the school had been given, a class list of Year 6 was requested.

A passive consent letter, signed by the Chief Health Officer was sent home to parents. This letter requested that parent's who did not want their child to participate should return a slip at the bottom of the letter.

4.2. Survey development

4.2.1. Height and weight measures

Data collection on Year 6 children coincided with the Year 6 immunisation program that operates throughout ACT primary schools each year. Registered nurses employed by ACT Health collected physical measures of children's height and weight. Measurements were performed in a private area by nursing staff either before or after the class had received their immunisations.

4.2.2. ACTPANS questionnaire

The questionnaire used for the 2009 survey was the same as the questionnaire administered in 2006. Information about the development of the 2006 questionnaire and the source and reliability and validity of the questions employed are described in detail in the 2006 Report on the ACT Year 6 Physical Activity and Nutrition Survey available in PDF format at: http://health.act.gov.au/health-services/public-health/epidemiology-branch/epidemiology-publications-health-series/act-year-6-physical-activity-and-nutrition-survey-2006.

4.2.3. Procedure for administrating the ACTPANS questionnaire

A survey administrator was recruited to liaise with the schools and to administer the questionnaire in schools. The survey administrator was a retired primary school principal with a strong background and reputation in teaching and building rapport with primary school children.

The Year 6 survey was administered during scheduled class-time and took approximately 45 minutes to complete. This time included an introduction to the survey and instructions on how to respond.

Upon completion of the questionnaire, children were each given a small gift consisting of a pencil, eraser and some stickers as a show of gratitude for their participation. These gifts all featured information on healthy fruit and vegetable from the Go for 2 & 5 campaign – an Australian Government, State and Territory health initiative (see www.gofor2and5.com.au for more information).

4.3. Data entry and analysis

4.3.1. Data entry

Codes were developed for all questions and data was entered manually into an SPSS spreadsheet. Data were checked for accuracy using a number of cross-checking methods. Outliers were removed where applicable.

4.3.2. Analysis

Data were weighted to the general population on the basis of sex and school type distribution and analysis was undertaken using SPSS and Excel. Physical activity and nutrition data were analysed by sex and BMI status. Significance testing of differences between sex, BMI status and survey years was achieved using chi square testing. As this was the second survey of its type undertaken in the ACT, it was possible to make comparisons of survey results over time.

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