

A young boy with short brown hair is shown in profile, drinking water from a clear plastic bottle. He is wearing a dark blue t-shirt. The background is a bright blue sky with some light clouds. The image is framed by a large, wavy blue shape that overlaps the text on the left and the boy on the right.

# The role of beverages in the diet of Australian children

Analysis and summary report  
commissioned by the Australian  
Beverages Council

Australian  
Beverages 

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## Introduction

The 2007 Australian National Children's Nutrition and Physical Activity Survey, known as Kids Eat, Kids Play (KEKP), is the first national survey of Australian children's nutrition since 1995 and the first national physical activity survey since 1985.

To gain a current and comprehensive understanding of how non-dairy, non-alcoholic beverages fit into the diet of Australian children, the Australian Beverages Council Ltd commissioned Flinders Partners (led by Professor Lynne Cobiac, Head, Department of Nutrition & Dietetics, Flinders University) to undertake an independent analysis of the KEKP data.

This publication provides a summary of the key findings contained in the KEKP report regarding the consumption behaviour of Australian children and addresses specific public health issues related to beverage intake.

### KIDS EAT KIDS PLAY SURVEY 2007

#### Data collection period:

- February to August 2007

#### Survey sample:

- 4,487 children aged 2 to 16 years from across Australia

#### Survey methods:

- 24 hour dietary recall on two occasions - once by computer assisted personal interview, followed 7 to 21 days later by computer assisted telephone interview
- Anthropometric measurements (2 to 16 Years) - height, weight and waist circumference
- Physical activity patterns (children aged 5 to 16 years) - children wore a pedometer for one week and children  $\leq 9$  years requested to complete 48-hour activity recall

#### Survey conducted by:

- CSIRO Preventative Health National Research Flagship
- University of South Australia



**“The industry recognises its responsibility to play a positive role in any solution framework”**



## Beverage Categories

The beverage category was diverse and the KEKP report grouped beverages into a number of categories under the umbrella of non-dairy, non-alcoholic beverages ('beverages') as outlined below. This beverage category does not include tea or coffee.

- **Sweetened beverages (sugar and non-nutritive sweetened)** - including all 'beverages' other than 100% fruit juice and unsweetened water (bottled, tap, bore and rain water). This includes beverages such as fruit drinks, soft drinks, cordials, flavoured waters, energy drinks
- **Non-nutritive sweetened beverages** - including intensely sweetened/diet versions of the above beverages
- **Sugar sweetened beverages** - including all beverages other than 100% fruit juice, non-nutritive sweetened drinks and unsweetened water

- **Sweetened soft drinks** - including sugar sweetened and non-nutritive sweetened soft drinks
- **Bottled water** - including unflavoured filtered bottled water and non-sparkling, unsweetened mineral and spring water
- **Fruit juice** - 100% fruit juice only

### DEFINITIONS

**Total Sample:** All children in the survey (consumers + non-consumers) based on the 24-hour food recall responses collected during the survey interview

**Consumers:** Any child who consumed the specific non-dairy, non-alcoholic beverage item in any amount on the day of the 24-hour food recall responses collected during the survey interview

All non-dairy non-alcoholic beverages

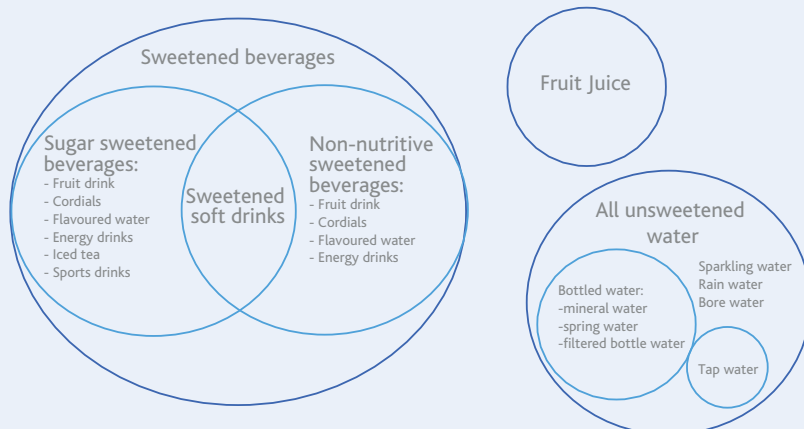


Figure 1: Relationship between the beverage categories (diagram not to scale)





## What are Australian children consuming?

On the day of the KEKP survey, the majority of children reported drinking at least some type of 'beverage':

- Water – 90% some form of unsweetened water, including 21% consuming bottled water
- Fruit juice - 37%
- Sugar sweetened soft drink – 25%
- Cordial – 20%
- Fruit drinks – 10%
- Non-nutritive sweetened soft drink – 5%
- Sports drinks and/or flavoured water – 2%

### KEY FINDINGS

- The majority (9 out of 10) of children consumed water on the day of the survey with 21% of children drinking bottled water
- There was an increase with age in consumption of non-nutritive sweetened soft drinks overall, with

a slight trend towards reduced energy intake from sweetened beverages

- The proportion of children consuming non-nutritive sweetened drinks increased significantly with age in both boys and girls. For instance, consumption rose from 4.8% in primary school children, to a maximum of 8.4% in secondary school children
- More boys than girls (27% vs. 22%) reported drinking sugar sweetened soft drinks
- For girls, the percentage consuming sugar sweetened soft drinks increased up to the age of 13, but slightly decreased in those aged 14 to 16 years

Mean intakes (g) per person vs. categories of non-dairy non-alcoholic beverages\*

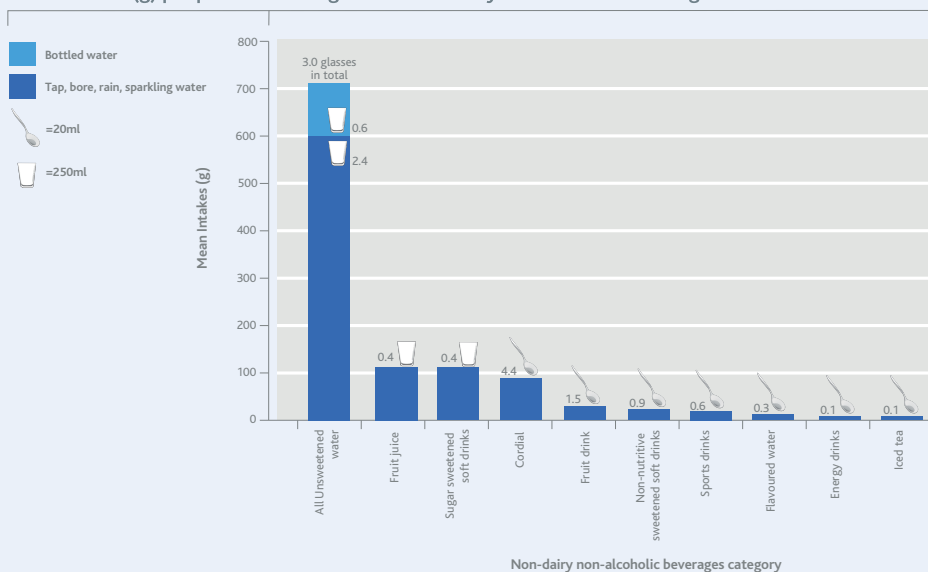


Figure 1: Mean intakes (g) of beverages on survey day (total sample, all ages)

\*mean intakes calculated as grams (g) in original data as well as being converted to millilitres (ml)



### Intakes of beverages across the total sample of children in the survey

The mean intake of total beverages for all children was 1122g/day – roughly equivalent to 4.5 standard 250ml glasses. This intake was less than the Adequate Intake (AI) for children ≥ 4 years (around 1200 – 1800g/day), however, this does not include dairy milk beverages, so total fluid intake would have been higher.

The amount of total beverages consumed was consistently greater for boys and increased with age across all categories of beverages. The proportion of tap water to bottled water was around 3.5:1. The estimated intake of tap water was two glasses (507g/day) and the intake of bottled water was over half a glass (152g/day) across all age groups.

The mean intake of sugar sweetened soft drinks across all children was one third of a can (107g/day), with boys consuming greater amounts than girls (127g/day vs. 86g/day respectively). Fruit juice was consumed in similar amounts with the mean intake at one half of a cup (112g/day).

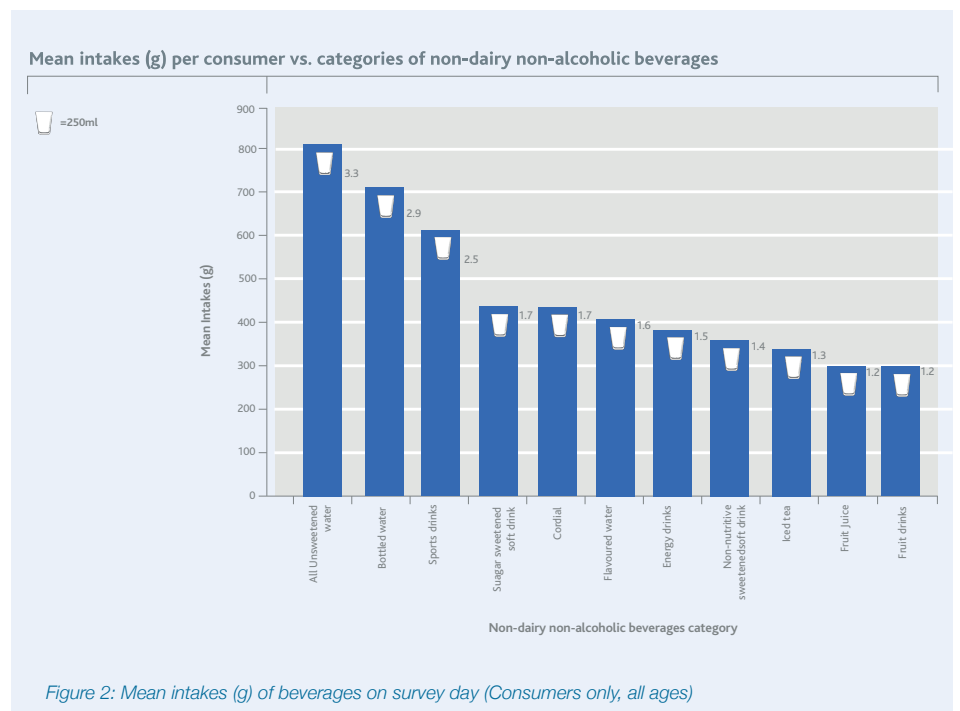
The highest mean intake of beverages was for water, with approximately 3.3 standard glasses (828g/day) of water consumed. Mean intake of sports drinks were high in the children who consumed them at 2.5 standard glasses (620g/day). This probably reflects the common bottle sizes of these beverages in the market. However, as only 2% of children consumed sports drinks on the day of the survey, the mean intake for all children was much lower, at 12g/day.

The mean intake of fruit juice, sugar sweetened soft drinks and non-nutritive sweetened soft drinks for children who consumed them was lower than water and sports drinks, at 1.2 standard glasses (301g/day), 1.2 cans (436g/d) and 1 can (361 g/day) respectively.

These findings on mean beverage intakes, particularly for sugar sweetened soft drinks and sports drinks, suggest that marketplace portion (bottle & cans) sizes influence intakes.



This presents an opportunity for the beverage industry to help consumers achieve healthier diets by increasing availability of portion control sizes of existing and new products.





## How have consumption patterns changed over time?

Comparisons were made with the previous National Nutrition Survey conducted in 1995 and the resulting figures are indicative of the change over time. The 2007 survey age groups were re-coded to match those of the 1995 survey and are restricted to children aged 2 to 15.

Two beverage categories were defined in the comparative data:

1. Soft drinks, flavoured mineral waters and electrolyte drinks, and
2. Mineral waters and waters

### KEY TRENDS

The key trends from a comparison of data from 1995 and 2007 were:

- A reduction in the proportion of children consuming sugar sweetened beverages in younger age groups ( $\leq 7$  years)
- A similar trend in a reduction in the proportion of children consuming these beverages was evident for boys and girls
- An increase in the percentage of children consuming the combined unsweetened water category, again, with a more marked effect in younger age groups ( $\leq 11$  years)

Children consuming soft drinks, flavoured waters or electrolyte drinks

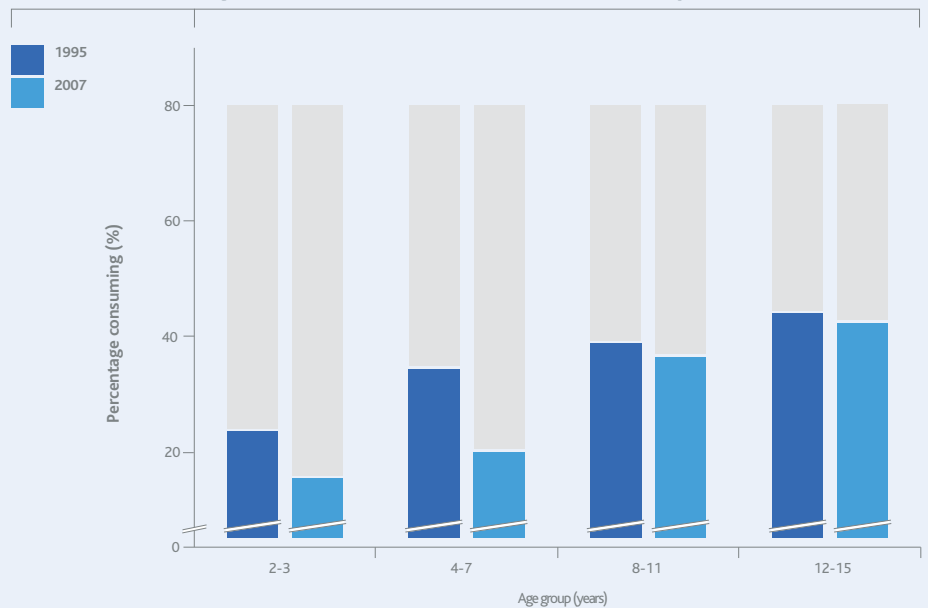
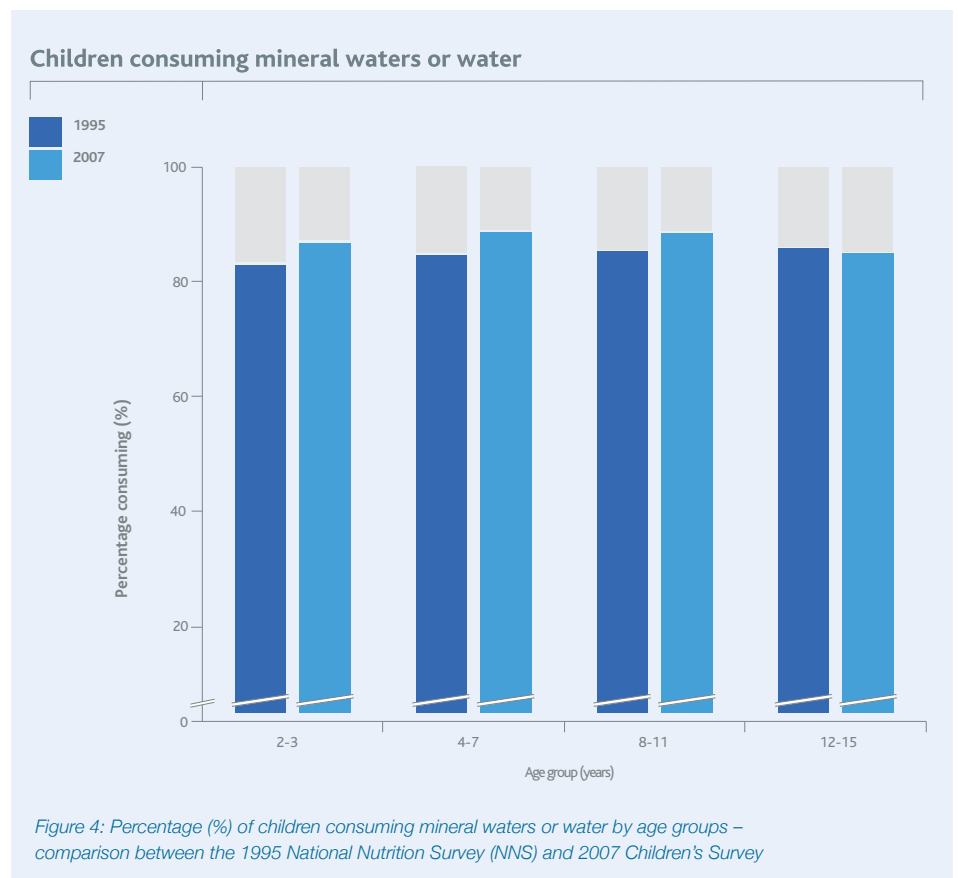


Figure 3: Percentage (%) of children consuming soft drinks, flavoured waters or electrolyte drinks by age groups comparison between the 1995 National Nutrition Survey and 2007 KEKP Survey



These findings support recent research reports documenting a shift away from sugar sweetened to non-sugar beverages since 2002 (Levy G and Tapsell L, 2006) and market statistics showing sugar sweetened soft drinks decreasing in

volume share of the carbonated soft drink category by 11% from 2002 to 2009 with a subsequent increase in volume share for non-nutritive sweetened soft drinks of 11% in this time period (Canadean Wisdom 2009).



**“The Australian Beverage Industry is reducing access to soft drinks in primary and secondary schools”**





## Do beverage consumption patterns differ by socio-economic status?

There were three key differences in beverage intake patterns according to socio-economic status (SES):

- Fewer children (19%) in the highest SES regions consumed sugar sweetened soft drinks compared with 30% of children in the lowest SES regions
- Fruit juice was consumed by a greater proportion of children (40%) in the highest SES regions compared with the lowest SES regions (36%)

- Children from lower SES regions drank less water and more sugar sweetened soft drinks compared with those in the highest SES region. The greatest difference was seen for intake of the latter in 14 to 16-year-olds (additional 126g/day).

These findings indicate the importance of public education and information targeted to the needs of different SES regions.

Percentage (%) of children consuming vs. categories of non-dairy non-alcoholic beverages

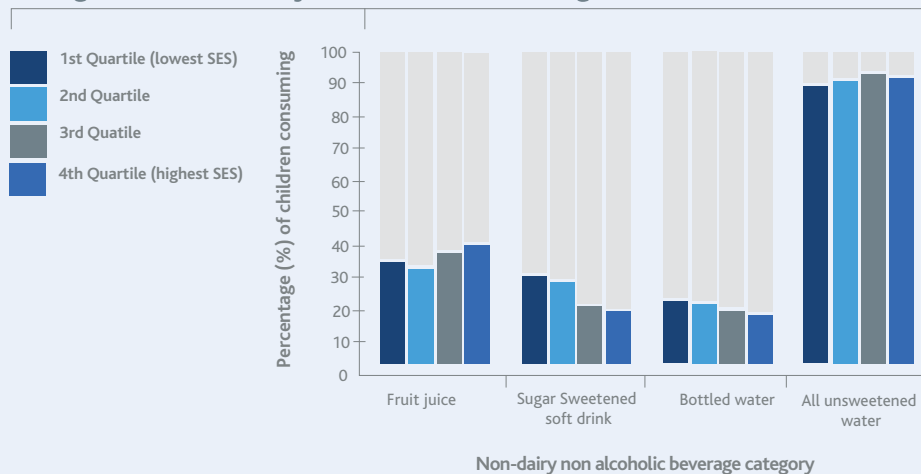


Figure 5: Percentage (%) of children consuming by SES quartile vs. categories of non-dairy non-alcoholic beverages





## Where and when are children consuming beverages?

The KEKP survey showed that for more than half of the consumption occasions, sugar sweetened beverages (55%), non-nutritive sweetened beverages (64%) and fruit juice (77%) were consumed at home. This pattern was consistent across all age groups.

Beverage consumption patterns were also analysed according to school hours, showing that sugar and non-nutritive sweetened beverages, along with fruit juice, were consumed more often outside school hours.

All children

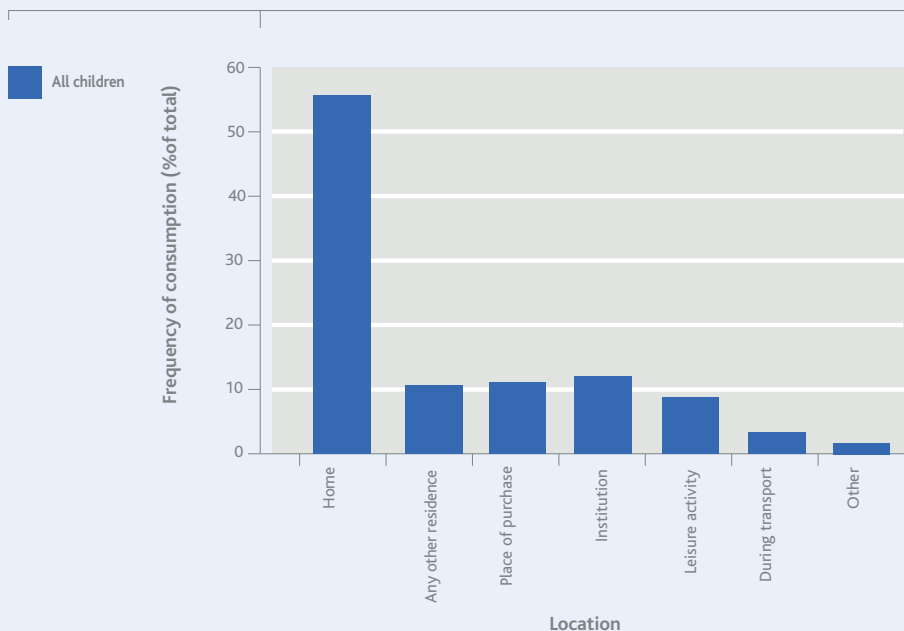
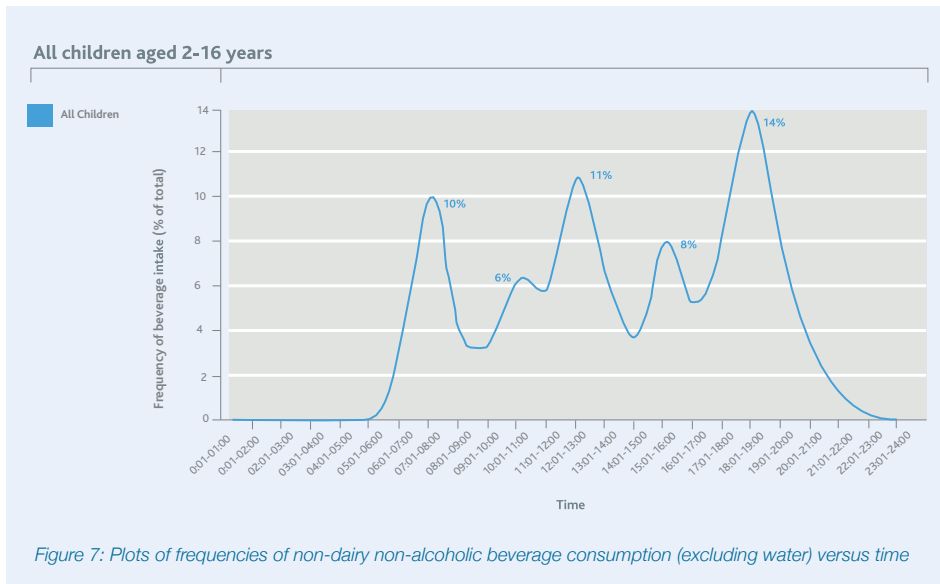


Figure 6: Frequency of consumption of sugar sweetened beverages by location

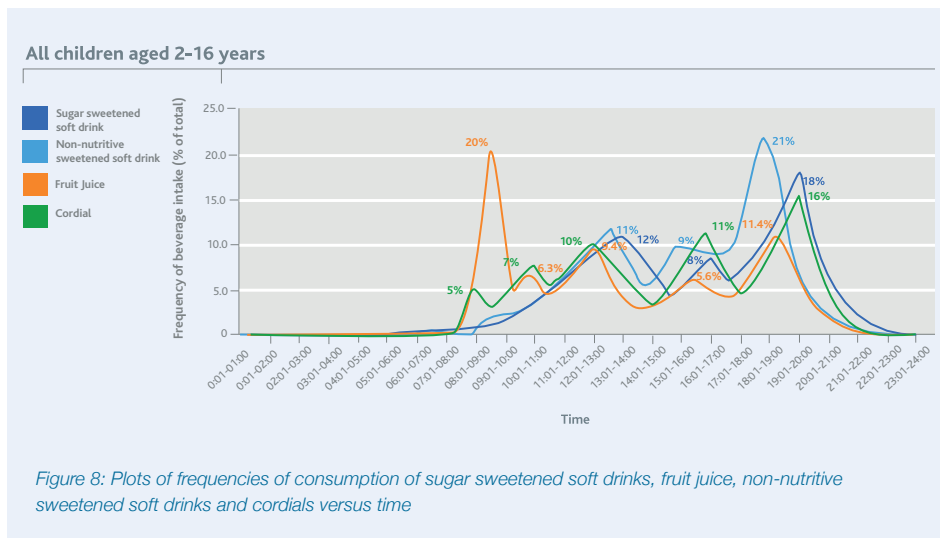
**“Increased involvement in educational programs which provide parents with relevant information regarding healthy eating and active lifestyle”**



For all beverage consumption, there were three distinct meal peaks and two distinct mid-meal drinking occasions (mid-morning and mid-afternoon). Older children (14 to 16 years) tended to drink beverages more consistently throughout the day.



For all children, soft drinks and cordial appeared to be consumed in two distinct drinking occasions around 12 noon and in the evening between 6pm and 7pm. Fruit juice was mostly consumed during the morning between 6am and 9am.





## What is the relationship between beverage consumption and weight status?

There was not a significantly higher percentage of overweight or obese children consuming sugar sweetened beverages (50% vs. 47%) or fruit juice (35% vs. 38%) compared with non-overweight children. The mean and median intakes of consumers of sugar sweetened beverages were also similar between overweight/obese and healthy/underweight children.

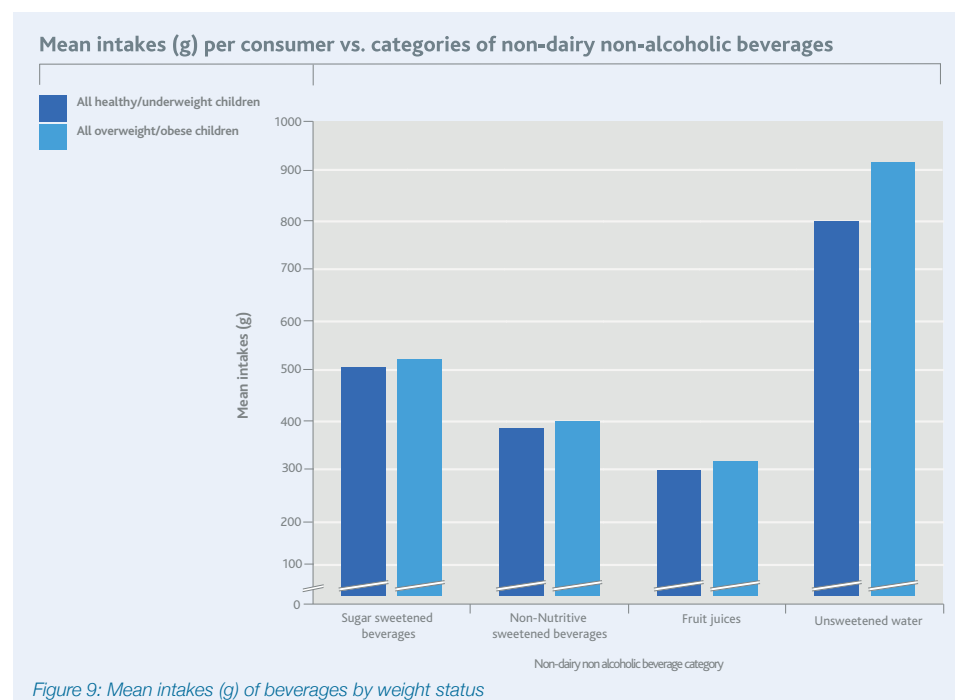
Ten per cent of overweight/obese children consumed non-nutritive sweetened beverages compared to 6% in the healthy weight range. Mean and median intakes of these beverages were slightly higher in the overweight/obese category (mean - additional 24g/day; median - additional 50g/day).

Mean and median intakes of unsweetened water (consumers only) were higher in the overweight/obese category (mean -

additional 141g/day, median - additional 60g/day) – see Figure 8.

The observation that children in the overweight/obese category were not consuming a significantly greater proportion or amount of sugar sweetened beverages than healthy weight children is an interesting finding as there are conflicting findings in the literature on the association between consumption of sugar sweetened beverages and obesity.

In the KEKP data, an encouraging observation was higher intakes of non-energy beverages, such as non-nutritive sweetened drinks and unsweetened water, amongst overweight/obese children. Encouraging appropriate beverage choices amongst children including smaller serving sizes and increased availability of non- or low-energy beverage options is clearly important.





## Is there a relationship between beverages and physical activity?

The children who were more physically active consumed higher amounts of total beverages than children who were less active. Children who met physical activity guidelines also generally had higher daily energy intakes.

No trend was found linking sugar sweetened beverage intakes with reduced physical activity.

Amount of sugar sweetened beverages consumed (consumers only) (g)

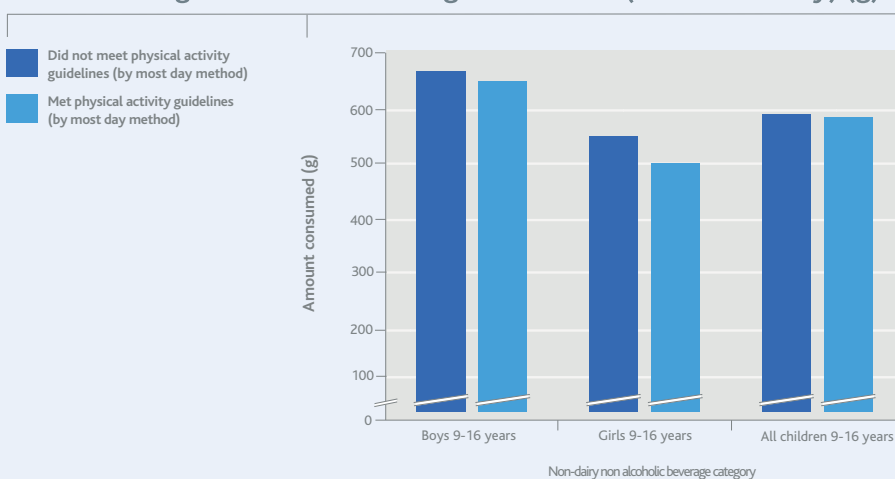


Figure 10: Mean intake of sugar sweetened beverages in children who met or did not meet physical activity guidelines.

## What is the percentage contribution of beverages to children's energy and total sugars intake?

	Beverages	Sugar sweetened soft drinks		Fruit juice	
	Total Sample	Total Sample	Consumers only	Total sample	Consumers only
%Energy	5.4	1.6	7.0	2.0	5.0
%Total Carbohydrate	10.1	3.2	13.1	3.6	9.6
% Total Sugars	20.1	6.5	26.4	7.1	19.0

Table 1: Percentage contribution of beverages, sugar sweetened soft drinks and fruit juice to energy and total sugars intake of Australian children (All Ages)

Across all children surveyed (total sample and consumers only), the beverage category was a relatively small contributor to total energy intake (around 5%) but made an important contribution to total carbohydrate (10%) and total sugars (20%) intakes.

The two largest single contributors to energy and total sugars intake in the non-alcoholic non-dairy beverage category were sugar sweetened soft drinks and 100% fruit juice. For children who consumed sugar sweetened soft drinks, the contribution to energy intake was 7% and to total sugars intake was 26%.





However across the total sample, the contribution to total energy intake from all non-dairy, non-alcoholic beverages, sugar sweetened soft drinks or fruit juice was relatively small (5.4%, 1.6% and 2% respectively. By comparison, the contribution to total energy intake from 'snack foods, confectionery and cereal bars' was around 7% (2007 Australian National Children's Nutrition and Physical Activity Survey-Main Findings).



### % Energy Contribution

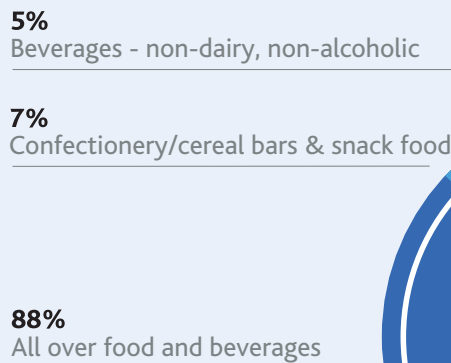


Figure 11: Percentage (%) of total energy contribution from non-dairy, non-alcoholic beverages and snack foods



## Is there a relationship between sweetened soft drink and dairy milk consumption?

The KEKP Main Findings publication (Commonwealth of Australia 2008) reported older girls (12 to 16 years) were most at risk of not meeting their dietary requirements for calcium (82% to 89% not meeting their estimated age requirement EAR). The publication stated the likely cause of the decline in dairy milk intake was replacement with other beverages.

To explore this issue, the KEKP beverage consumption data was analysed by Flinders and found:

- Across all children, those consuming the highest amounts of sweetened soft drink did not appear to displace milk with soft drink, as there was no consistent trend across tertiles of intake
- For females only, there was little difference in frequency of consumption of dairy milk between sweetened soft drink consumers and non-consumers, suggesting no displacement was occurring

A possible reason for the lack of displacement observed is the distinct pattern of consumption amongst females - dairy milk is consumed earlier in the day and soft drink later in the day.

Frequency of intake by female consumers of dairy milk and soft drink

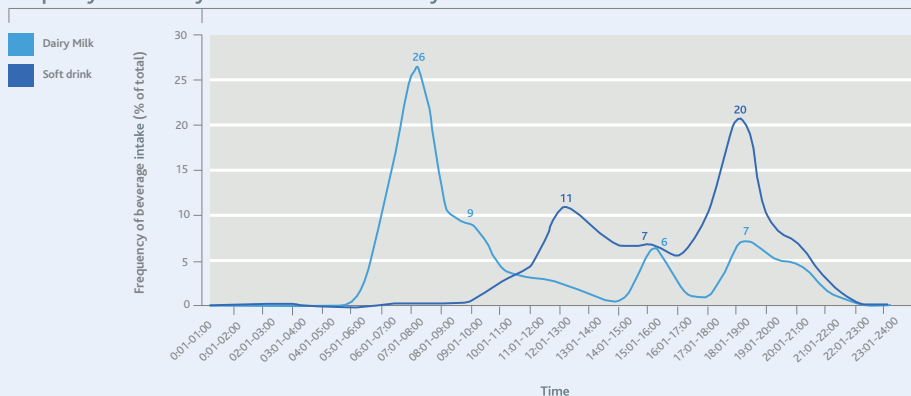


Figure 12: Plot of frequencies of dairy milk and soft drink consumption by girls versus time

**“The Australian Beverage Industry is reducing portion sizes and offering more packaging options for beverages”**



## A summary of the key findings

1. A lower proportion of children consumed sugar sweetened beverages in 2007 compared with 1995 in younger children aged seven or less
2. Across all children surveyed and consumers only, the beverage category (including fruit juice) provided a relatively small contribution to total intake of energy (5%) but a higher contribution to total sugars intake (20%)
3. Five out of ten (47%) children drank some type of sweetened beverage with the most frequently consumed being fruit juice (37%) and sugar sweetened soft drinks (25%)
4. Sugar sweetened beverages were consumed more often outside school hours
5. The proportion of children consuming non-nutritive soft drinks increased significantly with age in both boys and girls
6. There was no consistent trend in sweetened soft drink intake and displacement of milk across all children and in older girls
7. Children in the lowest socio-economic regions drank less water and more sugar sweetened soft drinks than children in highest socio-economic regions
8. The majority of Australian children (nine out of ten) drank water on the day of the survey
9. The consumption of sugar sweetened beverages was not associated with reduced physical activity
10. Overweight/obese children did not consume more sugar sweetened beverages

## What is the Australian Beverage Industry doing?

The Australian Beverages Council Ltd (ABCL) and its members recognise public concerns about today's health issues, particularly the rising levels of obesity and chronic disease related to poor diets and lack of physical activity. The non-alcoholic beverages industry also recognises its responsibility to play a positive role in any solution framework along with other relevant stakeholders and has been developing and implementing initiatives to address these issues.

In 2006, the ABCL and its members developed a policy with a set of commitments to help address obesity and other health issues. This policy document, Commitment to Addressing Obesity and Other Health and Wellness Issues, is subject to independent biennial review to evaluate progress in the achievement of the commitment initiatives and is reviewed and updated as needed. These initiatives include:

- Reducing access to soft drinks in primary and secondary schools
- Reducing portion sizes and offering more packaging options for beverages
- Restricting marketing of products to children under 12 years
- Voluntarily providing clear information on the nutritional composition of beverages through the % Daily Intake Guide (%DI) on the front and back of packaging
- Reformulating products and developing innovations to provide more choice for consumers – such as lower and no kilojoule beverages
- Increased involvement in educational programs which provide parents with relevant information regarding healthy eating and active lifestyle
- Ensuring that promotional activities avoid requiring people to drink excessive quantities of products to participate



## References

1. Levy G and Tapsell L. Shifts in purchasing patterns of non-alcoholic, water-based beverages in Australia, 1997-2006. *Nutrition and Dietetics* 2007;64:268-279.
2. Canadean Wisdom Soft Drinks Service Australia Market Insights 2009 (Confidential Report)
3. 2007 Australian National Children's Nutrition and Physical Activity Survey. Main Findings. Commonwealth of Australia 2008.

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