



POLICY BRIEF

Translating early childhood research evidence to inform policy and practice

Overweight and obesity in childhood

Overweight/obesity during childhood is a major public health issue with more than 200,000 Australian children between 2-18 years now obese (Booth et al, 2003). It has significant health implications across the life span. This Policy Brief reviews the effectiveness of prevention and intervention strategies and highlights the importance of adopting a multi-faceted approach to decrease the prevalence of overweight/obesity in children.

Why is this issue important?

With around 25% of school-aged children (Booth et al, 2006; Booth et al, 2003) and 20% of preschoolers now overweight or obese (Wake et al, 2006), Australian children are heavier and less fit than ever before. Overweight doubled and obesity tripled in prevalence between 1985 and 1997, and continues to rise at a rate of about 1-1.5% per year (Booth et al, 2006; Sanigorski et al, 2007). Though Australian children are in 'the middle of the pack' internationally, their rate of rise is among the steepest (Lobstein et al, 2004).

Obesity is an all-inclusive epidemic, affecting rural and urban Australian children from all states, all age groups, and all socioeconomic levels (Booth et al, 2001). Nonetheless, there are disparities. In the Longitudinal Study of Australian Children:

- culturally and linguistically diverse (CALD) and indigenous communities, and other disadvantaged backgrounds, are risk factors for heavier BMI status (especially for boys),
- preschoolers in the lowest fifth of the population for social disadvantage have nearly 50% higher odds of being in a heavier body mass index (BMI) category compared to those in the top fifth of the population (Wake et al, 2006).

Being overweight/obese has short term and long term consequences for physical and psychosocial health. Whilst most overweight/obese pre-school and primary school children appear healthy and well-

adjusted, many experience weight-related problems including:

- Physical problems - joint and mobility problems, sleep apnoea and the early biochemical precursors of later diabetes, heart and liver disease (Ebbeling et al, 2002).
- Psychosocial problems - exposure to teasing, bullying and social exclusion, which can lead to withdrawal from participation in activity, and in turn, increased weight gain due to lack of physical activity (Batch and Baur, 2005; Williams et al, 2005).

Overweight/obesity at adolescence, regardless of later BMI, are also associated with poorer health and employment outcomes for males, and poorer social and economic outcomes for females (Must, 1992). The most significant long-term concern is the increased risk of adult overweight/obesity, and the associated serious health problems (Summerbell et al, 2003). In addition to the implications for the individual and their family, overweight/obesity has substantial economic ramifications and places an enormous burden on the health and welfare system (Access Economics, 2005).

There have been many prevention and intervention programs employed to address the obesity epidemic, but no one program has provided 'the answer' for successful outcomes (ACE, 2006). The need to evaluate 'what has been done' as well as 'the next steps forward', is critical given that it appears difficult if not impossible to reduce the average weight of populations once obesity is entrenched.

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What does the research tell us?

Why are children becoming obese?

The interacting factors that determine whether or not a child becomes overweight are complex and multifaceted (Davison and Birch, 2001). Children live within layers of extending influences: the family, the extended family or cultural group, the local community (childcare, school, local streets, recreational facilities), the wider community (television advertising, public transport) and the society. Obesity is driven by individual, environmental and social circumstances (Lobstein et al, 2004).

Individual and family perspective

Between 1985 and 1995, the energy density of food consumed by Australian children increased by about 13% (Cook et al, 2001). Children also became less fit (Tomkinson et al, 2003) and current daily physical activity is lower than recommended for general health (Reilly, 2005; Reilly et al, 2004). Even though the relative contributions to the obesity epidemic of overnutrition (large portions, high energy density) versus underactivity remain unclear, one emerging viewpoint is that although overnutrition may be the main driver of obesity, low physical activity may be responsible for many of its health consequences (Weiss and Raz, 2006).

The critical question as to why some children become overweight, but others do not, can not yet be fully answered. While lifestyle choices play a part, many individuals appear to be genetically predisposed toward weight gain given the 'right' conditions (Popkin, 1998). It takes many generations for the gene pool to evolve; however, it is possible to induce permanent changes in the way genes function ('epigenetic' changes) from one generation to the next. The most obese generation of young adults in history are now becoming parents, and having heavier babies and toddlers (Whitaker and Dietz, 1998). Epigenetic changes, due to exposures such as high glucose, high fat and/or high insulin during fetal life, could be programming individuals towards obesity even from before birth (Keith et al, 2006; Singhal et al, 2003).

As well as their genes, families share lifestyle and local environment (Agras, 2005). Parental eating habits, feeding practices (Fisher, 1995) and duration of breastfeeding (Hediger et al, 2001) can all influence children's weight. Children typically adopt their families' meal patterns (such as high-fat food and fruit and vegetable intake) and practices

(such as eating in front of the television) (Matheson et al, 2004). Children are also influenced by the family activity levels and parents' ability to facilitate an active lifestyle for them (Reilly, 2005).

Community perspective

Environmental and societal changes have seen a reduction in incidental physical activity.

- Perceptions about child safety, concerns about injury during active play at school and child care, and smaller families lead to less strenuous activity (Swinburn and Egger, 2004).
- People living in towns characterised by fewer green outdoor spaces and more rubbish and graffiti report lower physical activity and more obesity (Ellaway et al, 2005).

In relation to food intake, a large proportion of the food supply is partially or fully prepared and cooked before purchase, and many meals are eaten away from home (Commonwealth Department of Health and Age Care, 1998). These items are often higher in fat, energy and portion size than home-prepared foods. High-sugar drinks and foods high in simple sugars, processed starch and fats are widely available, very palatable, and may specifically promote obesity. Poverty may impose a 'double jeopardy': energy-dense food is preferentially purchased when money is tight, and this may compound the effects of poorer access to healthier nutrition options (Sausenthaler et al, 2007; Mendoza et al, 2006; Drewnowski et al, 2004).

Approaches to effective prevention

Attempts to develop evidence-based strategies need to take into consideration the individual and family perspective as well as the influence of the wider community.

Whitaker (2003) suggests that, at the individual level, successful obesity prevention needs to include changes in parenting practices and access to information to support parents regarding:

- increasing breast feeding rates and duration
- developing a child's fruit and vegetable acceptance, and inclusion in daily diet
- developing a preference for lower fat foods and milk to reduce fat content and increase calcium content respectively to reduce potential weight gain and support healthy growth
- drinking water in preference to sugary drinks to decrease kilojoule intake

- establishing television viewing guidelines to limit sedentary activity
- increasing outdoor play to increase physical activity.

Parents can influence children's physical activity and health practices through modeling, providing a healthy home environment and emphasizing behaviours more than weight. They can limit television and screen-based activities, particularly at times which compete with outdoor time and active play. Prevention programs aimed at supporting changes in parenting practices also need to include more intensive targeted strategies for families in communities at risk for higher rates of overweight/obesity (eg CALD, indigenous and socio-disadvantaged groups) (Harvey-Berino and Rourke, 2003).

The community, including government, also plays an important role in prevention. A recent review demonstrated that the most cost-effective obesity intervention included reduction in television advertising of high fat/sugar foods and beverages during children's viewing hours, and a school-based nutrition education intervention to reduce consumption of soft drinks (ACE, 2006). Schools and child care centres, transport, urban design and infrastructure strategies can all encourage healthier nutrition as well as more and safer play. Strategies such as the 'Walking School Bus' and 'Active After School' programs have been found to have low cost-effectiveness (ACE, 2006) in reducing prevalence rates of overweight/obesity, due to relatively low changes in the energy expenditure of those who participated in these programs, coupled with variable uptake across all communities. However, such strategies may have secondary benefits in community engagement.

Approaches to effective intervention and treatment

Treatment and intervention for those children already overweight and obese is as important a priority as prevention. Evidence shows that targeted family-based interventions are effective and cost-efficient (Barlow and Dietz, 1998). Older children need to be actively engaged, along with the family, to make necessary behavioural and lifestyle changes (Summerbell et al, 2003). For younger children, the most effective approach involves professionals working with the parents (Golan et al, 2006). It is also necessary for interventions to start as

young as possible, given that:

- obesity clinics report the best results for younger children
- obesity is already very stable by school entry
- early treatment may avoid subsequent decline in physical and psychological health
- young children can simply 'grow into their weight' (rather than having to actually lose weight)
- even if children do not change their BMI trajectory, they may still benefit through improved fitness and glucose metabolism and relative increases in lean mass (Reinehr et al, 2006).

School-based interventions targeted to obese children have been successful (Sallis et al, 1995), but are not currently popular because of fears of alienation and stigmatization. For children with established obesity, multidisciplinary hospital clinics have been shown to improve health outcomes in a large majority of referred children (Sabin et al, 2007).

The National Health and Medical Research Council (2003) guidelines recommended routine surveillance of BMI in primary care settings for all Australian children backed up with guidance, counseling, and treatment when needed. However, recent surveys show that community child health nurses (Wake et al, 2007), general practitioners (Gerner et al, 2006), and paediatric hospitals (McLean et al, 2006) do not routinely assess children for overweight, nor do parents themselves usually express concerns about overweight in their own young children. Even if professionals and parents could and did correctly identify obesity, few services are available, even for the children who are most obese and/or suffering other morbidities related to their obesity. Australia boasts only a handful of dedicated children's obesity clinics, which tend to be poorly resourced, have long waiting lists, and see only a minute proportion of Australia's severely obese children. An integrated service delivery approach across the primary, secondary and tertiary levels is needed so that there is adequate service provision to sufficiently reverse the trend of increasing levels of overweight/obesity (ACE, 2006).

Despite its current prominence, obesity is a relatively new public health issue, so that evidence about causal pathways and effective intervention strategies is still sparse.

What are the implications of the research?

- Obesity is a multi-cause disease, and therefore requires multiple solutions.
- Once obesity grips a population, it is difficult to lower its prevalence. However, it is possible to slow or even prevent further increases.
- Prevention efforts need to continue even though it is not yet known exactly which aspects of behaviour drive which aspects of obesity and its consequences.
- Obesity is a 'pandemic', needing effective responses for every community. 'At-risk' communities require additional resources and solutions.
- Effective population interventions must not only work for help-seeking individuals, but also reach all those in need, and be cost-effective. Multi-faceted approaches with community-wide engagement have shown the most promise.
- Within the healthcare sector, obesity treatment continues to rely on the traditional practice of presentation to a primary care practitioner followed by referral. Since neither parents nor practitioners routinely raise the issue or consider the overweight/obese child to be 'sick', the vast majority of obese children are not offered care. In any case, capacity to meet the demand for care is limited.
- Primary and secondary health care professionals do not routinely conduct surveillance of BMI as recommended by the NH&MRC, therefore the issue is not raised with the parent/s.
- There are significant gaps in the information available about effective strategies and delivery models for prevention and intervention. Research and rigorous data-monitoring is required to inform communities, practitioners and families.

Considerations for policy and programs

- Consider the child, family, and community, and use a genuine whole-of-government collaborative approach, involving (but not limited to) the health, education, community services, sports, transport, food, agriculture, environment, primary industry and communications portfolios, to develop effective policy and programs.
- Monitor trends through a national surveillance strategy for children's BMI status, physical activity, nutrition and obesity-related morbidity.
- Support parents with education and parenting skills to make healthy lifestyle choices for themselves and their children. The responsibilities of parents should be balanced by effective community and societal preventive strategies.
- Limit the marketing/advertising of food for and to children. Although research on effectiveness is limited, policy and legislative approaches have worked in other areas such as tobacco control and bike helmets.
- Involve primary health care as an effective player in all initiatives.
- Develop multidisciplinary clinics funded not only to deliver needed services, but to continually evaluate and improve performance.
- Support nationally-coordinated longitudinal, clinical, primary care and community child obesity research, to shorten the time frame from research to implementation and accurate monitoring.
- Sustain, develop and determine the effectiveness of promising interventions through long-term support. It is crucial to evaluate all strategies for effectiveness, reach and cost.

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An **advisory group of national and international experts** in children's policy and service delivery provides advice and peer review.

References

A full list of references and further reading used in the development of this Policy Brief is available from:

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