Increasing healthy eating for children aged 4–6 months to 4 years

An Evidence Summary

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This document summarises current evidence on increasing healthy eating for children aged 4–6 months to 4 years, together with implications for policy, practice and research.

1 Why change is needed

The early years of life are a period of rapid growth, and a healthy diet is critical for development. During this time children establish their eating behaviours and food preferences.[1]

The current dietary intake of Australian children aged 4–6 months to 4 years is of significant concern; dietary guidelines and recommendations[1, 2] are not being met. Data from the *2007 Australian National Children's Nutrition and Physical Activity Survey*[3] (see Table 1) shows that the diet of approximately *four out of five* Australian children aged 2–3 has:

- inadequate vegetables
- inadequate cereals
- too much saturated fat
- excess sugar.

Table 1 Proportion of children not meeting dietary guidelines

	All children (%)	
Dietary guideline	**2–3 years**	**4–8 years**
Vegetables: ≥2 serves/day (including potatoes)	(86)*	78
Vegetables: ≥2 serves/day (excluding potatoes)	(95)*	96
Fruit: ≥1–3 serves/day (including juice)	(10)*	7
Fruit: ≥1–3 serves/day (excluding juice)	(32)*	39
Cereals: ≥3–4 serves/day	(95)*	80
Saturated fat: less than 10% of total energy intake	84	81
Sugar: less than 20% of total energy intake	79	71

* No national recommendations or guidelines available for this age group; percentage in brackets was calculated based on recommendations for 4–7 year olds.

Adapted from the 2007 Australian National Children's Nutrition and Physical Activity Survey.[3]

A Victorian Government initiative

Victoria The Place To Be

2 Children's dietary behaviours and food preferences

To understand the type of support and interventions that may be effective in increasing healthy eating for children aged 4–6 months to 4 years, it is important to understand normal childhood dietary behaviours and development.

For most children, initial food preferences include sweet and salty tastes.[4] Although young children's eating behaviours may appear to vary and be irregular, they do have an innate tendency to vary their food consumption to meet physical needs.[1, 4]

Fussy eating and appetite fluctuations are common among toddlers. Parents often worry, but these are usually a stage of normal development.[1]

Parents play a critical role in the development of their child's early dietary behaviours and food preferences via the selection of foods, feeding practices and role modelling.[4–7]

Key parental, family and environmental factors influencing a child's food intake include:

- the family—children are more likely to consume foods that they see others eating, are familiar and are available.[1, 6, 8] Parents influence children via their own preferences (which may limit the variety of foods offered to children)[7]
- other children—children copy each other when eating in social settings and children influence each other's food preferences and consumption[1, 4]
- early establishment of healthy food preferences—this can influence behaviour in later childhood and beyond. Food preferences may be well developed (though still open to change) by age 3[7, 9]
- repeated exposure to a range of foods for toddlers[10, 11]
- parental practices—parental control (positive or negative), using food as a reward or feeding restrictions can influence children's food preferences.[1, 7, 8, 12]

The abundance of convenience foods—often inexpensive, palatable, energy-dense and salty—creates additional challenges.[6] A broad range of strategies (including working with and influencing the food supply) are required to improve diet and nutrition and reduce the likelihood of obesity.[13, 14]

Healthy eating for children aged 4–6 months to 4 years: recommendations

- Breastfeed exclusively up to 6 months and continue as the main source of milk to 12 months. Introduce solid foods at around 6 months to meet increasing nutritional needs.
- Children should be consuming a variety of foods from the different food groups by 12 months.
- Children should eat sufficient nutritious foods for growth and development. This should include:
  - plenty of vegetables, legumes and fruits
  - plenty of cereals (including breads, rice, pasta and noodles), preferably wholegrain
  - lean meat, fish, poultry and/or alternatives
  - milk, yoghurt, cheese and/or alternatives. (Reduced fat milk is not suitable for children under 2 years because of their high energy needs. Reduced-fat varieties should be encouraged for older children.)
- Children should drink water rather than alternatives.
- Limit children's saturated fat and moderate total fat intake. (Low-fat diets are not suitable for infants.)
- Choose foods low in salt.
- Children should consume only moderate amounts of sugar and foods containing added sugars.
- Parents and carers should prepare and store food safely.

Adapted from *Dietary Guidelines for Children and Adolescents in Australia*[1] and *The Australian Guide to Healthy Eating.*[2]

3 The evidence

Three systematic reviews (plus one update) on interventions to increase healthy eating for children aged 4–6 months to 4 years were identified.[15–18] Two systematic reviews on food marketing and promotion to children were identified.[19, 20]

This limited evidence does not include any Australian interventions. An increase in articles being published and research initiatives underway (including in Australia) reflects the importance of the topic.[18]

No economic evaluations were identified for this age group.

3.1 Parent/family-based interventions

There is evidence that interventions targeting parents and/or families can be successful in increasing healthy eating in children aged 4–6 months to 4 years.[15, 16, 18]

Successful interventions were predominantly of high-intensity (that is parents were seen many times). Examples include:

- group/service provider models: program provided to groups of parents by a public health nurse, nutritionist or other health provider
- peer models: trained parent peers delivered programs to groups of other parents
- individualised models: programs developed by health professionals, tailored to individual children's and family's needs, and delivered in the home.

Most of the successful interventions were designed to impact on parental skills and behaviour, not just knowledge.[18]

One article found that lower intensity interventions may be effective in changing established food preferences. A simple short-term intervention where parents encouraged their children to continue tasting vegetables showed increased consumption at completion compared to a control group.[21]

3.2 Children's services settings

a Preschool and kindergarten

There is little evidence on the effectiveness of interventions targeting children attending preschool or kindergartens. Curriculum-based preschool interventions in the USA increased children's nutritional knowledge, but provided limited or no evidence of behavioural change.[15]

Two recent Australian studies have shown positive healthy eating outcomes for children attending preschool (and other children's services), including increases in fruit and vegetable consumption and decreases in energy-dense, nutrient-poor food and drink consumption compared to a control group.[22, 23]

Parental involvement is important in achieving sustained behavioural change in preschool-aged children.[18]

Evidence from the primary school setting[24, 25] highlights the need for multi-component, whole-of-school approaches to increasing fruit and vegetable consumption. Similar principles may apply in preschools and kindergartens.

b Long day care

Training and support for staff in long day care centres on meeting children's dietary needs has been effective.[16] An awards program, requiring centres to provide at least 50 per cent of the recommended daily intake of nutrients, has been shown to be successful in long day care services.[1, 26] 'Start Right, Eat Right' is a Victorian example of this program.

c Family day care

No systematic review evidence was identified for the family day care setting.

The successful Victorian 'Romp and Chomp' project (see case study below) included family day care interventions.[23]

d Playgroups

No systematic review evidence for the playgroups setting was identified.

e Other settings (for example recreational facilities and commercial playgrounds)

There are a range of services catering to families with children aged 4–6 months to 4 years, including commercial playgrounds and party venues, recreational facilities (such as swimming pools) and family food outlets. Foods high in fat, sugar and/or salt are commonly available in these settings. No systematic review evidence for these types of establishments was identified.

Findings from other settings (such as school canteens) indicate that tools, such as food provision guidelines, can be used to successfully reorientate menus to healthier options.[27, 28]

3.3 Advertising and marketing

Two systematic reviews[19, 20] found that food promotion and advertising can influence children's:

- food preferences
- requests to parents to purchase particular foods
- consumption of particular foods.

A large proportion of food advertisements directed at children on television and other media are for a narrow range of products that are high in fats, sugars and/or salt and low in dietary fibre.[1, 29]

Restricting TV food advertising to children has been identified as one of the most cost-effective population-based interventions for the prevention of obesity in children[30] with the potential to achieve significant reductions in childhood obesity rates.[31]

4 Policy and practice

The majority of Victorian children aged 4–6 months to 4 years do not have a healthy diet. Changing this situation will require comprehensive action, including:

- Initiatives in partnership with the food industry to make **healthy foods** (consistent with the Dietary Guidelines) **the easiest choice** for parents of children aged 4–6 months to 4 years. Key elements would include, but not be limited to:
  - an increase in the availability and promotion of vegetables and fruit
  - a decrease in the amount of added sugars, salt and saturated fats in foods or meals produced for children aged 4–6 months to 4 years (or their families)
  - consistent, easy-to-understand labelling of foods and drinks.
- **Reduce exposure** of young children to inappropriate food and drink **advertising and marketing** practices, including brand awareness, through media, sporting sponsorship, schools and early childhood services.
- **Meet the needs of parents** of children aged 4–6 months to 4 years with effective, timely and adequately intensive healthy eating programs. This would include the:
  - review and strengthening of nutrition/healthy eating components of existing primary health and child health programs
  - identification of opportunities for additional, sustained parent programs throughout the early years that focus on parental skills and behaviour.
- Include healthy eating and breastfeeding as components of overall **service policy and program delivery** for children aged 4–6 months to 4 years. These should:
  - recognise that parents and carers guide children's eating behaviour and so they need to be involved in any intervention
  - promote breast milk as the preferred milk source up until 12 months
  - regularly disseminate information on balanced eating from the core food groups as well as limiting non-core foods (such as sweetened drinks, confectionary and high-fat, high-sugar and/or high-salt foods), as part of a multi-strategy approach
  - take into consideration normal childhood development as it relates to food behaviours and recognise the importance of the social and emotional aspect of eating meals.
- **Champion and support healthy eating activities** through state-wide programs for community and early children's services to:
  - provide evidence-based resources, training, support and evaluation
  - increase parental involvement in kindergartens and childcare-based programs and extend interventions to the family home
  - ensure the adequacy and quality of long day childcare food services
  - prioritise support to children's services and communities within areas of greatest disadvantage or at increased risk.
- **Provide healthy eating guidelines** for recreational facilities and commercial food outlets (for example leisure and playground centres) that cater to children aged 4–6 months to 4 years.
- Implement **monitoring and surveillance systems** to provide data on the diet and eating behaviours of children aged 4–6 months to 4 years.
- **Conduct additional evaluation and research** to examine the impact of programs on health inequalities and ensure this is reflected in ongoing policy and program development.

5 Case studies

5.1 Romp and Chomp

This whole-of-community obesity prevention demonstration project (2005–08) promoted healthy eating and active play to achieve healthy weight in children less than 5 years of age in Geelong.

Children in the intervention group had a significantly lower intake of packaged snacks (by 0.23 serves), fruit juice (0.52 serves) and cordial (0.43 serves) and a higher vegetable consumption compared to the comparison sample at follow up.

'Romp and Chomp' focused on capacity building and developing sustainable changes in early childhood environments, with particular attention on the policy, sociocultural and physical environments.

The key behaviour change messages were:

- daily active play
- daily water
- daily fruit and vegetables
- less screen time.

For further information visit http://www.goforyourlife.vic.gov.au/hav/articles.nsf/pracpages/Romp_and_Chomp?Open.

5.2 Tooty Fruity Vegie

In this NSW program (2006–07), children in intervention preschools had significantly increased fruit and vegetable intake and decreased unhealthy food intake compared to the control preschools. The program provided:

- children with the opportunity to engage in skills-based active play and learn about healthy choices through a range of learning experiences
- parent-focused support materials, including fact sheets with simple tips and ideas for practising healthy, active behaviours at home.

'Tooty Fruity Veggie' is now being implemented as Munch and Move. For further information visit www.healthykids.nsw.gov.au/infopages/2635.html.

6 Research gaps

There is a lack of well-evaluated interventions, resulting in a limited evidence base for the most effective interventions for increasing healthy eating in children aged 4–6 months to 4 years and their families. Specific research gaps include:

- research on effective parent/family-based interventions with quality evaluation, adequate duration, methodology and outcome reporting
- research on preschool/childcare-based interventions including long term follow-up
- research into the effects of broader food culture and availability on the diet and eating behaviours of children aged 4–6 months to 4 years
- cost-effectiveness data to inform the ongoing allocation of funding for programs
- evidence on suitable interventions for high-risk groups, including low socioeconomic groups and Indigenous people
- evidence on the relationship between intervention outcomes and health inequalities to inform ongoing planning and delivery.

7 Methods

Department of Health evidence summaries use the best available evidence of intervention effectiveness. Full details of the methods are given in the 'Guideline for evidence summaries for health promotion and disease prevention interventions' at <http://www.health.vic.gov.au/healthpromotion/evidence_evaluation/cdp_tools.htm>. The specific methods for this report are listed below.

Inclusion criteria for studies

Population:	Children aged 4–6 months to 4 years
Interventions:	Interventions to promote healthy eating or components of healthy eating
Comparisons:	No intervention or usual practice
Outcomes:	Outcomes relating to healthy eating were reported, including that for children aged 4–6 months to 4 years
Study types:	Systematic reviews of all relevant controlled trials Economic evaluations (including cost-effectiveness and cost-utility analyses)

Search strategy

Resources identified in the 'How to search for evidence of intervention effectiveness and cost-effectiveness' were searched using the terms 'healthy eating' and 'fussy eating'. This document is available at http://www.health.vic.gov.au/healthpromotion/evidence_evaluation/cdp_tools.htm. In addition, *PubMed* and *Google Scholar* were searched using the terms 'healthy eating', 'fussy eating', 'children' and 'systematic review'. Bibliographies of identified studies were examined.

These searches are current as at August 2009.

8 Results

Five systematic reviews (and one update) were identified and used for this summary.[15-20] No economic evaluations were found.

9 References

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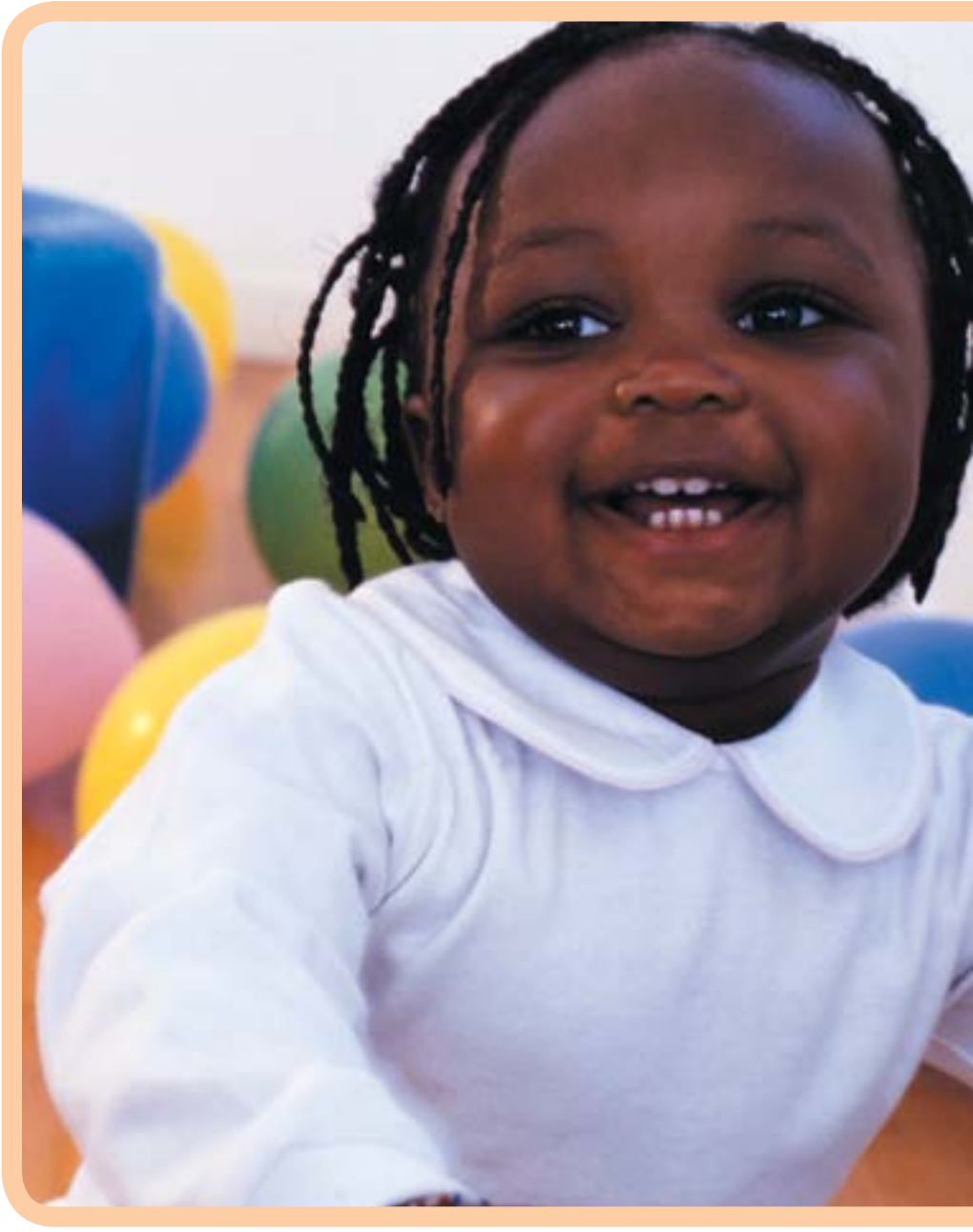

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