

Western Australia's Children and Their Health

A COLLABORATION BETWEEN THE TELETHON INSTITUTE FOR CHILD HEALTH RESEARCH AND THE EPIDEMIOLOGY BRANCH, DEPARTMENT OF HEALTH



MIDWEST AND MURCHISON HEALTH REGION - HEALTH BEHAVIOURS

Health Behaviours

This report details findings from research into aspects of diet, physical activity and sun protection among 0-15 year old Western Australians. The report also profiles the extent of overweight and obesity among the State's children.

The information provided this paper was derived from analyses of data collected as part of the Western Australian Department of Health's Health and Wellbeing Surveillance System (HWSS). The data were collected between 2002-2005.

This report outlines important issues for health care decision makers to consider. This has been reinforced by the World Health Organisation (2006), which recently noted that diet and physical activity play an important role in the aetiology of 60 per cent of annual global mortality. Skin cancers are also a major public health problem in Australia, and childhood sun exposure is an important risk factor for this group of conditions (Lowe et al., 2000).

Data on diet, exercise and obesity collected by the Australian Bureau of Statistics (ABS, 2006) has already highlighted aspects of adult behaviour that are of significant public health concern. This data shows that:

- Three-in-ten adults do not exercise regularly;
- six-in-ten males and four-in-ten females are overweight or obese;
- five-in-ten males and four in ten females do not consume recommended daily intakes of fruit; and
- nine-in-ten males and eight in ten females do not consume recommended daily intakes of vegetables.

The National picture with respect to skin cancers is also worrying. This includes increasing rates of melanoma (AIHW, AACR & NCSG, 2005) and annual treatments for non-melanoma skin cancers numbering in the vicinity of 400,000 cases (AIHW, AACR & NCSG, 2005).

The information provided in the following sections are intended to offer health care decision makers a window to the scope of some future health problems that may result from current dietary, exercise and sun-protection behaviours of the State's children. The report also highlights some possible areas for further action.

Papers on Western Australian Children and Their Health

Papers in this series will focus on the following topics:

- 1. A healthy start to life**
Pregnancy, birth and early caring behaviours.
- 2. A healthy home life**
Parenting and the home environment.
- 3. Health care needs**
Chronic health conditions.
- 4. Health care services**
Service utilisation.
- 5. Health behaviours**
Risk and protective behaviours.

POPULATION PROFILE	
HEALTH RISKS	INDICATORS OF CHILD HEALTH NEEDS
ILLNESS/DISEASE	
HEALTH CARE USE	
MORTALITY	
COMMUNITY WELLBEING	INDICATORS OF CHILD WELLBEING
FAMILY WELLBEING	
<input checked="" type="checkbox"/> INDIVIDUAL WELLBEING	

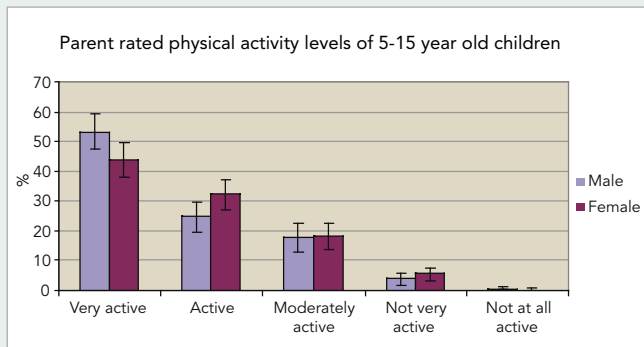
§ **Indicator:** A statistic chosen to describe (indicate) a situation concisely, help assess progress and performance, and act as a guide to decision making... (AIHW 2006)

Physical Activity

Research indicates that exercise, even at low-to-moderate levels, has a broad range of health benefits (USDHHS, 2000). These include substantial reductions in the risk of heart disease, diabetes, and colon cancer.

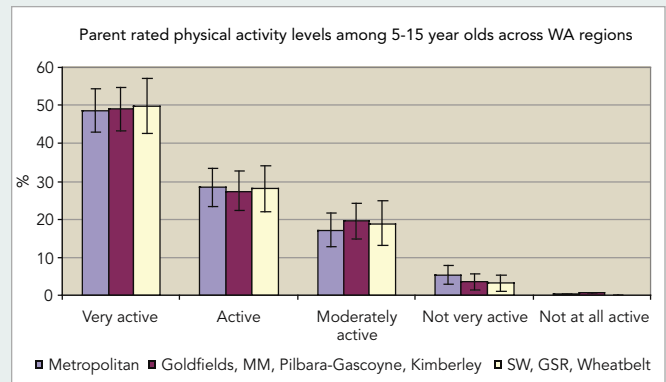
Olds et al (2004) have argued that trends in activity and body weight among Australian children paint a disturbing picture of increasingly fat, less fit and less active young people.

During the 2002-2005 period, the Western Australian Health and Wellbeing Surveillance System (HWSS) included a series of questions on physical activity among 5-15 year olds. The first of these asked parents to rate their children's physical activity levels. Results of analyses of responses to this item are detailed in the following graphs.

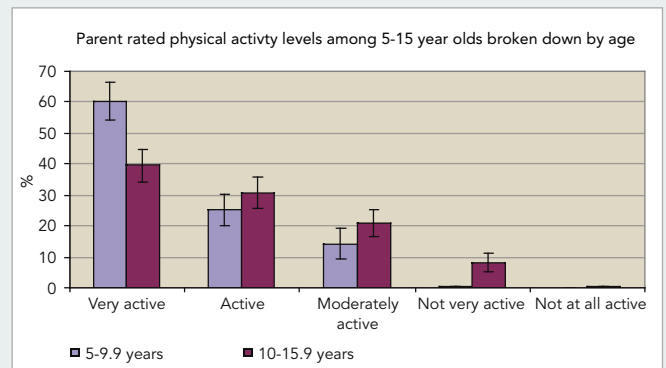


The data suggest that four-in-five 5-15 year olds as active or very active as rated by their parents. Very few parents rate their children as not very or not at all active. While the data appear to suggest lower activity ratings for girls, the differences are not statistically significant.

The HWSS data does not indicate any significant geographic variations in parent assessments of children's activity levels.



As part of the analysis of children's physical activity, parent ratings were checked to assess differences between younger and older children. Children were classified as younger if they were in the lowest half of the age range of children surveyed. This range spanned children within pre-primary through to year 5 levels of primary school. The older age group comprised children in years 6-10 at school. The following graph indicates that parents are more likely to rate younger children as very active.



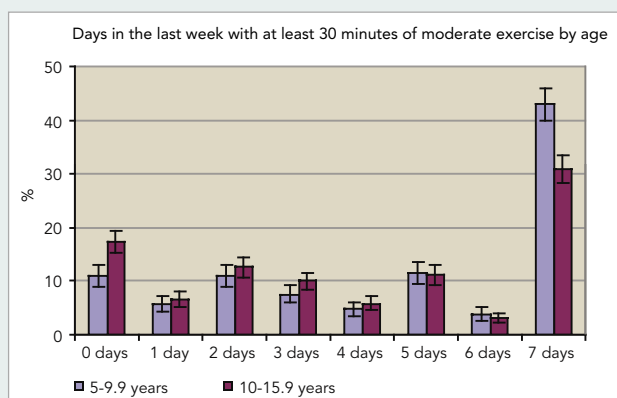
To investigate whether parent ratings of children's activity matched actual levels of physical activity undertaken, two analyses were performed. The first compared younger and older children on the number of days on which they performed 30 or more minutes of moderate intensity physical activity. Moderate intensity exercise includes activities such as "fast walking, slow bicycling, rollerblading, or skate

"Young people report a strong and consistent desire to be active but are often constrained by external factors such as school policy or curricula, parental rules in relation to safety and convenience, and physical environmental factors."

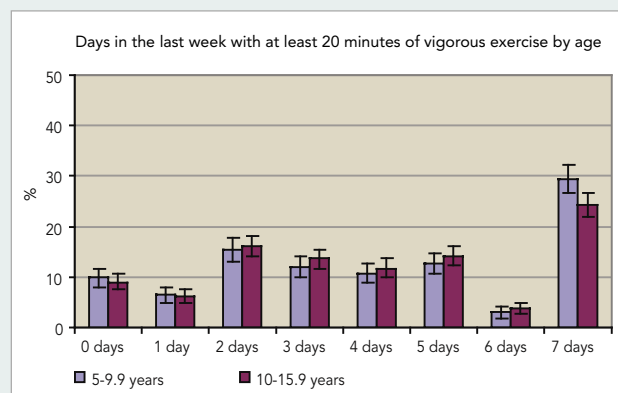
(Dollman, Norton and Norton, 2005, p.896).

boarding." Australia's Physical Activity Recommendations for 5-12 year olds indicate that children need between 60 minutes and several hours of moderate to vigorous physical activity every day (Department of Health and Ageing, 2004). HWSS data on children's moderate intensity physical activity affirmed that children are more active when they are younger. In particular, children in the early to middle primary school years are significantly more likely than older children to undertake 30+ minutes of moderate level activity every day. Younger children are also significantly less likely to have no days where they undertake 30+ minutes of moderate exercise during the week.

Further analysis of the HWSS exercise data compared younger and older children with respect to their recent involvement in vigorous activity. The results did not highlight any statistically significant differences between younger and older children.



"Australian research has suggested that physical inactivity is responsible for 18% of coronary heart disease, 16% of stroke, 13% of Type 2 diabetes, 19% of colon cancer, 9% of breast cancer and 10% of depression. The same research also indicated that 18% of all cause mortality was attributable to physical inactivity." (Olds et al, 2004, p.42).



Taken together, the overall pattern of exercise among 5-15 year olds suggests a gradual reduction in levels as children pass through their early and middle primary school years and enter into adolescence.

Overall, Western Australian children seem to take two major steps towards adopting the relatively sedentary lifestyle characteristic of two-in-three adult Australians (ABS, 2006). The first of these is to gradually but substantially reduce their levels of "play-based" exercise such as walking, skate boarding and bike riding during the adolescent years. The second step occurs as children drop out of both school and club based sports in their mid-to-late teenage years. A recent study into children in sport prepared for the Australian Sports Commission found that in South, Australia, time spent playing sport decreases at an annual rate of 7% among girls and 3% among boys (Olds et al, 2004).

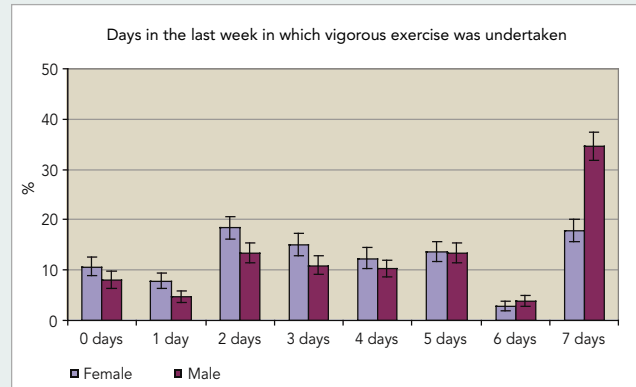
While the HWSS survey data do not shed any light on whether today's children exercise less than their counterparts of previous years, Dollman et al (2005) indicate that there is a trend to decreasing levels of cardio-vascular fitness among Australian children. They associate this trend with an increasing preference among Australian children for less active, indoor activities such as "watching TV".

Further analysis of HWSS childhood physical activity data focussed on sex differences. Olds et al (2004) identified gender as the most important predictor of a children's exercise levels and pointed to overwhelming evidence that boys are more active than girls across all ages.

Physical Activity – What the HWSS Data Reveal

- Gender differences in physical activity are important, with girls being much less likely than boys to undertake regular exercise;
- Younger children are much more likely to be physically active than older children; and
- A majority of Western Australian children do not appear to undertake sufficient physical activity.

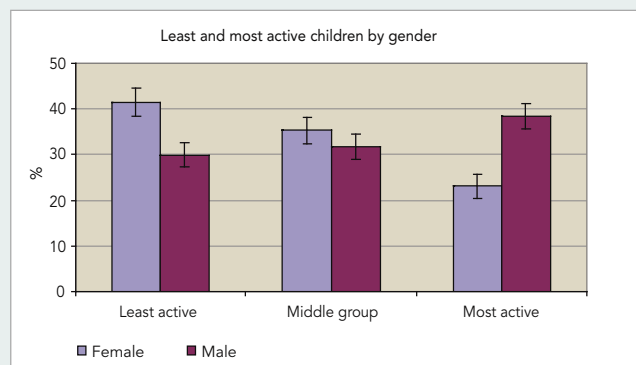
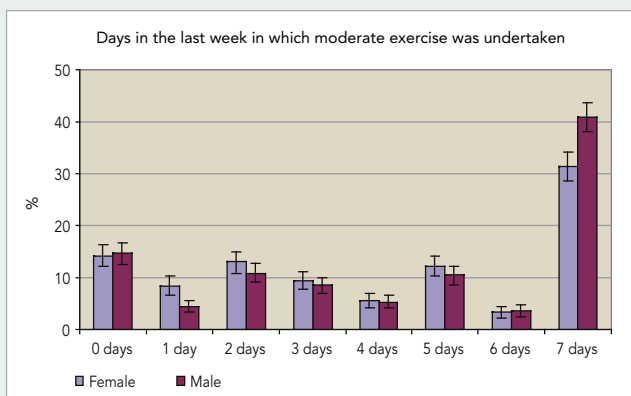
Results of analyses of the frequency of children's participation in moderate or vigorous exercise are outlined in the following graphs. The data confirm that 5-15 year old boys are significantly more likely than girls of the same age to undertake daily exercise.



To further explore gender differences in overall activity levels, HWSS data on both moderate and vigorous exercise were combined. Using the combined data, children were classified into the following approximately equal sized groups:

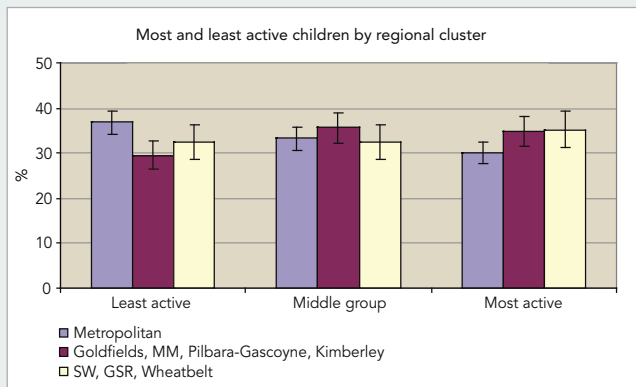
1. the least active third of 5-15 year old boys and girls, which comprised children who exercised for approximately 0-3 hours in the last seven days;
2. the middle third of the sample, which comprised children who exercised for approximately 4-5 hours in the last seven days; and
3. the most active third, which comprised children who exercised for approximately 5 or more hours in the last seven days.

Of these 3 groups, only the most active third achieves the recommended levels of exercise for children. The proportions of males and females within each of the above-mentioned groups are outlined in the following graph. The data indicate that 5-15 year old girls are significantly over-represented within the least active group and under-represented in the most active.



Subsequent analysis of total exercise levels assessed Regional differences. This analysis compared activity levels across: (1) the metropolitan area; (2) the South West, Great Southern and Wheatbelt Regions; and (3) the Kimberley, Pilbara, Midwest and Murchison, and Goldfield Regions.

The results suggest that that children living in Perth are somewhat less active than their counterparts in the Kimberley, Pilbara, Midwest and Murchison, and Goldfield Regions. This result is consistent with evidence of small metropolitan-regional differences in the fitness levels of Australian children identified by Olds et al (2003).



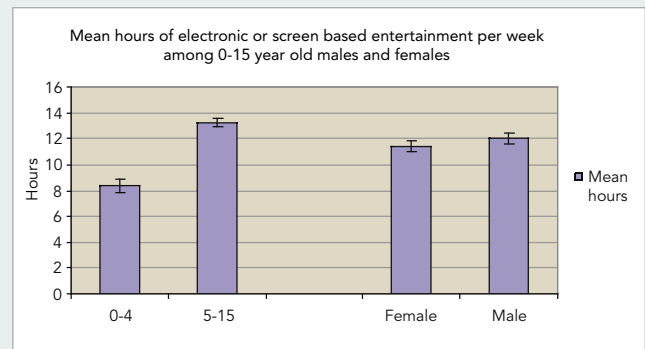
Electronic or Screen Based Entertainment

Olds et al (2004, p.xvi) refer to screen time (TV, video games, cinema and texting) as the “overwhelming competitor for physical activity”. They also highlight the many choices of entertainment this category now offers children.

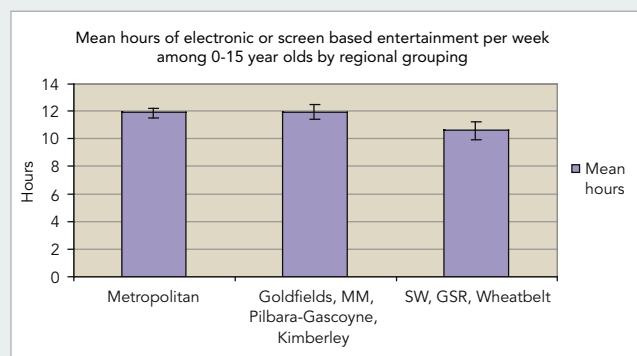
Dollman et al (2005) have also pointed to the pervasiveness of electronic and screen based entertainment in contemporary Australian households. For instance, they note that around 40% of homes have three or more televisions. They also highlight the extensive proportion of children’s leisure time that is spent on electronic entertainment. For Australian children, this is said to comprise an average of 55% of their leisure hours (Dollman et al 2005, p.894).

The HWSS included a single item on use of electronic or screen-based entertainment by children aged between 0-15 years. This item asked respondents to estimate the total hours their children spent each week watching TV, videos or using the computer (for the internet, to play games etc). The following three graphs detail results of analyses of this item.

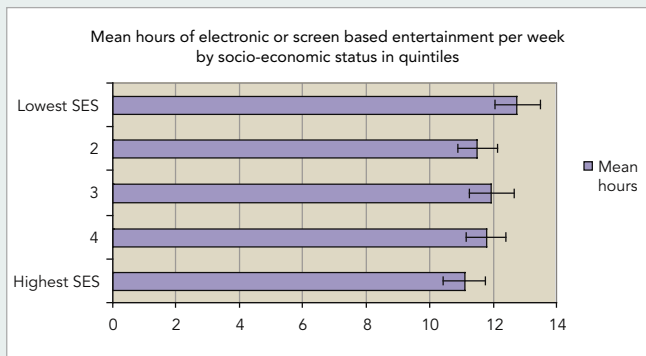
Clearly evident in the first graph is the age related trend to increasing hours of screen time. The increase translates to an approximate doubling of average screen use from 1 hour per day among 0-4 year olds to 2 hours per day among 5-15 year olds. HWSS data did not reveal significant differences between girls and boys in their average weekly screen use.



The following graph profiles screen time among children across three geographic clusters or zones. The data suggest that there are unequal levels of screen use by children across the different areas of the State, with those living in the South West, Great Southern and Wheatbelt Regions spending significantly fewer hours each week engaged in this form of entertainment than their counterparts elsewhere in Western Australia.



A final analysis of HWSS data on screen use compared average hours of use across households within 5 different socio-economic status groupings (SES). The results suggest that children from lower SES households spend significantly more time engaged in screen based entertainment than their counterparts from higher SES households.



While interpretation of the HWSS data on children's screen time is not a straightforward issue, national recommendations indicate that children should not spend more than 2 hours per day using electronic media for entertainment (DHA, 2004). With this in mind the HWSS data suggest that approximately three in ten 0-15 year olds get too much screen time. The proportion of Western Australian children exceeding the national recommendation on maximum screen time increases substantially with increasing age. Children from lower SES families are also more likely to exceed the recommended maximum level of screen time. This SES relationship with screen time appears to emerge in the late primary through early secondary school years.

Fruit and Vegetable Consumption

The HWSS included several items on children's fruit and vegetable intakes. Fruit and vegetables have long been believed to play an important role in children's health and wellbeing. After reviewing the scientific basis for beliefs about the benefits of fruit and vegetables, the NH&MRC (2003, p.75) concluded that there was strong evidence "that many compounds in fruits and vegetables (phytochemicals) help to protect against a number ofdiseases" including cancer, cardiovascular diseases, and type 2 diabetes.

Recommendations for daily fruit and vegetable consumption by children and adolescents are outlined in the Australian Guide to Healthy Eating (DHFS, 1998). A feature of these recommendations is that they indicate that children should increase their consumption of fruit and vegetables as they age. For example, the Guide to Healthy Eating highlights that teenagers should eat substantially more fruit and vegetables than preschoolers.

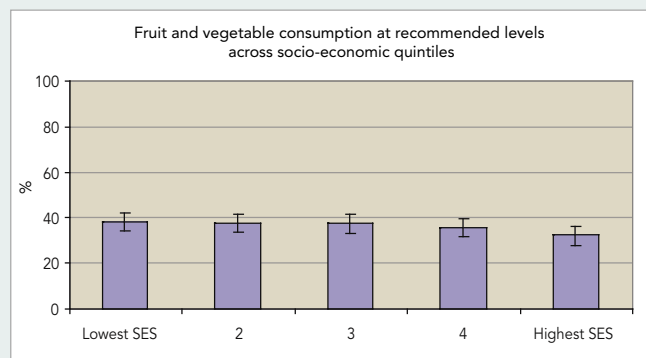
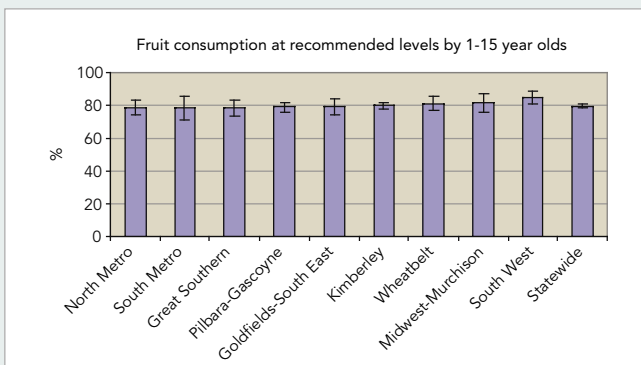
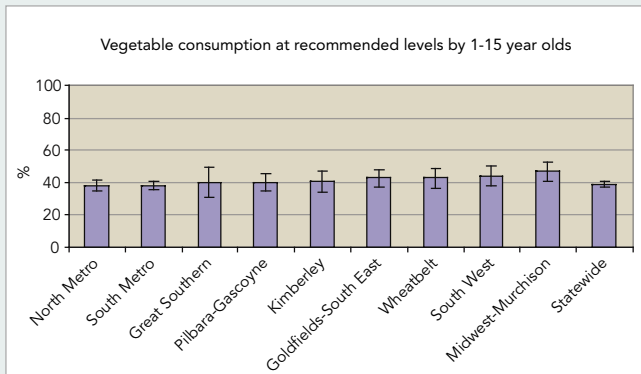
While they are generally consistent, the levels indicated for children in the Guide to Healthy Eating differ slightly from more recent NH&MRC (2003) recommendations that Australians should eat 2 fruit and 5 vegetable servings every day. To take account of these differences in the analysis of the HWSS data, the levels indicated in the following table were used as the recommended minimum daily serves of fruits and vegetables that children should consume.

Age group	Minimum Serves of Fruit	Minimum Serves of Vegetable
1-7	1 or more	2 or more
8-11	1 or more	3 or more
12-18	2 or more	4 or more

Using the minimum levels indicated in the previous table, children who consumed sufficient daily serves of fruits and vegetables were identified. Results of analyses of this data are described in the following graphs.

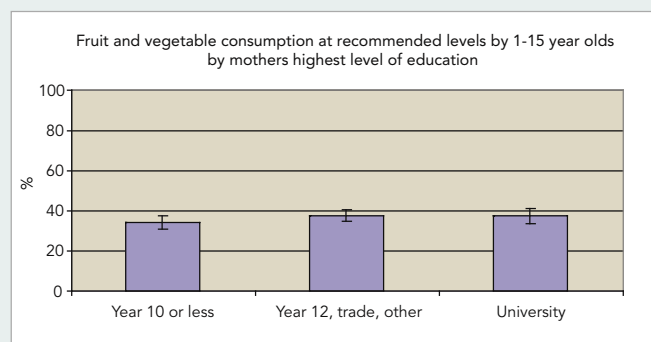
Fruit and Vegetables – What the HWSS Data Reveal

- Substantially more children achieve minimum recommended levels of fruit consumption than is the case for vegetables; and
- Younger children are much more likely than older children to eat the recommended daily number of serves of fruit and vegetables.



The data indicate that while four-in-five children eat the recommended daily serves of fruit, fewer than one-in-two do so for vegetables. No regional differences are evident with respect to the proportions of children eating the recommended daily servings of fruit and vegetables.

Further analyses were undertaken to assess differences in patterns of fruit and vegetable consumption across groups defined by family socio-economic status and maternal education. The results of these analyses are outlined in the following graphs. These graphs do not highlight any significant differences in adherence to the recommended minimum daily servings of fruit and vegetables across groups defined by family SES or maternal education.



Children's fruit and vegetable consumption was examined for age related trends. This data indicates that younger children are more likely than older children to eat the daily minimum recommended levels of fruits and vegetables.

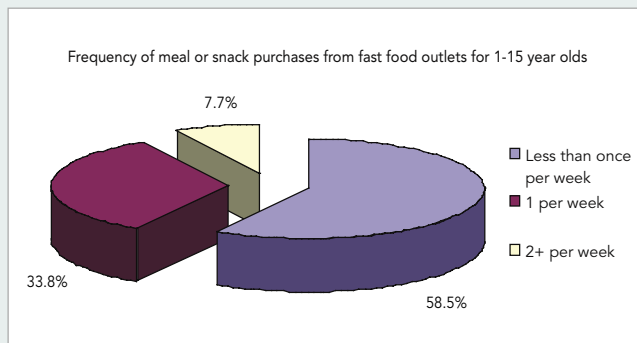
"Fast Food" Consumption

Children's diets are often characterised in the mass media as comprising a significant proportion of take-away meals purchased from fast food outlets.

The HWSS included a single item which asked about the frequency of meals or snacks purchased for children from outlets such as McDonalds, Hungry Jacks, Pizza Hut or Red Rooster. The item asked about a range of "fast foods" such as burgers, pizzas, chicken and chips.

The following graph details responses to this item. The data suggest that six-in-ten 1-15 year olds eat meals purchased from fast food outlets less than once per week (95% C.I. 3.5%). A further three-in-ten 1-15 year olds eat meals purchased from fast food outlets once per week.

While the HWSS data indicate that meals from take away outlets are an occasional purchase for most children, such information can only be regarded as providing a very limited perspective on one aspect of the food consumption patterns of the State's children.



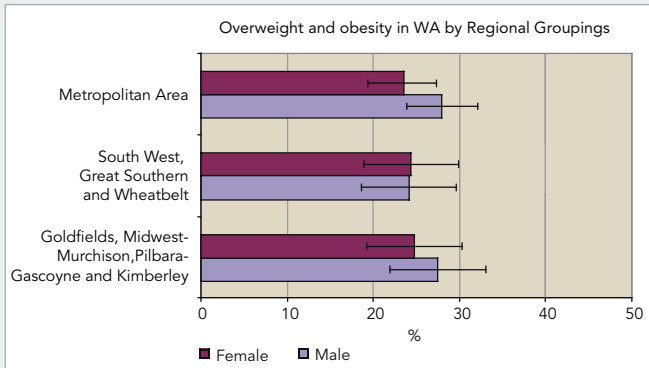
Overweight and Obesity

Children who are overweight or obese are at increased risk for current and future health problems (Booth et al, 2003). Thus, trend data on children's overweight and obesity provide an important indicator of their current and future health.

The prevalence of childhood obesity appears to be increasing in most developed countries (Cole et al, 2000). For example, in the USA between 1980 and 2000, the proportion of overweight children doubled (USDHHS, 2001). International research also suggests that the growth rate in childhood overweight and obesity is accelerating (Booth et al, 2003).

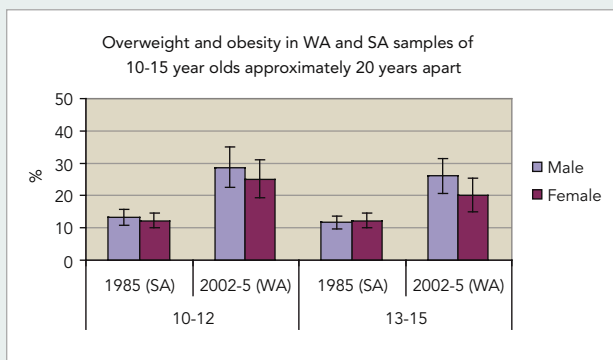
The HWSS included height and weight questions for respondents aged between 5-15 years. These data enabled the calculation of a Body Mass Index or BMI, which is a widely used scale with internationally agreed ranges that define adult overweight and obesity. To enable comparisons with other Australian BMI data for children, Cole et al's (2000) international age specific BMI definitions of childhood overweight and obesity for boys and girls were applied to HWSS data.

The Western Australian BMI data were first analysed to assess the prevalence of overweight and obesity by gender across Regional clusters. This analysis did not reveal any significant differences in the prevalence of overweight and obesity among boys or girls across the three Regional clusters. This data suggest that approximately one-in-four 5-15 year old Western Australians are overweight or obese.



Subsequent analysis of the BMI data attempted to provide an insight into possible historical trends in overweight and obesity among the State's children. While no historical BMI data are available for Western Australian children, Booth et al (2003) profiled 1985 BMI data for South Australian children. Given that Booth et al (2003) found that the 1985 SA data was similar to Victorian and NSW data for the same period, it seems likely that the SA data provides a reliable proxy baseline for the prevalence of overweight and obesity among Western Australian children in 1985.

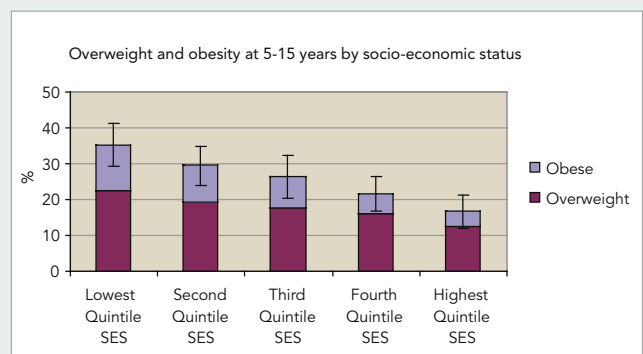
The following graph compares 2002-05 BMI data for Western Australian children aged between 10-15 years with that found among same-aged children living in South Australia approximately 2 decades ago. The data suggest that the prevalence of overweight and obesity among 10-15 year olds in Western Australia has doubled over the last 2 decades.

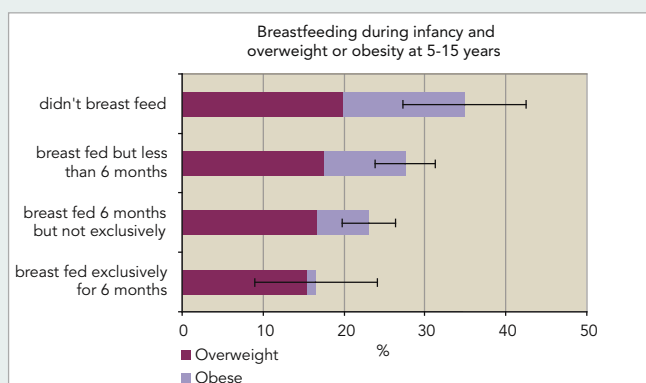
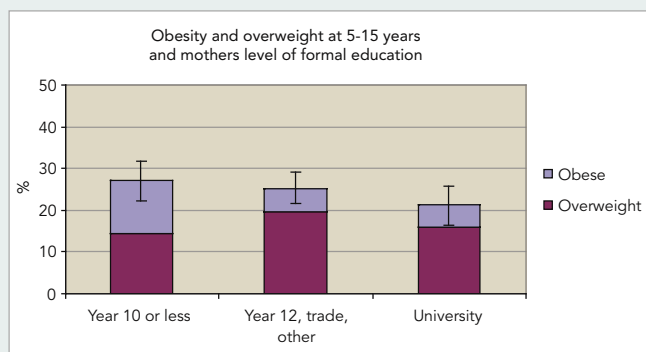


Overweight and Obesity – What the HWSS Data Reveal

- One-in-four Western Australian children are overweight or obese;
- Over the last 2 decades, childhood overweight and obesity appears to have increased significantly in Western Australia;
- Childhood overweight and obesity appears to be correlated with family socio-economic status. Children in lower SES families are more likely to be overweight or obese; and
- Breastfeeding may reduce a child's longer-term risk for overweight or obesity.

To examine possible correlates of overweight and obesity among Western Australian children BMI data for 5-15 year olds was analysed by socio-economic status, mother's education levels, and child's breastfeeding history. The results of these analyses are detailed in the following graphs.





The previous graphs point to significant differences in the prevalence of childhood overweight and obesity among different SES groups and according to whether a child was breastfed. Children from Western Australia's lowest socio-economic quintile are twice as likely to be overweight or obese as children in the highest quintile. Among, children

who were not breastfed, the proportion of overweight or obesity is twice that found among their counterparts who were exclusively breastfed for at least 6 months. The association between breastfeeding and childhood obesity identified in the HWSS data is consistent with evidence that breastfeeding protects against childhood obesity (Allen and Hector, 2005). Likewise, a higher prevalence of overweight and obesity among children from lower SES families has also been identified in previous South Australian research (Dollman and Pilgrim, 2004).

Sun Protection Behaviour

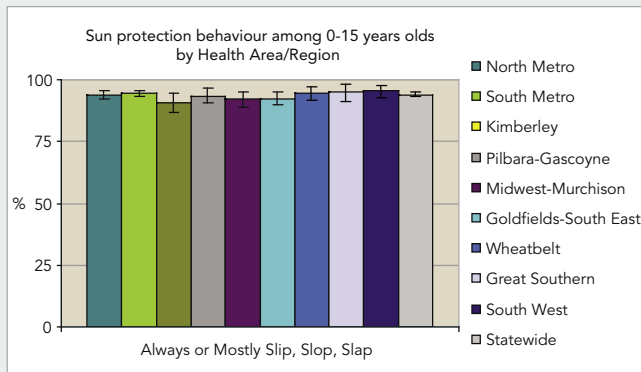
Reducing exposure to UV radiation and eliminating sunburn before adulthood appears to reduce the risk for non-melanoma skin cancer and melanoma (Buller and Borland, 1999). In light of this, substantial efforts have been made to encourage West Australian parents to ensure children are protected from excessive sunlight.

The HWSS included two items which related to the prevention of sunburn. The first of these asked respondents whether they ensured their children were protected with a hat, sunscreen and clothing prior to exposure to sunlight ("slip, slop, slap" behaviours). The proportion of parents that "always" or "mostly" check that their children are adequately protected against sunburn detailed in the following graph. The data suggest that most Western Australian parents have adopted a regular habit of ensuring their children are protected from excessive sun exposure.

"Many people believe that dealing with overweight and obesity is a personal responsibility. To some degree they are right, but it is also a community responsibility. When there are no safe, accessible places for children to play or adults to walk, jog, or ride a bike, that is a community responsibility. When school lunchrooms or office cafeterias do not provide healthy and appealing food choices, that is a community responsibility. When new or expectant mothers are not educated about the benefits of breastfeeding, that is a community responsibility. When we do not require daily physical education in our schools, that is also a community responsibility."

(USDHHS, 2001, p.xiii-xiv).

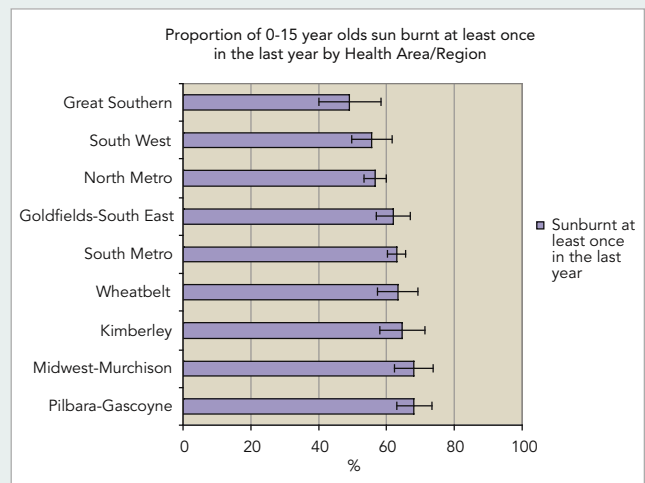
HWSS data on the sun protection practices of Western Australian parents are generally consistent with those identified in previous reports on parents from other Australian states (Centre for Epidemiology and Research, 2002) and Victoria (Dixon, Borland and Hill, 1999).



The HWSS also included an item which asked parents about the frequency of sunburn among their children over the previous year. Responses to this item are outlined in the following graph, which highlights that more than one-in-two Western Australian children continue to have at least one episode of sunburn each year and that the annual rate of sunburn increases with increasing latitude. Thus, in the Great Southern, where the major population centres are on the South coast, the annual prevalence of at least one sunburn among children is approximately 50 per cent. In contrast, the annual prevalence among same aged children in Western Australia's northern Regions is approximately 70 per cent.

Sun Protection – What the HWSS Data Reveal

- Most Western Australian parents always or mostly check to ensure their children are protected from excessive exposure to sunlight; and
- A majority of Western Australian children experience at least one episode of sunburn each year.



The data indicate that...

- Four in five 5-15 year olds in the Midwest and Murchison Health Region are rated by parents as very active or active. More younger children are rated by their parents as being more active than older children.
- Boys tend to be more physically active than girls.
- While most children eat the recommended number of serves of fruit, fewer than half eat sufficient vegetables.
- Approximately one-in-four children in the Midwest and Murchison Health Region are overweight or obese. The prevalence of childhood overweight and obesity appears to be increasing relatively rapidly.
- While most parents in the Midwest and Murchison Health Region always or mostly take care to ensure their children are protected with a hat, sunscreen and clothing prior to going out in the sun, sunburn remains a common childhood experience.

About the Data...

The WA Health & Wellbeing Surveillance System (HWSS) is a continuous data collection system using Computer Assisted Telephone Interviews (CATI) to survey 550 people throughout Western Australia every month. The system began in March 2002 and up to July 2006, 27,000 interviews had been conducted.

People are asked questions on a range of indicators related to health and wellbeing. Topics include chronic health conditions, lifestyle risk factors, protective factors and socio-demographics. Since the surveillance system began, response rates have been between 78-80 per cent of all the people contacted.

Discussion points for Area Health Service decision makers...

Are programs that promote physical activity, particularly among girls, adequately resourced in the Region?

Do SES differences in the prevalence of childhood obesity warrant the development of targeted interventions?

Are programs that promote the benefits of fruit and vegetable consumption by children adequately resourced in the Region?

Are the risks associated with childhood sunburn adequately communicated to local children and those responsible for their care?

References

1. ABS. 2006. *National Health Survey: Summary of Results*. ABS cat. No. 4364.0. Canberra: Australian Bureau of Statistics.
2. AIHW, AACR & NCSG: Ian McDermid. 2005. *Cancer incidence projections, Australia 2002 to 2011*. Canberra: Australian Institute of Health and Welfare (AIHW), Australasian Association of Cancer Registries (AACR) and the National Cancer Strategies Group (NCSG).
3. Allen, J. and Hector, D. 2005. *Benefits of breastfeeding*, *The NSW Public Health Bulletin*, 16(3-4), 42-46
4. Booth, M.L., Chey, T., Wake, M., Norton, K., Hesketh, K., Dollman, J. and Robertson, I. 2003. *Change in the prevalence of overweight and obesity among young Australians, 1969-1997*, *American Journal of Clinical Nutrition*, 77, 29-36.
5. Buller, D.B. and Borland, R. *Skin Cancer Prevention for Children: A Critical Review*. 1999. *Health Education and Behaviour*; 26, 317-343.
6. Centre for Epidemiology and Research, NSW Department of Health. 2002. *New South Wales Child Health Survey 2001*. *NSW Public Health Bulletin*, 13(S-4).
7. Cole, T.J., Bellizzi, M.C., Flegal, K.M. and Dietz, W.H. 2000. *Establishing a standard definition for child overweight and obesity worldwide: international survey*. *British Medical Journal*, 320, 1240-3.
8. Department of Health and Family Services. 1998. *The Australian guide to healthy eating*. Canberra: DHFS.
9. Department of Health and Ageing. 2004. *Active kids are healthy kids: Australia's physical activity recommendations for 5-12 year olds*. Canberra: DHA.
10. Dollman, J., Norton, K. and Norton, L. 2005. *Evidence for secular trends in children's physical activity behaviour*. *British Journal of Sports Medicine*, 39: 892-897.
11. Helen Dixon, H., Borland, R. and Hill, D. 1999. *Sun Protection and Sunburn in Primary School Children: The Influence of Age, Gender, and Coloring*. *Preventive Medicine* 28, 119-130.
12. Lowe, J. B., Borland, R., Stanton, W. R., Baade, P., White, V. & Balanda, K. P. 2000, *Sun-safe behaviour among secondary school students in Australia*, *Health Education Research*, 15(3), 271-81.
13. National Health and Medical Research Council (NH&MRC). 2003. *Dietary Guidelines for Children and Adolescents in Australia*. Canberra: NH&MRC.
14. Olds, T., Dollman, J., Ridley, K., Boshoff, K., Hartshorne, S., and Kennaugh, S. 2004. *Children in Sport: A Report Prepared for the Australian Sports Commission*. Belconnen ACT: Australian Sports Commission.
15. Olds, T., Tomkinson, G. and Baker, S. 2003. *Fitness differential amongst schools: how are they related to school sector?* *Journal of Science and Medicine in Sports*, 6 (3): 313-327
16. U.S. Department of Health and Human Services (USDHHS). 2000. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office.
17. U.S. Department of Health and Human Services (USDHHS). 2001. *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General.