

## 2.4.4 Health behaviours

*“The focus is on addressing the determinants of health, decreasing risk factors and increasing protective factors for children and young people within the context of the family, community, society and the environment.”*

*Strategic Policy Framework for Children’s and Young People’s Health 2002-2007<sup>4</sup>*

Health risk factors such as physical inactivity, overweight, smoking, excessive alcohol consumption, hypertension, high blood cholesterol and insufficient fruit and vegetable consumption are responsible for a substantial proportion of the overall burden of disease in Australia.<sup>38</sup> The burden of disease and injury attributed to health risk factors has not been determined for sub-populations such as children. Indicators of major risk factors for children are reported below. In addition, the health impact of these health behaviours is described where possible. Section 2.5 describes interventions to address the key health behaviours.

### Maternal smoking and substance abuse

In Australia in 2001, women who were pregnant and/or breastfeeding in the previous 12 months were less likely to consume alcohol (53%), tobacco (23%) and any illicit drug (8%) while they were pregnant and/or breastfeeding compared with when they weren’t (83%, 24%, and 17% respectively).<sup>116</sup> Tobacco was the drug that women were least likely to cease using during pregnancy and/or breastfeeding.

### Tobacco smoking

Smoking during pregnancy increases health risks for both the mother and baby. Although there are currently no long-term data on Australian trends in smoking prevalence during pregnancy, it was reported in 2002 that about one in five women continue to smoke during pregnancy.<sup>117</sup> It has been reported that women who continue to smoke during pregnancy are more likely to be young, unmarried, less educated, of higher socioeconomic disadvantage, and to have two or more children.<sup>117</sup> About one quarter of Australian women who were smokers at the time they became pregnant, quit smoking for the pregnancy.<sup>117</sup> However, about half the women who quit smoking during pregnancy relapse within six months of delivery.<sup>117,118</sup> Pregnancy or the desire to become pregnant can provide powerful motivation to quit smoking. A national drug strategy report quotes studies that suggest a lack of success in quitting smoking during pregnancy, and relapse after giving birth, have been associated with high alcohol consumption, a lack of confidence in the ability to quit, concern about weight gain and shorter duration of breastfeeding.<sup>117</sup>

In Queensland in 1999-01, there were on average 21 deaths per year in children aged 0-4 years attributed to tobacco smoking. In Queensland between 1999/00-2001/02, there were on average 1,150 hospital separations per year in children aged 0-4 years attributed to tobacco smoking. Of the hospital separations attributed to tobacco smoking, low birth weight was the leading cause (71.0%), followed by lower respiratory illness (23.2%). In Australia in 1999, of the 155 deaths due to sudden infant death syndrome (SIDS), 51 were attributed to active smoking.<sup>117,119</sup>

Women who smoke during pregnancy can have problems with delayed conception and infertility, and are at higher risk of certain complications of pregnancy such as ectopic pregnancy, spontaneous abortion (miscarriage) and placenta previa.<sup>117,120</sup> Smoking during pregnancy also increases risks for the baby. Infants born to women who smoke tend to have lower average birth weight, are more likely to be small for gestational age and are at increased risk for pre-term delivery. Smoking does not appear to affect the overall risk for congenital malformations. However, the risks for still birth, neonatal death, perinatal death and sudden infant death syndrome are all increased.<sup>117,120</sup>

### Alcohol

In Queensland in 1999-01, there were on average 1.8 deaths per year in children aged 0-4 years attributed to hazardous and harmful alcohol consumption. In Queensland between 1999/00-2001/02, there were on average 45 hospital separations per year in children aged 0-4 years attributed to alcohol-related conditions.

Maternal alcohol intake can have a number of effects on the developing baby, such as an increased heart rate and dilation of the small blood vessels. Severe maternal alcohol misuse can cause foetal alcohol syndrome.<sup>45,121</sup>

## Illicit drugs

In Queensland in 1999-01, there were on average 2.7 deaths per year in children aged 0-4 years attributed to illicit drugs. Of these deaths, newborn drug toxicity was the leading cause (49.8%). In Queensland between 1999/00 and 2001/02, there were on average 286 hospital separations per year in children aged 0-4 years attributed to illicit drugs. Of the hospital separations attributed to illicit drugs in children aged 0-4 years, low birth weight was the leading cause (65.3%) followed by newborn drug toxicity (34.1%).

## Healthy weight

While no recent Queensland specific data is available on growth and overweight/obesity in children and adolescence, national data highlights the magnitude of this health problem. Using standard international definitions on childhood levels of overweight and obesity, it has been reported that in Australia in 1995, among 2-18 year olds, 16% of girls and 15% of boys were overweight, and a further 4.9% and 4.5% of girls and boys respectively, were obese.<sup>122</sup> The highest prevalence of overweight/obesity among girls was in the 8-11 year age group (25%), and for boys was in the 12-15 year age group (26%). The prevalence of overweight doubled and the prevalence of obesity trebled between 1985 and 1995.<sup>122</sup> More recent data from South Australia found that approximately 20% of four-year-old children were overweight in 2002, an increase of 60% since 1995.<sup>123</sup>

Australia and Queensland are experiencing an epidemic of overweight and obesity in the entire population. A general pattern has become apparent in populations as they modernize. Obesity first becomes most prevalent in middle-aged females, then in middle-aged males, then in young adults and finally in adolescents and children. Australia has currently moved into phase four of this cycle with almost one quarter of children between two and 17 years now categorized as overweight or obese.<sup>124,125</sup>

Overweight and obesity in children is a serious problem.<sup>126</sup> It has been associated with numerous health risks for children, including stress on weight bearing joints, high blood pressure, abnormal blood lipids, type 2 diabetes and respiratory problems.<sup>126</sup> Overweight during childhood can also have a damaging impact on psychosocial and emotional development. Further, child onset overweight increases adult morbidity and mortality risk. In the long term, overweight children are more likely to develop chronic diseases such as cardiovascular disease, type 2 diabetes and some forms of cancer.<sup>126</sup>

More evidence is needed to describe the factors that contribute towards the increasing trend in overweight and obesity in Australian children. In general, physical inactivity and inappropriate eating patterns, or a combination of both, cause overweight and obesity. The 'obeseogenic' environment the technological, social and economic changes that encourage and support reduced activity and over consumption of energy dense food, plays a significant role in influencing these trends.<sup>127,128</sup> Despite obesity having strong genetic determinants, the genetic composition of the population does not change rapidly. Therefore, the large increase in obesity in recent years must reflect changes in non-genetic factors.<sup>129</sup>

## Breastfeeding

In Queensland in 2000, 83.2% of infants were exclusively breastfed at discharge from hospital.<sup>130</sup> Older mothers were more likely to breastfeed, with 84.4% of mothers aged 35 and older breastfeeding at discharge from hospital, compared to 75.3% of mothers aged younger than 20 years.<sup>43</sup> It is estimated that by three months of age, only 56% of infants are exclusively breastfed and by six months of age only 19% are exclusively breastfed.<sup>130</sup> These figures are in line with national data, however, they fall significantly short of international, national and state recommendations. By 2008, Queensland Health aims to increase breastfeeding rates to 90% at discharge from hospital, 60% exclusive breastfeeding at three months of age, and 50% exclusive breastfeeding at six months of age.<sup>130</sup> These targets support the recently released *National Dietary Guidelines for Children and Adolescents* that recommend exclusive breastfeeding for the first six months of an infant's life.<sup>131</sup>

Optimal infant nutrition for a child in the first 12 months of life provides a sound basis for normal growth and development and the enhancement of health throughout life. Optimal infant nutrition is provided through exclusive breastfeeding for the first six months with the introduction of appropriate solid food at this age, in addition to continued breastfeeding to at least 12 months of age.<sup>130</sup>

Breast milk provides all the energy, nutrients, vitamins and minerals needed for healthy growth to six months of age. It contains components that enhance and develop an infant's immune system and reduce the risk of developing preventable diseases throughout life. Of particular relevance to the current childhood obesity epidemic, a number of large scale epidemiological studies indicate that exclusive

breastfeeding is protective against obesity in later life.<sup>131</sup> As well as significant benefits to the infant, breastfeeding provides positive health benefits to the mother including; increased fertility control, increased likelihood of postpartum weight loss, reduced risk of developing breast and ovarian cancer, and improved recovery of the mother's body to pre-pregnant state.<sup>131</sup>

## Nutrient intake

In Australia in 1995, fat contributed between 32.0% and 35.3% of total energy in children in the age range 2-15 years. This is in excess of the recommended level of 30% of total kilojoules from fat (Table 2.14). In all age groups, for both boys and girls, saturated fats accounted for the highest proportion of fat intake, and intake was above the recommended 10% of total fat intake coming from saturated fat.<sup>132</sup>

Intake of total sugars, as a proportion of total energy, decreased for boys as age increased (Table 2.14). For females (aged 2-11 years) a similar trend was seen, with the exception of an increase in intake of total sugars in ages 12-15 years. Total sugars refers to monosaccharides and disaccharides such as sucrose, glucose and fructose that are found naturally in foods or added in processing. It has been suggested that excess consumption of sugar contributes to an energy dense diet that may contribute to obesity. However, these links are still not clear. National data indicate a 20% increase in consumption of sugars for children aged 10 to 15 years in the 10-year period 1985 to 1995.<sup>132</sup>

**Table 2.14: Median contribution of carbohydrate, protein, total starch and total sugars (kJ) as a proportion of total energy (J) by age and sex, Queensland 1995**

	Males (years)				Females (years)			
	2-3	4-7	8-11	12-15	2-3	4-7	8-11	12-15
Protein	14.2	14.5	14.7	15.6	14.2	14.0	14.0	15.8
Total fat	33.3	32.0	32.0	34.7	35.2	33.4	35.3	33.2
Saturated fat	14.8	14.6	13.9	15.7	17.6	15.7	15.2	14.6
Monosaturated fat	10.2	11.2	11.3	11.6	11.3	11.1	11.8	11.5
Polyunsaturated fat	3.9	3.9	4.4	3.6	3.6	3.9	4.5	4.1
Carbohydrate	52.2	52.0	52.5	49.8	51.1	51.8	50.1	49.8
Total sugars	31.6	25.7	24.3	22.5	27.2	26.1	23.5	25.5
Total starch	21.3	24.5	27.6	26.3	24.7	24.2	25.4	24.9

Source: ABS National nutrition survey 1995

Note: Calculated by QH

The National Health and Medical Research Council recommend that in the first six months of life, fat should make up about 50% of the energy requirements for both breastfed and formula fed infants.<sup>131</sup> For infants not breastfed, infant formula should be the primary milk feed until 12 months of age. In the latter part of the first year and during the second year of life, the fat target should be about 40% of energy intake. For children aged 2-5 years, there should be a gradual reduction in fat intake to 30% total fat with no more than 10% saturated fat. Reduced fat milks are suitable for this age group. Skim milk however, is not suitable for children aged 2-5 years. Children aged 5-14 years should obtain 30% of their total energy requirements from fat, with no more than 10% of this being saturated fat.<sup>131</sup>

Substantial proportions of children in Queensland potentially did not meet recommended daily intake (RDI) for a number of key micronutrients (Table 2.15). Due to methodological limitations, a more accurate measure of the proportion of children who consume recommended daily intake of these micronutrients cannot be assessed. Specifically, between 25-90% of children met or exceeded the recommended daily intake (RDI) of vitamin A (retinol equivalent), folate, vitamin C, calcium, iron and zinc. These data suggest that there is still a significant proportion of children who may not meet the RDI for these key essential nutrients. For calcium, between 25-50% of males and females met or exceeded the RDI, suggesting for some age groups there is a majority who do not meet these levels. Median intakes of zinc are also low in males and females aged 8-11 years and 12-15 years respectively (Table 2.15). Additional information relating to macro- and micro-nutrient intake in Queensland is available from the Health Information Centre, Queensland Health.

**Table 2.15: Percentage (%) of children who met or exceeded recommended daily intake of micronutrients by age, Queensland 1995**

	2-3 years		4-7 years		8-11 years		12-15 years	
	Male	Female	Male	Female	Male	Female	Male	Female
Vit. A - retinol equivalent	75	75	75	75	50	50	50	50
Folate	90	90	90	75	75	50	50	50
Vitamin C	75	75	75	50	75	75	75	75
Calcium	50	25	50	25	50	25	50	25
Iron	50	50	90	75	90	75	75	50
Zinc	75	75	75	75	25	25	50	25

Source: ABS National nutrition survey 1995

Note: Calculated by QH Data was not adjusted for within person variation  
 Note: The RDI used in this analysis were as recommended in 1991 and are currently under revision. It is quite likely that some nutrients, particularly folate, may be changed

There is evidence that Australian children and adolescents are eating more. Between 1985 and 1995, in 10-15 year old children, increases in energy and protein for both boys and girls were reported (Table 2.16).<sup>132</sup> In 1995, on the day prior to survey, more than one third of children did not eat any fruit, and about 20% did not eat vegetables on the day prior to the survey.<sup>133</sup> In contrast, one third of children consumed snack foods such as potato crisps and extruded snacks, 50% ate confectionery such as lollies and chocolates, and 75% ate high fat foods such as commercial hamburgers and pastries, on the day prior to the survey.<sup>134</sup>

**Table 2.16: Increased nutrient intake (percent) 1985 to 1995: in children aged 10-15 years by sex, Australia 2001**

	Male	Female
Energy Kj	11	15
Protein	13	14
Carbohydrate	20	20
Sugar	20	20

Source: Cook T, Australia Food and Nutrition Monitoring and Surveillance Unit, 2001

In addition, the proportion of Australian children consuming non-alcoholic sweet beverages (fruit juice, soft drinks etc) increased for both boys and girls between 1985 and 1995. For boys the increase was from 83% to 87% and for girls from 84% to 86%. The mean intake of non-alcoholic sweet beverages also increased significantly for both boys (increased by more than 200g) and girls (increased by more than 150g).<sup>132</sup>

The proportion of Australian children consuming milk products decreased slightly for both boys and girls between 1985 and 1995. For boys the proportion decreased from 95% to 92% and for girls from 95% to 91%. The mean intake of milk and milk products also decreased for both boys and girls but the decrease was significant only for boys. For boys, mean intake decreased by about 60g per day.

A two-year longitudinal study of ethnically diverse school children in the United States of America found that an increase in consumption of sweetened soft drink was linked to increasing body mass index and risk of obesity. For children aged 8-11 years and 12-15 years, percentage of energy from total carbohydrates and total sugars increased between 1983 and 1995 from 8 to 14% in boys and from 8 to 13% in girls. Similarly, the contribution of sugars from sweetened soft drinks and fruit and vegetable juices increased from 9 to 20% in boys and remained the same for girls at 20%.<sup>135</sup> There is good evidence that a high intake of sugar-sweetened drinks is a probable cause of obesity.<sup>136</sup>

Information relating to introduction to solid food, cow's milk and sweet drinks to infants and children, was collected in Queensland in 2003. Detailed analysis is planned to be released in late 2004.

## Food and drink advertising

Australian children aged between 5-12 years are watching an average of 23 hours per week of television; an average of two hours 31 minutes daily. Between 9 and 13 minutes of advertising is broadcast per hour, thus children on average view 240 minutes of advertising per week. In a recent content analysis of the types of foods advertised during programs which have appeal to children, Zuppa *et al* found there were 544 food advertisements, some 21% were for core foods and 79% for non-core foods according to the *Australian Guide to Healthy Eating*.<sup>134</sup>

In addition to its detrimental effects on children's physical activity levels, television exposes children to numerous food advertisements. Television is an important media source of education for children,

influencing them from a very young age. However, Australia has one of the highest levels in the world of food advertising during children's television viewing times. The National Health and Medical Research Council has reported that television may be more influential than family in setting children's food preferences. An association between television watching and consumption of 'unhealthy' foods has been demonstrated.<sup>134,137</sup>

### Fast food consumption

In Queensland in 2003, 56% of children in the age group 2-12 years were reported by their parents as consuming take-away food less than once per week.<sup>92</sup> A further 43% of parents reported that their children consumed take-away food once or twice a week. A very small proportion (0.96%) of children reportedly ate this type of food three or more times per week.<sup>92</sup>

### Physical activity

In Queensland in 2000, 56% of children aged 5-14 years participated in organised sport, compared to the national average of 59%. More boys (64%) participated than girls (47%).<sup>138</sup> Queensland children's participation in sport and leisure activities is one of the lowest in Australia. About two thirds of Queensland children participated in bicycle riding and about one third in skateboarding or rollerblading.<sup>138</sup>

The data presented here do not give an indication of the regularity of children's participation in physical activity. Such data are not currently available. Since physical activity needs to be regular for health benefits, some caution needs to be taken in the interpretation of these data for health benefits.

Although there are no formal activity guidelines for Australian children, the American and Australian Heart Foundations recommend that children aged five years and older should participate in at least 30 minutes of moderate intensity physical activity every day, which can include organised sports, recreational games or other family or school activities.<sup>139</sup>

Children who are sufficiently active, particularly if they participate in additional vigorous intensity physical activity three or four times a week, have a lower risk of developing chronic diseases such as diabetes and cardiovascular disease in later life. In addition to encouraging children to participate in physical activities, parents should also limit the time that children are permitted to spend in sedentary recreation such as watching television or playing computer games.<sup>140</sup>

### Sun protection

In Queensland in 2003, over three-quarters (78.7%) of parents with children aged 0-12 years agreed that children need to get some direct sunlight to be healthy.<sup>92</sup> The majority of parents (81.2%) stated that it was not difficult to prevent their child from becoming sunburnt during summer. However, 18.9% of parents reported one episode of painful sunburn in their child and 4.9% reported between two and 10 episodes of painful sunburn in the preceding summer. With regard to parental behaviour, 15.9% of parents reported they always applied sunscreen to themselves if outside on a sunny day for 15 minutes or more, 22.0% reported that they applied sunscreen most of the time, 24.8% applied sunscreen sometimes and 37.3% rarely or never applied sunscreen.<sup>92</sup>

Of parents of children aged 2-12 years, 84.8% explained the danger of being unprotected in the sun to their child 'always' or 'mostly' and 95.2% of parents encouraged their child to protect themselves from the sun 'always' or 'mostly'. On sunny days when the child was outside for at least 15 minutes, 71.9% of parents encouraged the child to apply sunscreen to exposed areas of skin 'always' or 'mostly', 92.6% encouraged them to wear a hat 'always' or 'mostly', and 72.9% encouraged the child to wear sun protective clothing 'almost' or 'mostly'. On sunny days 24.0% of parents encouraged their children to stay indoors 'always' or 'mostly'. Most parents (76.9%) encouraged their children to protect themselves from the effects of the sun 'always' or 'mostly' on cloudy days.<sup>92</sup>

### Vaccination rates

Overall, high immunisation coverage for vaccines due in the first two years of life has been achieved in Queensland. In 2003, a child was defined as fully vaccinated at 12 months of age if they had received a third dose of pertussis-tetanus-diphtheria-hepatitis B (DTPa-Hep B) and poliomyelitis vaccines as well as three doses of HibTiter or two doses of PedvaxHIB. At the second milestone of 24 months, a child was defined as fully vaccinated if they had received the third dose of poliomyelitis vaccine, the first dose of measles-mumps-rubella (MMR) vaccine (due at 12 months of age), the fourth dose of pertussis-tetanus-

diphtheria (DTPa) vaccine (due at 18 months of age) and the fourth dose of HibTiter or third dose of PedvaxHIB vaccine.

In Queensland in October 2003, 92.1% of children were fully vaccinated at 12 months of age, 90.0% were fully vaccinated at two years of age, and 94.5% had received a first dose of MMR vaccine. Vaccination coverage rates presented here refer to Queensland children provided with free vaccine through the childhood immunisation program and were calculated from the Australian Childhood Immunisation Register (Table 2.17).<sup>141</sup>

Immunisation coverage for children at six years of age remains lower than optimum. A child was defined as up-to-date at six years if they had received a fifth dose of pertussis-tetanus-diphtheria, a fourth dose of poliomyelitis and a second dose of measles-mumps-rubella vaccine (all due at four years of age), and a fourth dose of HibTiter or third dose of PedvaxHIB vaccine. In Queensland in October 2003, 82.4% of children were fully vaccinated at six years of age (Table 2.17).<sup>141</sup> Future cohorts of children will be assessed as fully vaccinated for each milestone according to an amended schedule introduced in September 2003.

While much of the effort in immunisation over the last decade has resulted in demonstrated successes indicated by the above coverage rates, a significant number of children in all cohorts remain incompletely vaccinated. There is general agreement in the literature on the factors associated with the incomplete vaccination status of children. These include failure to commence primary vaccination, high mobility, socio-economic disadvantage, being from a single parent family, parental unemployment, coming from a culturally or linguistically diverse background or being of Aboriginal or Torres Strait Islander descent. The challenge is to develop strategies that effectively target these groups.<sup>87</sup>

**Table 2.17: Vaccination coverage rates by milestone and age cohort, Queensland and Australia, 2003**

	Fully vaccinated 12-<15 months	First MMR 24-<27 months	Fully immunised 24-<27 months	Fully immunised 72-<75 months
Queensland	92.1	94.5	90	82.4
Australia	91.7	94.1	89.2	83.1

Source: QH Communicable Disease Unit (based on data supplied by Australian Childhood Immunisation Register)