

Centre for Health Equity Training, Research and  
Evaluation (CHETRE) part of the  
Centre for Primary Health Care and Equity  
*Research that makes a difference*

Equity Focused HIA Report:  
South Australian ABHI  
School and Community Initiatives

# Executive Summary

This report presents the findings of an equity focused Health Impact Assessment (EFHIA) undertaken on the South Australian Program Reference Document of the School and Community Based Activities under the Australian Better Health Initiative 2006-2010. The EFHIA focussed on four components: Regional Healthy Weight Coordinators, the Healthy Ways project in Aboriginal communities, CYWHS parent focused project, and professional development to support these initiatives.

The EFHIA followed the structured step wise process generally undertaken in HIA across screening, scoping, identification and assessment of impacts, recommendations and monitoring and evaluation.

A number of generic recommendations are proposed for the program as a whole along with specific recommendations per component.

## **Generic recommendations:**

### ***Building an Australian Evidence base for effective intervention:***

*The Health Promotion Branch is in a strong position to contribute to building an evidence base of effective interventions. This can be done by developing a strong program logic framework for the ABHI program as a means of evaluating complex community based interventions. The Eat Well Be Active strategy provides a good basis for this program logic, provided it reflects a commitment to equity of outcomes.*

### ***Capacity building across the health system and other sectors***

*Consideration be given to adapting the NSW Health Capacity Building Framework as a way of auditing the ways in which organizational capacity is being built within the ABHI Initiative. This should include an assessment of the ways in which equity considerations inform policy, resource allocation, partnerships and leadership activities.*

### ***Increased focus on healthy Development***

Continue the integrated focus of the ABHI initiatives, oriented toward healthy development that supports children, families and communities.

*Include a commitment to addressing the wider determinants of health across the ABHI initiatives and link to other statewide, regional and local programs across SA that address these determinants, such as access to healthy food and the creation of healthy environments and communities in line with the South Australian Strategic Plan.*

### ***Sustainability***

*Each of the ABHI School and Community Strategies be clearly linked to longer term strategies such as the Eat Well Be Active strategy and the South Australian Strategic Plan, provided the focus on equity of outcomes is maintained.*

### ***Equity considerations in the context of the ABHI School and Community Initiatives***

*Within the context of the Schools and Communities initiatives priority populations should include Aboriginal communities, low socioeconomic groups, groups with complex needs, remote communities and locationally disadvantaged communities.*

## ***Monitoring***

*Conduct ongoing monitoring of the ABHI school and community initiatives' potential impacts based on a limited set of indicators linked to the overall program logic. At a minimum ongoing monitoring would include the program reach of initiatives into vulnerable and disadvantaged groups.*

## **Specific recommendations per component:**

### ***Regional Healthy Weight Coordinators***

1. Include Healthy Ways workforce development needs within a broader strategy to recruit, train and support indigenous health workforce in South Australia.
2. As funds become available the Department of Health extend and adapt the program to the Northern sub region of Central Northern Adelaide population, and Western sub region of Central Northern Adelaide population.
3. Identify recurrent funding for the program to ensure that gains made in the communities are not lost at the end of the ABHI funding period.
4. Establish a system to monitor the impact of the program on the health of children in the communities where the program operates using routine data such as changes in birth weights, breast feeding rates, smoking in pregnancy etc to provide evidence of health impact.
5. Health Ways be delivered using a flexible and responsive model to of activities that best fits the needs of the community using a community development model of working with Aboriginal communities while insisting on strong governance and accountability.
6. Systematically link to broader SA policy documents on Aboriginality (for example the 'Doing it Right Framework' referred to in Eat Well Be Active Strategy, 'Our culture our health' and the South Australia's Strategic Plan 2007) and Aboriginal programs to ensure a consistent and complimentary approaches to working in Aboriginal communities on priority issues.

### ***The Healthy Ways project in Aboriginal communities***

1. Healthy Weight Co-ordinators undertake needs assessments to identify priority populations within their region, at a minimum through demographic analysis and assessment of program reach (in terms of access and use).
2. Regional Healthy Weight Action Plans be subject to a rapid equity filter (for example Bro Taf, NZ Health Lens, NSW screening tool), at a minimum to indicate whether population groups that are likely to be disadvantaged are identified and potential remedial action taken.
3. Planning, monitoring, and resource allocation should be targeted based on health need and social disadvantage in the region/sub-region in which they work.
4. A workforce needs assessment should be undertaken to identify and develop strategies to meet the specific workforce development needs of the Healthy Weight Co-ordinators and the wider workforce in their regions to support knowledge, skills and attitudes required for working with disadvantaged groups.
5. Strategies developed by the Healthy Weight Co-coordinators should be clearly linked and cross referenced to the Eat Well Be Active Strategy as a mechanism for long term sustainability. This should include specific references to work with disadvantaged groups and populations.

### ***CYWHS parent focused project***

1. Reorient CYWHS 'eat well be active ....start young!' (ewbasy) links to service delivery models to broaden their reach into disadvantaged and vulnerable populations.
2. Subject these models to a rapid equity filter (for example Bro Taf, New Zealand Health Lens, NSW screening tool), at a minimum to indicate whether population groups that are likely to be disadvantaged are identified and potential remedial action taken.
3. Strengthen and routinely report on a monitoring system to identify if services are being successfully used with those with the greatest need.
4. Identify and develop strategies to meet the specific organisational and workforce development capacity needs of CYHWS staff in their regions to develop knowledge, skills and attitudes required for working with disadvantaged groups as it may relate to the ewbasy project plan.
5. Develop partnerships with those with greatest skill in working with families with complex vulnerabilities.
6. Expand the focus of information dissemination to include fathers and other carers.
7. Tailor generic messages to meet the needs of specific groups.
8. Link the ewbasy program to other programs addressing equity across CYWHS and South Australia.

### ***Professional development: Healthy weight short course***

1. Underpin professional development with a broader capacity building approach (for example the NSW Capacity Building Framework).
2. Explore making available additional flexible communication and learning resources to staff who do not have easy access to the internet or other technologies.
3. Link Aboriginal professional development to Aboriginal Health Worker competencies
4. Link professional development initiatives as these develop to the work of the regional coordinators in disadvantaged areas and the healthy ways program.
5. Incorporate equity (for example the equity filter) as a core component of professional development initiatives.
6. Explore the feasibility of developing TAFE modules to be included in a wide range of courses for welfare, youth, community workers at certificate and diploma levels.

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# Part 1: Introduction and overview

## 1.1 Introduction

This report presents the findings of an equity focused Health Impact Assessment (EFHIA) that was undertaken on the Australian Better Health Initiative 2006-2010 South Australian Program Reference Document on School and Community Based Activities (see Appendix 1). ABHI funded programs are to be implemented between 2006–2010. This priority area will be coordinated by Health Promotion Branch (HPB) in the Department of Health. There was limited program rollout in the first year of funding, with full funding being available in second and subsequent years. Funding for initiatives was made available in January 2007.

## 1.2 Components of school and community programs

There are four components: Regional Healthy Weight Coordinators, the Healthy Ways project in Aboriginal communities, CYWHS parent focused project, and professional development to support these initiatives.

### ○ *Regional Healthy Weight Coordinators*

Regional Health Services will be funded for regional Healthy Weight Coordinator positions. Regional coordinators will be expected to participate in statewide program planning, development, implementation, monitoring and evaluation activities. Healthy Weight Regional Action Plans must:

- be consistent with the Eat Well Be Active Healthy Weight Strategy for South Australia 2006–2010
- focus on children, young people and their families
- be based on prevention
- adopt a settings based health promotion approach
- take equity into consideration
- address environmental barriers; and
- identify collaborative action with other sectors.

### ○ *Healthy Ways Program*

Healthy Ways will focus on child and maternal health, healthy pregnancy and the early years of life to promote healthy lifestyles, healthy eating and physical activity. Country Health SA will be funded to continue the Healthy Ways project in two country areas, Northern and Far Western and Eyre.

### ○ *CYWHS parent focused program*

Children, Youth and Women's Health Service (CYWHS) will be funded to develop, implement and evaluate a plan to build the capacity of CYWHS to provide further support for parents and families around healthy weight, healthy eating and physical activity. This initiative will complement the work in the other initiatives in this priority area, specifically the professional development for the workforce and the work of the Regional Healthy Weight Coordinators. Strategies for consideration in this initiative include workforce professional development, complementing the

Healthy Weight Short Course, and parent information and support materials for use across the sector.

- *Professional development for the workforce*

Workforce training and professional development will be provided, in the first instance, to the health and education workforce and the Aboriginal Health workforce.

- Health workforce training and development

Professional development for the health workforce will be provided through the Healthy Weight Short Course. The course is being developed, in consultation with the regions and HPB by TAFE SA, to focus on healthy weight promotion, healthy eating, physical activity and primary prevention of chronic disease.

- Aboriginal Health workforce training and development

Country Health SA will be funded to develop and implement professional development for the Aboriginal Health Worker workforce in both country and metropolitan regions. This will complement the Healthy Weight Short Course.

- Education sector workforce training and development

Professional development will be provided to the education workforce in conjunction with Department of Education and Children's Services (DECS) with a focus on those working in preschools and childcare services. DECS will be contracted to undertake the development and implementation of this program.

## 1.3 Rationale for undertaking and Equity Focused HIA (EFHIA)

Health Inequity makes a substantial contribution to the burden of chronic disease in Australia with the AIHW estimating 17% of the burden of chronic disease was related to the distribution of social determinants of health. The higher prevalence of behavioural risk factors within vulnerable and disadvantaged populations and groups also suggests there should be an increased focus on these groups in program development. In 2007 the SA Health Portfolio Executive endorsed a series of health equity actions and recommended that these be inserted into the implementation plans for South Australia's Strategic Plan 2007 SA Health-led targets. These include target T2.2 Healthy weight. In relation to the healthy weight target, it was also recommended that an EFHIA be conducted on the ABHI School and community program to ensure that funded strategies are assisting those children and families who are most in need.

The Centre for Health Equity Training Research and Evaluation (CHETRE) was contracted by the Health Promotion Branch to conduct this work based on their expertise in equity impact assessment in Australia.

Health Impact Assessment is a structured step-wise process that is used to assess the impact of a project, program or policy proposals on health before their implementation.

- HIA predicts the health impacts of these proposals, including:

- assessing the severity and likelihood of the identified positive and negative impacts;
  - determining whether these are direct or indirect impacts, and
  - assessing the distribution of impacts.
- HIA recommends mitigation measures:
    - to maximise positive health impacts and minimise negative health impacts; and
    - engage decision makers so that they consider health impacts, the determinants of health and the distribution of impacts in their deliberations.

There are five reasons that are generally given for why HIA helps to improve planning and policy development:

1. To identify hazards to health from the proposed initiative.
2. To reduce or eliminate the potential risks to health arising from these hazards and to undertake risk communication on the remaining risks as part of this process.
3. To identify, and where feasible strengthen, the ways in which the proposed initiative can promote and enhance health.
4. To identify and address underlying social, environmental and economic impacts of the initiative that will have both direct and indirect impacts on health.
5. To reduce or eliminate health inequalities occurring as a result of the proposed initiative

In this context the EFHIA will be used to specifically identify the potential differential distributions of benefits of the proposed initiatives across the population. This will be done by asking five questions of each of the initiatives

- What is the initiative trying to do?
- Is there evidence of inequality?
- Who may be disadvantaged by the initiative?
- Are there likely to be unanticipated impacts?
- What are the key recommendations for implementation?

## 1.4 Structure of the Report

This report has four parts:

### Executive Summary

Part 1: Provides an overview of the rationale for conducting the Rapid EFHIA, an outline of how it was conducted and identifies the limitations of the process.

Part 2: Describes the process through which the EFHIA was undertaken in more detail.

Part 3: Presents a summary of the findings of the EFHIA and draft recommendations.

## Part 2: The EFHIA PROCESS

The EFHIA followed the structured step wise process generally undertaken in HIA:

- **Screening**

Screening involves identifying:

- links between the proposed initiative and health,
- links there might be to equity and inequalities in health; and
- whether and in which ways the initiative might impact differentially on groups within the population.

- **Scoping**

Scoping involves:

- establishing the scope and nature of the specific EFHIA and being clear about what is to be done and in what time frame
- identifying individuals that will be responsible for each aspect of the work
- clarifying other aspects of project management (such as budget, planning and reporting)

In this EFHIA the screening and scoping steps were undertaken in two face to face meetings held in Adelaide on 10<sup>th</sup> September and 29<sup>th</sup> October. The Screening and Scoping Reports are attached as Appendix 2.

- **Identification**

Identification of impacts involves

- profiling the affected community focusing particularly on socioeconomic status and other factors that might impact on sub-groups of the population differentially
- gathering evidence on the effectiveness of the proposed intervention and how it may be differentially effective on different population groups
- gathering evidence from a wide range of sources including other stakeholders and community groups.

In this EFHIA information was gathered from a number of sources:

***Population profile***

A range of data was compiled from various sources to provide a population profile <sup>1</sup> of the scoped population groups across South Australia (see Appendix 3). 'Workforce' data was unavailable.

This profile identified a consistent Social gradient across SEIFA Quintiles 1-5 (1 being the least disadvantaged) by key indicators of health status: Smoking during pregnancy, Low birth weight, infant mortality, overweight and obesity

Socio-economic indicators of inequality show that disadvantage is concentrated in four regions in South Australia, each covered by one of the three Area Health

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<sup>1</sup> Based on information provided by Dr John Glover with a specific focus on potential equity related areas.

Services: the Northern and Far Western country region, the Outer Southern District of Southern Adelaide, and the Western and Northern sub regions of Central Northern Adelaide (Table X).

Three of these regions contain the three largest indigenous populations in SA: Northern and Far Western region, Northern sub region of Central Northern Adelaide, and Western sub region of Central Northern Adelaide.

Remote regions of SA are more disadvantaged than urban areas by key indicators: number of GP service, smoking rates, low birth weight babies, unemployment, and full-time education for 16 year olds.

Around 1 in 11 South Australians (9.1%) were born in non-English speaking (NES) countries, representing 11.3% of the metropolitan population and 3.3% of the regional population.

17.5% of four year old boys in South Australia are overweight or obese. In three regions, more than one in five four year old boys are overweight or obese: Northern and Far Western (21.8%), Eyre (20.4%), and the Western sub region of Central Northern Adelaide (20.1%).

### ***Literature Reviews***

Two reviews of the literature provided information concerning health impacts. One was a review commissioned explicitly for the EFHIA and undertaken by the Centre for Overweight and Obesity (Appendix 4). The second was a systematic review commissioned in 2006 by Centre for Health Promotion in Adelaide (Appendix 5)

Both reviews state that the evidence is limited concerning influencing healthy weight, reporting little or no empirical Australian research to draw upon. Further, the evidence from overseas is limited. Sample sizes are small and / or not reported and the results have limited generalisability to the Australian context. Also intervention study results are often gathered within limited timeframes following the intervention, providing an incomplete picture of their effectiveness.

However the two reviews should be read as they highlight some promising findings of relevance to the EFHIA.

### ***Stakeholder consultation***

Stakeholder interview comprised four face-to-face focus groups conducted on site in Adelaide and eight individual telephone interviews. Respondents included staff at executive level, middle managers and service delivery staff from various branches in the Departments of Health and Education. A summary of key messages is included in Appendix 6 but included issues related to evidence and use of evidence, recruitment and retention of staff, impact of short term funding, differencing views on health inequities and interventions, need to look beyond individual behaviour, flexibility in program planning and implementation and high level organizational support.

### ***Document review***

Three documents were included in the document review to inform the EFHIA; the original 'ABHI schools and communities' proposal, 'Eat Well Be Active' Healthy Weight Strategy for South Australia 2006-2010, and the 'Healthy ways project (2001-

2005): evaluation report'. The documents were searched for reference to the scoped population groups and strategies or interventions that impact on inequalities.

### ***Steering committee meetings***

Two steering committee meetings and two Teleconferences were held to discuss summaries of evidence for each strategy and possible recommendations.

- **Appraisal and Recommendations.**

Draft appraisal summaries and recommendations were circulated for each of the strategy areas. Teleconferences were held on 27<sup>th</sup> November and 19<sup>th</sup> December to discuss these drafts and further refinements made at the Steering Committee Meeting on 6<sup>th</sup> February 2008. The reworked recommendations follow

- **Monitoring and Evaluation**

At the final steering Committee meeting it was agreed that monitoring of potential impacts assessed in the EFHIA would form an important aspect of the ongoing development and implementation of the ABHI initiatives (see generic and specific recommendations). Further, it was agreed that CHETRE would undertake a six month evaluation in mid-2008 to assess whether the recommendations had been adopted.

# Part 3: Appraisal & Recommendations

## 3.1 Generic recommendations:

### **Building an Australian Evidence base for effective intervention**

There is a lack of Australian and quality international literature on the effectiveness of schools and community based programs in improve healthy weight and nutrition, especially interventions that may be able to reduce health inequity. The difficulties in building an evidence base are in part related to the need for multi-level interventions at child, family, community and organization levels which are hard to research and evaluate.

#### **Recommendation**

*The Health Promotion Branch is in a strong position to contribute to building an evidence base of effective interventions. This can be done by developing a strong program logic framework for the ABHI program as a means of evaluating complex community based interventions. The Eat Well Be Active strategy provides a good basis for this program logic, provided it reflects a commitment to equity of outcomes.*

### **Capacity building across the health system and other sectors**

While there is clear commitment to building capacity across the health system and in other sectors to reduce childhood overweight and obesity there is a tendency in the strategies to focus on workforce development and partnerships as the key strategies for capacity building. There is strong evidence that capacity needs to be built into organizational structures at multiple levels including through policies and procedures, reorientation of services and resources, leadership, partnerships as well as workforce development. The need to look beyond workforce development is very important in the context where there are substantial workforce shortages.

#### **Recommendation:**

*Consideration be given to adapting the NSW Health Capacity Building Framework as a way of auditing the ways in which organizational capacity is being built within the ABHI Initiative. This should include an assessment of the ways in which equity considerations inform policy, resource allocation, partnerships and leadership activities.*

### **Increased focus on healthy Development**

The integrated approach taken by ABHI schools and community initiatives is positive. As there is a lack of evidence concerning the effectiveness of health promotion programs addressing healthy weight, and some evidence that programs focussing solely on healthy weight, overweight and/or obesity can lead to stigmatization and bullying and the potential for unintended negative impacts from such programs needs to be kept in mind. These risks may be avoided by basing integrated interventions on the healthy development of children within the context of their family and wider community

There is a risk of ABHI and other priority initiatives becoming siloed, from each other and from other relevant interventions in South Australia. Developing a complex series of issue silos leaves workers feeling overpowered, isolated and underresourced. Focussing effort on healthy child development that encompasses the child, their

family and wider community has the advantage of integrating several emerging issues such as obesity, building resilience, child protection issues, injury, oral health into one overarching approach. It is important to provide workers with generic knowledge, skills and attitudes to work with vulnerable and disadvantaged children, families and communities to foster healthy development rather than develop a series of potentially competing programs.

***Recommendation:***

- 1. Continue the integrated focus of the ABHI initiatives, oriented toward healthy development that supports children, families and communities.*
- 2. Include a commitment to addressing the wider determinants of health across the ABHI initiatives and link to other statewide, regional and local programs across SA that address these determinants, such as access to healthy food and the creation of healthy environments and communities in line with the South Australian Strategic Plan.*

## **Sustainability**

There is a danger that short term funding of innovative, under resourced programs that are expected to produce measurable outcomes in short timeframes are unlikely to produce sustainable outcomes. All ABHI initiatives require strong links to long term programs and strategies such as Eat Well Be Active to remain sustainable over time. This link is vital in Aboriginal and disadvantaged communities where effective interventions require community ownership based on relationships that are built over long periods of time.

***Recommendation:***

*Each of the ABHI School and Community Strategies be clearly linked to longer term strategies such as the Eat Well Be Active strategy and the South Australian Strategic Plan, provided the focus on equity of outcomes is maintained.*

## **Equity considerations in the context of the ABHI School and Community Initiatives**

The original scoping of the EFHIA identified a number of potential population groups where equity may be an issue including gender, age, socioeconomic status, locational disadvantage, Aboriginality, recent migrants and rural/remoteness. However, identification of impacts indicated that within the context of ABHI schools and community initiatives priority should be given to Aboriginal populations, low socioeconomic groups, and people living in disadvantaged communities and remote communities.

***Recommendation:***

*Within the context of the Schools and Communities initiatives priority populations should include Aboriginal communities, low socioeconomic groups, groups with complex needs, remote communities and locationally disadvantaged communities.*

## **Monitoring**

Ongoing monitoring of the ABHI school and community initiatives' potential positive and negative impacts and program indicators is important in providing evidence of their reach and the effectiveness of the programs. This monitoring should be based on a limited number of indicators that are clearly linked to the overall program logic.

***Recommendation:***

*Conduct ongoing monitoring of the ABHI school and community initiatives' potential impacts based on a limited set of indicators linked to the overall program logic. At a minimum ongoing monitoring would include the program reach of initiatives into vulnerable and disadvantaged groups.*

## 1. REGIONAL HEALTHY WEIGHT COORDINATORS

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Population profile – (1), Literature Review – (2), Stakeholder consultation – (3), Document review – (4), Steering committee – (5).

Aboriginality	Age	Gender	SEP	Locational Disadvantage	CALD	Current health / family health	Workforce
✓			✓	✓		✓	✓

### ***What is the initiative trying to do?***

The aim of this strategy is to build capacity through regionally based ‘Healthy Weight’ coordinators to provide greater coordination of existing initiatives, scoping gaps and determining ways to build community capacity (3). The Coordinators will be responsible for supporting the implementation of the Regional Healthy Weight Action Plans consistent with learnings from the Eat Well Be Active Community Programs and key action areas and outcomes of the Eat Well Be Active Healthy Weight Strategy with a focus on children and their families (4, 5). The objective is ensuring that messages and programs are delivered in a consistent and coordinated way across South Australia, fostering collaboration and uptake of effective programs and strategies at community level (3). The Coordinators will work cooperatively with each other and with coordinators in other ABHI program areas and work towards the development of ABHI regional teams where appropriate (4).

### ***Is there evidence of inequality?***

There is strong and consistent evidence of health inequity in SA across SEIFA quintiles by a range of health indicators, including smoking during pregnancy, low birth weight and overweight and obesity (1). Data provided suggests that there are some pockets within regions that have significantly poorer health and social health indicators than others including recent reports on the costs of fruit and vegetables in less advantaged areas(2, 3, 4). Evidence from NSW suggests that there are differences in the prevalence of unhealthy behaviours, health outcomes, and program impact and effectiveness by gender, culture and ethnicity, aboriginality, age, SES and place or residence (Booth 2002; Booth 2006) (2).

### ***Who may be disadvantaged by the initiative?***

There are three ways of looking at who may be disadvantaged by this initiative: differences in investment between regions, differences in access to appropriate interventions within regions, and pressures placed on the capacity of the workforce and organizational infrastructure within regions to deliver the initiative.

The “inverse care law” suggests that often those groups and locations most disadvantaged will be those least likely to have access to services and programs unless there are conscious and planned attempts at resource distribution.. If the program is to have an equity focus it will be important that this is an articulated objective of the program and the level of investment in Healthy Weight Co-ordinators should reflect the overall disadvantaged of the regions.

Once resources for Healthy Weight Co-ordinators are allocated to reflect the burden of disadvantage and the importance of addressing this disadvantage is articulated in the program aims then it is important to assess the appropriateness, reach and effectiveness of the programs to the priority disadvantaged populations that have been identified. There is potential for disadvantage by gender (patterns of risk differ between boys and girls), aboriginality, age (if activities are not age-appropriate), SES and vulnerability of the child or family. This requires a focus on who is using and not using services and programs.

Finally concern has been expressed at the capacity of the workforce to cope with the changes in focus and level of work especially for rural and remote workforces and those working with aboriginal communities and recently arrived migrant communities (1, 2, 4). In addition many services have limited contact with vulnerable families and communities and unless there is a specific focus on reaching these groups and adapting programs to meet their needs they may not use the services and programs developed. This can be expected to be a particular stress on the workforce who may be expected to show high levels of program use within short time frames.

### ***Unanticipated impacts?***

Lack of clearly identified links between the ABHI documents and the Eat Well Be active document reduce the ease with which the ABHI initiatives can be blended into the wider strategy when ABHI funding finishes. It also may lead to unrealistic expectations of ABHI initiatives that need to be understood in the wider program logic of the overarching strategy (2). There is limited evidence of effective intervention Co-ordinators could easily be overwhelmed with the scope of work to be done, especially in relation to working with disadvantaged communities where the evidence suggests high intensity interventions are required.

### ***How could the strategy be implemented in ways that strengthen its positive outcomes and reduce unintended consequences?***

The strategy could be strengthened by an articulated commitment to addressing the needs of disadvantaged groups in the work of the Healthy Weight Co-coordinators and ensuring that the resources available to them for program development within their region is related to the social health needs of the region. The Healthy Weight Co-ordinators could apply an equity audit to all their programs to assess the extent to which these potentially meet the needs of disadvantaged groups within their population (5). They could also identify a small number of priority groups to be targeted by their programs and activities. This may be most effectively done within a framework of healthy development as opposed to healthy weight.

Linking the work of the Healthy Weight Co-ordinators and the programs they develop to the Eat Well Be Active Program could provide additional funding and workforce leverage and also provide a framework for long term sustainability (5).

In order to undertake the range of work required, including that with disadvantaged groups, workforce support for coordinators (5) and the wider workforce is required.

### ***Recommendations for implementation***

1. Healthy Weight Co-ordinators undertake needs assessments to identify priority populations within their region, at a minimum through demographic analysis and assessment of program reach (in terms of access and use).

2. Regional Healthy Weight Action Plans be subject to a rapid equity filter (for example Bro Taf, NZ Health Lens, NSW screening tool), at a minimum to indicate whether population groups that are likely to be disadvantaged are identified and potential remedial action taken.
3. Planning, monitoring, and resource allocation should be targeted based on health need and social disadvantage in the region/sub-region in which they work.
4. A workforce needs assessment should be undertaken to identify and develop strategies to meet the specific workforce development needs of the Healthy Weight Co-ordinators and the wider workforce in their regions to support knowledge, skills and attitudes required for working with disadvantaged groups.
5. Strategies developed by the Healthy Weight Co-coordinators should be clearly linked and cross referenced to the Eat Well Be Active Strategy as a mechanism for long term sustainability. This should include specific references to work with disadvantaged groups and populations.

## 2. HEALTHY WAYS PROGRAM

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Aboriginality	Age	Gender	SEP	Locational Disadvantage	CALD	Current health / family health	Workforce
✓							✓

Population profile – (1), Literature Review – (2), Stakeholder consultation – (3), Document review – (4), Steering committee – (5).

### ***What is the initiative trying to do?***

The strategy seeks to improve infant and maternal health in Aboriginal communities through focusing on child and maternal health, healthy pregnancy and the early years of life to promote healthy lifestyles, healthy eating and physical activity (3, 4). The aim is to increase capacity of health services and communities to address the nutrition and play needs associated with young children (3). It will also build the capacity of Aboriginal Health Workers through training and development (3). The strategy builds on earlier work and takes a community development approach, educating and supporting women and families through local activities (3).

### ***Is there evidence of inequality?***

Aboriginal populations have significantly higher mortality and morbidity than their non-Aboriginal counterparts (3). Aboriginal babies have a high prevalence of low birth weights and children are likely to be malnourished (3). Remote communities have little infrastructure and little access to fresh food and to health and other services (3).

The health regions with the largest indigenous populations are the Northern and Far Western region (n=5,921, 23.2% of the Aboriginal population of SA), the Northern sub region of Central Northern Adelaide (n=5,559, 21.7%), and the Western sub region of Central Northern Adelaide (n=2,942, 11.5%) (1).

### ***Who may be disadvantaged by the initiative?***

Communities targeted by the health workers and dieticians will benefit and those in the most remote locations and with the least access to services will be the least likely to benefit (3). The original Healthy Ways program targeted specific communities, and a focus on these same communities will disadvantage communities not involved in the original (5). The model was developed in rural/ remote communities while the majority of Aboriginal people in South Australia live in provincial and urban settings and may need to be adapted to work in these different contexts.

### ***Unanticipated impacts?***

The significant workload required at each community will have unanticipated impacts. This includes building personal skills and knowledge, supporting the development of collective structures, providing services, creating supportive spaces (for example through the use of school facilities), networking and linking within the community and to outside agencies, and efforts to create macro level change (4). Working with communities requires fostering collaboration rather than competition,

as competition can fragment communities (4, 5). Differing communities also have different governance structures (4, 5). As a result of this multiple considerations, workers may become overloaded with the amount of work to be done (3).

Recruitment is also an issue, and training and time to learn through experience is required as the small pool of Aboriginal workers are generally young and inexperienced in working in rural and remote communities (3). In addition the required suite of community development strategies require flexibility in terms of time, resources, skills, coupled with strong governance and accountability mechanisms. If the program is limited and inflexible in design it is unlikely to be successful (3, 4). This may create additional tensions in under resourced communities, and if the program is cut short because of a funding cycle, future partnerships with Aboriginal communities can be jeopardised (3, 4).

The growing number of programs being developed to work on Aboriginal and general child health issues may lead to duplication and competition between service providers.

***How could the strategy be implemented in ways that strengthen its positive outcomes and reduce unintended consequences?***

Recurrent funding is required (3, 4) to increase community buy-in and maximise the possibility of long term health gains (3, 4) and to extend the program to other areas. In order to assess the impact of the program on Aboriginal Child health in the areas where Health Ways is operating a monitoring system using routine data sets should be established. Flexible program delivery within Aboriginal communities is important and it is important that the Health Ways Program compliment other local initiatives. Linking workforce development needs to a broader approach to recruitment and development of Aboriginal workers may assist in providing more stable and consistent services (3).

***Recommendations for implementation:***

1. Include Healthy Ways workforce development needs within a broader strategy to recruit, train and support indigenous health workforce in South Australia.
2. As funds become available the Department of Health extend and adapt the program to the Northern sub region of Central Northern Adelaide population, and Western sub region of Central Northern Adelaide population.
3. Identify recurrent funding for the program to ensure that gains made in the communities are not lost at the end of the ABHI funding period.
4. Establish a system to monitor the impact of the program on the health of children in the communities where the program operates using routine data such as changes in birth weights, breast feeding rates, smoking in pregnancy etc to provide evidence of health impact.
5. Health Ways be delivered using a flexible and responsive model to of activities that best fits the needs of the community using a community development model of working with Aboriginal communities while insisting on strong governance and accountability.
6. Systematically link to broader SA policy documents on Aboriginality (for example the 'Doing it Right Framework' referred to in Eat Well Be Active Strategy, 'Our culture our health' and the South Australia's Strategic Plan 2007) and Aboriginal programs to ensure a consistent and complimentary approaches to working in Aboriginal communities on priority issues.

### 3. CYWHS parent focused program

Aboriginality	Age	Gender	SEP	Locational Disadvantage	CALD	Current health / family health	Workforce
✓			✓	✓	✓	✓	✓

Population profile – (1), Literature Review – (2), Stakeholder consultation – (3), Document review – (4), Steering committee – (5).

#### ***What is the initiative trying to do?***

The CYWHS will be funded to develop, implement and evaluate a plan to build the capacity of CYWHS staff who are statewide providers of child and maternal health services to provide further support for parents and families involved in CYWHS programs around healthy weight, healthy eating and physical activity (4, 5). The initiative seeks to give clear and consistent messages to parents and children under five involved in CYWHS programs about healthy weight, including breastfeeding (3) that can be tailored to meet the needs of different groups of parents and families as well as support for parents to incorporate these messages into their parenting. Parents and families who do not have any direct contact with CYWHS services and programs will be a secondary target group. This initiative will complement the work in the other initiatives in this priority area, specifically the professional development for the workforce and the work of the Regional Healthy Weight Coordinators (4). Strategies for consideration in this initiative include workforce professional development, complementing the Healthy Weight Short Course, and staff and parent information and support materials for use across the sector (4). The approach involves interfacing with a number of sectors and stakeholders (3). It combines universal and targeted approaches (3).

#### ***Is there evidence of inequality?***

There are at several dimensions of health inequality to be considered in this initiative. Inequality in:

- Regional rates of overweight and obesity related to socioeconomic status
- Inequality in the use of CYWHS, especially by some marginalized groups such as Aboriginal families or groups who are ineligible for some services
- Higher proportions of vulnerable families within a region that may not be matched by levels of CYWHS staffing or resources within the region
- It is difficult to reach those families who have limited contact with services with information and parent support material.

There is strong and consistent evidence of health inequity in SA for children from disadvantaged groups. Although the evidence is variable higher rates of overweight and obesity have been linked to socioeconomic factors including place of residence and maternal education.

There is also some evidence that children from disadvantaged backgrounds are less likely to access CYWHS, especially group programs. This would be consistent with the experience of other jurisdictions. Often locationally disadvantaged areas and regions have difficulties in attracting and retaining suitably trained staff and this further compounds their capacity to access hard to reach groups.

### ***Who may be disadvantaged by the initiative?***

People who do not use the service will be disadvantaged. Reaching the most vulnerable families may require different approaches and service models that combine centre based, outreach services and other community development approaches (3). People with complex vulnerabilities who currently are not eligible for home visiting programs may not access any services (3).

The use of standard messages may have most impact on the already advantaged and either not reach or have meaning for vulnerable and other disadvantaged groups (3). The lack of focus on fathers and other carers may impact on the extent to which messages are taken up (3, 5). It is difficult to reach those families who have limited contact with services with information and parent support material.

### ***Unanticipated impacts?***

Strengthening CYWHS services has potentially great benefits. Staff, parents and children involved in the program have an opportunity to build relationships, to gain confidence and to transfer knowledge and skills and this can build on the focus of the family partnership training and framework that most of the CYHWS staff have undertaken and incorporate into their practice (3). A focus on healthy weight and nutrition and parenting style may lead to victim blaming making parents less likely to use services (2, 3, 4).

Over time effective action by CYWHS may involve advocating for action on the broader structural determinants of health that impact on healthy weight, such as access to food, supportive environments, access to education, transport and infrastructure (3). This will have implications for worker position descriptions and workforce development.

Staff may be impacted upon negatively as their workload will increase with additional content knowledge and new approaches to delivering key messages to target families, without reductions in caseloads (3). The literature suggests that high intensity interventions are required over extended periods of time and staff will be faced with difficult choices about where to invest their time: with families that are easy to reach and influence with brief interventions or with those who are hard to reach and influence. (2).

A focus on 'quick results' may mean harder to reach parents and children will not be targeted or reached (3).

### ***How could the strategy be implemented in ways that strengthen its positive outcomes and reduce unintended consequences?***

A mix of partnership development and organisational development activities (including service reorientation, professional development, knowledge exchange, technical support, consultations and data gathering and tracking) will add to the capacity of CYWHS as an organisation to undertake the strategy (2). Building partnerships with criminal justice, welfare services, housing and education will help prevent families falling through the gaps and increase opportunities for vulnerable families (3). A parallel strategy to support parents and children not accessing CYWHS services will extend the reach of the initiative (5). Additional strategies to increase and support Aboriginal staff in the field will be required (5). Structured opportunities for exchange and interaction across health and education sectors will

increase collaboration and build capacity (such as regular forums for exchanges of expertise) (3). Organisational development processes, such as changes in workers' roles, plans and tasks, coupled with workforce development initiatives will alleviate the potential overburdening of current CYWHS staff (2).

Strategies such as messages given by staff are likely to be more effective, particularly for those with complex vulnerabilities, with a focus on overall healthy development as opposed to an emphasis on weight, which fits with the existing role and training for CYWHS staff (2, 4). This focus should be incorporated into and build on the current work of and training for CYWHS staff, and staff should be encouraged to adapt information and support materials to be appropriate to the family and community context (including other carers in the family and community) (5).

### ***Recommendations for implementation***

1. Reorient CYWHS 'eat well be active ....start young!' (ewbasy) links to service delivery models to broaden their reach into disadvantaged and vulnerable populations.
2. Subject these models to a rapid equity filter (for example Bro Taf, New Zealand Health Lens, NSW screening tool), at a minimum to indicate whether population groups that are likely to be disadvantaged are identified and potential remedial action taken.
3. Strengthen and routinely report on a monitoring system to identify if services are being successfully used with those with the greatest need.
4. Identify and develop strategies to meet the specific organisational and workforce development capacity needs of CYHWS staff in their regions to develop knowledge, skills and attitudes required for working with disadvantaged groups as it may relate to the ewbasy project plan.
5. Develop partnerships with those with greatest skill in working with families with complex vulnerabilities.
6. Expand the focus of information dissemination to include fathers and other carers.
7. Tailor generic messages to meet the needs of specific groups.
8. Link the ewbasy program to other programs addressing equity across CYWHS and South Australia.

#### 4. Healthy Weight Short Course

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Aboriginality	Age	Gender	SEP	Locational Disadvantage	CALD	Current health / family health	Workforce
✓							✓

Population profile – (1), Literature Review – (2), Stakeholder consultation – (3), Document review – (4), Steering committee – (5).

#### ***What is the initiative trying to do?***

The strategy targets three workforce groups; Aboriginal health workers, mainstream health workers, and early childhood workers (3, 4). Workforce development strategies aim to ensure staff have a similar knowledge base and a consistent approach in supporting parents assist children eat well and be active (3). Overall, the strategy seeks to support staff to understand and utilise health promotion and community development models (3), allowing for flexibility according to local settings (5). Professional development for the health workforce will be provided through the Healthy Weight Short Course (renamed introductory short course), developed in consultation with the regions and HPB by TAFE SA (4). The course will focus on healthy weight promotion, healthy eating, physical activity and primary prevention of chronic disease. A tender process is currently underway concerning Aboriginal Health Worker workforce training, to be provided by an external partner, that will complement the Healthy Weight Short Course (5). Professional development will be provided to the education workforce in conjunction with DECS with a focus on those working in preschools and childcare services (4).

#### ***Is there evidence of inequality?***

Frontline and service delivery staff may have had and are likely to continue to have less opportunity to attend professional development programs and consequently may have had limited exposure to current best practice models (3). There is no existing professional development strategy for Aboriginal health workers in this content area (3), although this is being developed (5).

#### ***Who may be disadvantaged by the initiative?***

Staff not released by their organisations will be disadvantaged (3), and it is likely that direct service providers with the largest caseloads are least likely to release staff (5). Organisations and staff in rural and remote areas who cannot afford the cost of travelling to urban centres will be disadvantaged (3). Staff who do not access electronic information will be disadvantaged (5).

#### ***Unanticipated impacts?***

Staff who participate in professional development will have opportunities to build relationships with other practitioners which will underpin later collaboration. Teaching staff to see through a “lens” of equity and raised awareness of differential impact helps build a culture of critical thinking (5).

However, one day training courses alone will not change practice (3). Training will not have an impact unless staff are supported by their organisation to implement new learning and unless the content and approach is relevant to staff needs (3, 5).

Delays in developing the Aboriginal workers program will limit numbers that can be trained in the required timeframe (3).

***How could the strategy be implemented in ways that strengthen its positive outcomes and reduce unintended consequences?***

Implementing the strategy will require identifying and targeting organisations to participate (5). Training should be linked to a systems approach that ensures organisations are receptive to new ways of working and to support staff in doing so (3, 2). Regular opportunities for exchange of knowledge and expertise should be offered to strategically targeted staff and organisations, particularly focusing on local level strategies for working with disadvantaged and remote families (3). Matching funding and managerial support are needed to release staff to attend training and professional development and ensure backfilling (3, 5). Support staff to maintain or change their own behaviours (3). Mechanisms are needed which support staff in rural and remote areas to attend professional development (5). Linking the Aboriginal training to Aboriginal Health Worker Competencies that build on current work practice will strengthen advantages for Aboriginal Health Workers and increase capacity (3).

***Recommendations for implementation***

1. Underpin professional development with a broader capacity building approach (for example the NSW Capacity Building Framework).
2. Explore making available additional flexible communication and learning resources to staff who do not have easy access to the internet or other technologies.
3. Link Aboriginal professional development to Aboriginal Health Worker competencies
4. Link professional development initiatives as these develop to the work of the regional coordinators in disadvantaged areas and the healthy ways program.
5. Incorporate equity (for example the equity filter) as a core component of professional development initiatives.
6. Explore the feasibility of developing TAFE modules to be included in a wide range of courses for welfare, youth, community workers at certificate and diploma levels.

# AUSTRALIAN BETTER HEALTH INITIATIVE 2006 – 2010

## South Australian Program Reference Document November 2006

### Priority Area: Promoting healthy lifestyles

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#### 1. Service Title

School and Community-Based Activities

#### 2. Background and description

2.1 The strategy in South Australia is based on school and community-based programs which support the development of environments that facilitate healthy lifestyles. The emphasis is on healthy eating, physical activity and healthy weight and on making healthy choices the easy choices.

2.2 The target group is children, young people (to 18 years) and their families but with the major focus being on the early years.

2.3 State programs will be implemented through regional health structures, and through other government departments including the Department of Education and Children's Services and TAFE SA.

#### 3. State programs

3.1 The state program will take a population health approach and will include the development and implementation of Eat Well Be Active Regional Healthy Weight Action Plans through regional Healthy Weight Coordinators.

3.2 The program will also include workforce training for the health workforce; the education sector workforce focusing on those working in the early years settings – preschool and childcare; and the Aboriginal health workforce. The training will focus on updating the workforce around assisting and supporting children, parents and families to eat well and be active.

3.3 The program will also support the continuation of the Healthy Ways project in Aboriginal communities in two country areas.

3.4 Regions, following discussions with HPB, may subcontract services to the non-government sector in line with State Procurement Act guidelines

#### 4. Jointly funded programs

Joint funding from the Australian government and states and territories will be for the following:

4.1 Rolling health promotion social marketing campaigns to raise awareness of healthy lifestyle choices, beginning with physical activity and healthy eating. All jurisdictions will be involved in developing these campaigns. This will ensure that consistent healthy lifestyle messages are promoted across all jurisdictions and complemented by funded local activities.

4.1 The development of nationally consistent school canteen guidelines. The Australian government, in conjunction with all jurisdictions will work towards an agreed food categorisation system for school food services and develop national training resources. Jurisdictions will implement the system with canteens and train canteen managers. The SA Government has allocated separate funding for the mandating of healthy food in school canteens.

## **5. Underlying Program Principles**

The development and implementation of initiatives in this priority area should be guided by the following principles:

- 5.1 Initiatives will be developed to ensure synergies with other ABHI priority action areas are exploited.
- 5.2 Initiatives will reflect the intention of the ABHI to refocus the whole health system from care to prevention.
- 5.3 Initiatives must be consistent with the *Eat Well Be Active Healthy Weight Strategy for South Australia 2006-2010*.
- 5.4 Initiatives should strive to ensure effective outcomes for all Australians including those in rural and remote areas, Aboriginal and Torres Strait Islander people, disadvantaged groups and people from culturally and linguistically diverse backgrounds.
- 5.1 All parties will strive to maximise the impact and effectiveness of their programs by committing to clear and open collaboration at the national, jurisdictional and local levels.
- 5.5 Programs will feed into an overarching ABHI evaluation framework to ensure the strategies have been implemented in an effective and integrated manner.
- 5.6 All parties agree to participate in an evaluation of new programs implemented under this measure and the broader Australian Better Health Initiative.

## **6. Alignment with current SA priorities/programs**

Addressing risk factors for chronic disease is a key strategy of the health reform agenda in South Australia through the Generational Health Review 2003, which proposed substantial reform of the South Australian health system including shifting the emphasis to early intervention and prevention.

Work in this priority area aligns with achieving target T2.6 of the South Australia Strategic Plan, to reduce the percentage of South Australians who are overweight or obese by 10% in 10 years.

This is supported by the *Eat Well Be Active Healthy Weight Strategy for South Australia 2006-2010*, *Eat Well South Australia Public Health Nutrition Action Plan 2006-2008* and *be active Physical Activity Strategy for South Australia 2004-2008*.

## **7. Implementation**

### **7.1 Coordination**

This priority area will be coordinated by Health Promotion Branch in the Department of Health.

### **7.2 Funding rollout**

There will be limited program rollout in the first year of funding, with full funding being available in second and subsequent years of the ABHI initiative. Funding for initiatives will become available in January 2007.

## **8. Components of School and Community Programs**

There are four components in this priority area: Regional Healthy Weight Coordinators, the Healthy Ways project in Aboriginal communities, CYWHS parent focused project, and professional development to support these initiatives.

In each of these initiatives there will be the development of consistent messages regarding physical activity, healthy eating and healthy weight to ensure South Australians receive consistent, reliable and current information. The initiatives will work collaboratively, in conjunction with HPB, to develop and disseminate these messages. These messages will take into account the messages developed by all Australian governments for the national social marketing campaigns.

### **8.1 Regional Healthy Weight Coordinators**

Regional Health Services will be funded for regional Healthy Weight Coordinator positions. Regional coordinators will be expected to participate in statewide program planning, development, implementation, monitoring and evaluation activities.

Those regions which have not developed Regional Healthy Weight Action Plans will be required to develop these plans, consistent with the learnings from the Eat Well Be Active Community Programs and consistent with the key action areas and outcomes of the Eat Well Be Active Healthy Weight Strategy for South Australia 2006-2010.

Regional Healthy Weight Regional Action Plans must be:

- consistent with the *Eat Well Be Active Healthy Weight Strategy for South Australia 2006–2010*
- focus on children, young people and their families
- based on prevention
- adopt a settings based health promotion approach
- take equity into consideration
- address environmental barriers ; and
- identify collaborative action with other sectors.

The Regional Healthy Weight Coordinators will be responsible for supporting the implementation of the Regional Healthy Weight Action Plans. The initiatives will be called Eat Well Be Active (region name) Healthy Weight

Programs. The guidelines for the use of this program identification will be provided by HPB. (See also ABHI badging guidelines in Appendix 2 of DH ABHI Program Master Document.) The roles and responsibilities for these positions will be comparable across the state.

The Coordinators will work cooperatively with each other and with coordinators in other ABHI program areas and work towards the development of ABHI regional teams where appropriate.

### **8.2 Healthy Ways Program**

Country Health SA will be funded to continue the Healthy Ways project in two country areas, Northern and Far Western and Eyre. This will include 1.5 FTE PSO 2 dietitians and 1.5 FTE Aboriginal Health Worker positions to work with remote communities. The placement of these positions will be negotiated with Country Health SA and the specific areas.

Healthy Ways will focus on child and maternal health, healthy pregnancy and the early years of life to promote healthy lifestyles, healthy eating and physical activity.

### **8.3 CYWHS parent focused program**

CYWHS will be funded to develop, implement and evaluate a plan to build the capacity of CYWHS to provide further support for parents and families around healthy weight, healthy eating and physical activity. This initiative will complement the work in the other initiatives in this priority area, specifically the professional development for the workforce and the work of the Regional Healthy Weight Coordinators. Strategies for consideration in this initiative include workforce professional development, complementing the Healthy Weight Short Course, and parent information and support materials for use across the sector.

### **8.4 Professional development for the workforce**

To support this priority area workforce training and professional development will be provided, in the first instance, to the health and education workforce and the Aboriginal Health workforce.

#### **8.4.1 Health workforce training and development**

Professional development for the health workforce will be provided through the Healthy Weight Short Course which is being developed, in consultation with the regions and HPB by TAFE SA. This course will focus on healthy weight promotion, healthy eating, physical activity and primary prevention of chronic disease. The development and implementation of this Short Course will be funded through the ABHI initiative at no cost to regions. Regional Healthy Weight Coordinators will have a role in promoting and implementing this training in their region, and may be involved in course co-facilitation if appropriate.

#### **8.4.2 Aboriginal Health workforce training and development**

Country Health SA will be funded to develop and implement professional development for the Aboriginal Health Worker workforce in

both country and metropolitan regions. This will complement the Healthy Weight Short Course. The specific details of this initiative will be negotiated with Country Health SA in conjunction with Aboriginal Health Division and the Aboriginal Health Council.

#### 8.4.3 Education sector workforce training and development

Professional development will be provided to the education workforce in conjunction with DECS with a focus on those working in preschools and childcare services. DECS will be contracted to undertake the development and implementation of this program.

### 9. Funding Allocation

Proposed funding allocations for each region for the 4 year program are shown below.

#### Funding for Programs 2006/07 – 2009/10

PROMOTING HEALTHY LIFESTYLES	Program Initiatives	2006-07	2007-08	2008-09	2009-10	TOTAL
CNAHS	HW Coordinator 1 FTE	38,500	78,000	80,000	84,000	280,5000
SAHS	HW Coordinator 1 FTE	38,500	78,000	80,000	84,000	280,5000
CYWHS	Parent focused program	80,000	82,000	85,000	88,000	335,000
COUNTRY HEALTH SA	HW Coordinators	61,000*	437,000	457,000	473,500	1,428,000
	Healthy Ways 3 FTEs	116,000	222,000	229,000	240,000	807,000
	Aboriginal Workforce Training	30,000	49,000	51,000	52,000	182,000
<b>TOTAL</b>		<b>364,000</b>	<b>946,000</b>	<b>982,000</b>	<b>1,021,500</b>	<b>3,313,500</b>
<b>NON HEALTH UNIT EXPENDITURE</b>						
DECS	Education workers training	87,000	115,000	115,000	90,000	407,000
TAFE	Health workers training	35,000	80,000	65,000	50,000	230,000
	National Social Marketing**	356,000	368,000	381,000	395,000	1,500,000

\*Funding in 2006-07 for regional coordinators will be supplemented by HPB by \$210,000

\*\*\$500K will be spent in SA for local activities to support the national campaigns beginning in 2007-08; the remainder will be spent through the national process.

## **10. Outcome Measures**

The specific outcomes to be achieved for each component of this priority area will be developed annually into an Schedule 6 addendum to the Health Service Agreement and may include:

- 14.1 evidence of appointment of regional program coordinators
- 14.2 evidence of engagement of regional partners, including consumers and major service providers such as schools, preschools, childcare services and local government
- 14.3 evidence of staff attendance at professional development provided through the ABHI initiative
- 14.4 evidence of regional implementation plans
- 14.5 evidence of incremental implementation of plans
- 14.6 evidence of equity considerations in program initiatives
- 14.7 evidence of outcomes in line with the Eat Well Be Active Healthy Weight Strategy 2006-2010.

## **11. Monitoring and Evaluation**

Monitoring, reporting and evaluation of the program outcomes will be important in establishing the effectiveness of the programs.

### **15.1 National Evaluation and Reporting**

The Australian Government through the Department of Health & Ageing will lead the national evaluation of the Australian Better Health Initiative on behalf of all jurisdictions. This process will also be used to report progress and outcomes to the Council of Australian Governments. Details of the proposed National Evaluation are not yet available, but will be made available to a statewide monitoring group.

### **15.2 Statewide Monitoring and Evaluation**

The Department of Health will coordinate a group to oversee overall ABHI implementation, establish performance indicators and manage statewide monitoring and limited evaluation of the ABHI programs. The Department of Health will synthesise information from regional program reports into a format suitable for the National Evaluators.

# Screening and Scoping Report for Equity Focussed Health Impact Assessment on the South Australian ‘Australian Better Health Initiatives: School and Community Programs’

(based on screening and scoping meeting held at South Australian Department of Health, 10.09.07)

**Attendees:** Liz Harris (Centre for Health Equity Training, Research and Evaluation, UNSW), Patrick Harris (Centre for Health Equity Training, Research and Evaluation, UNSW), Tim Gill (NSW Centre for Public Health Nutrition, University of Sydney), Dave Trudinger (Department of Human Services, Victoria), Carmel Williams, Karen James, Kirsty Hammet, Penny Thyer, Eva Forte (Department of Health, South Australia).

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## Screening

Screening determines if an EFHIA is required and established the rationale for proceeding.

This screening recommends that:

- an EFHIA be conducted, and
- that an additional steering committee meeting be held on the first week of October to agree on the EFHIA’s scope

### **1. What is the proposal to be assessed?**

Programs under the title of ‘School and Community Based Programs’, corresponding to ABHI Priority Area: Promoting Healthy Lifestyles.

#### **Overview**

The strategy is based on school and community-based programs which support the development of environments that facilitate healthy lifestyles. The emphasis is on healthy eating, physical activity and healthy weight, and on making healthy choices the easy choices. The target group for the strategy is children and young people (to 18 years) and their families, with the major focus on the early years. The School and Community Program was developed consistent with the goals, objectives and strategies of the Eat Well Be Active Healthy Weight Strategy for South Australia 2006-2010.

There are two types of programs in the proposal. First are State programs taking a population health approach and implemented through regional structures and through

other government departments. Second are jointly funded programs from the Australian government and states and territories to raise awareness of healthy lifestyle choices through social marketing campaigns, and the development of nationally consistent school guideline canteens.

Work in this ABHI priority area aligns with State targets to reduce overweight and obesity by 10% in 10 years.

### **Underlying principles**

- Initiatives will be developed to ensure synergies with other ABHI priority action areas are exploited.
- Initiatives will reflect the intention of the ABHI to refocus the whole health system from care to prevention.
- Initiatives must be consistent with the *Eat Well Be Active Healthy Weight Strategy for South Australia 2006-2010*.
- Initiatives should strive to ensure effective outcomes for all Australians including those in rural and remote areas, Aboriginal and Torres Strait Islander people, disadvantaged groups and people from culturally and linguistically diverse backgrounds.
- All parties will strive to maximise the impact and effectiveness of their programs by committing to clear and open collaboration at the national, jurisdictional and local levels.
- Programs will feed into an overarching ABHI evaluation framework to ensure the strategies have been implemented in an effective and integrated manner.
- All parties agree to participate in an evaluation of new programs implemented under this measure and the broader Australian Better Health Initiative.

### **Implementation**

ABHI funded programs are to be implemented between 2006 – 2010. This priority area will be coordinated by Health Promotion Branch (HPB) in the Department of Health. There was limited program rollout in the first year of funding, with full funding being available in second and subsequent years. Funding for initiatives was made available in January 2007.

### **Components of school and community programs**

There are four components: Regional Healthy Weight Coordinators, the Healthy Ways project in Aboriginal communities, CYWHS parent focused project, and professional development to support these initiatives.

- *Regional Healthy Weight Coordinators*

Regional Health Services will be funded for regional Healthy Weight Coordinator positions. Regional coordinators will be expected to participate in statewide program planning, development, implementation, monitoring and evaluation activities. Healthy Weight Regional Action Plans must be:

- consistent with the Eat Well Be Active Healthy Weight Strategy for South Australia 2006–2010
- focus on children, young people and their families
- based on prevention
- adopt a settings based health promotion approach
- take equity into consideration
- address environmental barriers; and
- identify collaborative action with other sectors.

○ *Healthy Ways Program*

Healthy Ways will focus on child and maternal health, healthy pregnancy and the early years of life to promote healthy lifestyles, healthy eating and physical activity. Country Health SA will be funded to continue the Healthy Ways project in two country areas, Northern and Far Western and Eyre.

○ *CYWHS parent focused program*

Children, Youth and Women's Health Service (CYWHS) will be funded to develop, implement and evaluate a plan to build the capacity of CYWHS to provide further support for parents and families around healthy weight, healthy eating and physical activity. This initiative will complement the work in the other initiatives in this priority area, specifically the professional development for the workforce and the work of the Regional Healthy Weight Coordinators. Strategies for consideration in this initiative include workforce professional development, complementing the Healthy Weight Short Course, and parent information and support materials for use across the sector.

○ *Professional development for the workforce*

Workforce training and professional development will be provided, in the first instance, to the health and education workforce and the Aboriginal Health workforce.

- Health workforce training and development

Professional development for the health workforce will be provided through the Healthy Weight Short Course. The course is being developed, in consultation with the regions and HPB by TAFE SA, to focus on healthy weight promotion, healthy eating, physical activity and primary prevention of chronic disease.

- Aboriginal Health workforce training and development

Country Health SA will be funded to develop and implement professional development for the Aboriginal Health Worker workforce in both country and metropolitan regions. This will complement the Healthy Weight Short Course.

- Education sector workforce training and development

Professional development will be provided to the education workforce in conjunction with Department of Education and Children's Services (DECS) with a focus on those working in preschools and childcare services. DECS will be contracted to undertake the development and implementation of this program.

## **Outcome Measures**

The specific outcomes to be achieved for each component of this priority area will be developed annually and may include:

- evidence of appointment of regional program coordinators
- evidence of engagement of regional partners, including consumers and major service providers such as schools, preschools, childcare services and local government
- evidence of staff attendance at professional development provided through the ABHI initiative
- evidence of regional implementation plans
- evidence of incremental implementation of plans
- evidence of equity considerations in program initiatives
- evidence of outcomes in line with the Eat Well Be Active Healthy Weight Strategy 2006-2010.

## **2.1 What is the broader context surrounding the proposal?**

### **Work to date**

The proposal was developed in 2006. As a result certain related allocations have been completed, and the regions are now planning based on these allocations. The regions are also at different parts of their planning; some have endorsed the plans already and others have not.

### **The implementation strategies**

Each implementation strategy has a history and specific stakeholders, and links to other initiatives and related organisational structural issues.

#### *o Regional Healthy Weight Coordinators*

Country Health South Australia has written an action plan that supports the coordinators to roll out this initiative. The aim is to align statewide program planning with other ABHI initiatives, with support from colleagues in these other initiatives. In terms of human resources, Country Health has been allocated 5 FTEs due to rural and remoteness issues. Southern and Northern Areas, which are much larger in terms of population, have been allocated 1 FTE each.

Areas are to draw up the implementation plans to include outcome measures. HPB is developing key performance indicators reflecting each outcome area that are to be included annually in service agreements until 2010.

The Healthy Weight Coordinator positions are funded as three year positions.

The programs that are chosen are those that health thinks are the 'best bets'. These will be a mix of what is considered a good program and population health e.g. social marketing. However there are questions concerning on what basis statewide programs are rolled out, for example who wins and who loses?

*Potential Issue* – Application of program logic could enable consistency.

- *Healthy Ways Program*

This is version two of the program, which evolved from prior work with Aboriginal women in communities to increase weight in babies.

Supported by a strong dietician network the second phase of the program has been developed using partnering of nutrition expertise with Aboriginal Health Workers in the relevant location.

- *CYWHS parent focused program*

This initiative extends stage one of a previously developed program to include the development of resources for parents and health workers.

The initiative fits under early childhood and maternal health under the Primary Health Care program. Men and parents from low SES were included in early planning for this through focus groups.

The workforce involved are early childhood nurses, now called 'child and youth health nurses', who sit as a division within CYWHS structure.

- *Professional development for the workforce*

This initiative will be based on a consistent strategy on what is meant by and what is best practice is in promoting healthy eating.

The healthy weight short course component of this initiative is a one day course.

The Aboriginal training component was developed by an advisory committee pulled together at the end of 2006. This is now being tendered to interested organisations.

The education sector component is targeting employees in pre-school and childcare settings. DECS is being funded to do this, and a health representative is on the steering group, plus there is a technical reference group.

- *National social marketing campaign program*

This was screened to be out of the scope of this EFHIA due to no scope for change of campaign program or materials.

*Potential issues:* Is social marketing information going to be targeted to sub-groups? Are Health promotion over-buying into this and then not being able to input into other strategies.

## **Overall**

Individual, clinical and group interventions favoured by Chronic Disease and Lifestyle Intervention programs may be difficult to integrate with School and Community Program initiatives targeting populations. This may constrain School and Community initiatives and there are questions concerning where broader (e.g. more environmental) issues that are core business of the Eat Well Be Active Strategy fit.

The ABHI adds to the SA strategic plan, which was developed prior to ABHI. However, ABHI has really reinvigorated initiatives in SA by providing additional funds (through matched funding with commonwealth). The healthy weight budget is now \$5 million – previously \$1.5 million. For example ABHI has provided money for positions at regional levels.

However the current situation in SA is that community health is being re-orientated with a shift in focus to a centralised model. Resources are being shifted from community capacity building approaches with staff are realigned to clinical work.

*Potential issues:* Clarity that ABHI money has provided four-fold increase in funding. This will lead to positive impacts is if there is a link between capacity and outcome. There should also be an acknowledgement that diffusion of innovation is work intensive.

## **2.2 What is the desired end product?**

The desired end product is a report that can be used as a tool to use to influence others to ensure strategies have an equity focus. Therefore the report requires enough of the process plus clear recommendations. As a ‘proof of concept’ idea, EFHIA could then be used across all of ABHI, with a potential extension to those involved in the operation of program. From a risk management point of view, EFHIA offers management of risks in terms of future criticisms. However, rapid EFHIAs can be criticised for a lack of evidence, therefore evidence is required for the recommendations (where it exists).

## **3.1. Will it be possible to influence decision-making?**

The aim is not to influence the strategy, which is unchangeable, but there is scope to influence the ongoing development and implementation of plans, and future resource allocation.

## **3.2 Who should be involved in the Steering committee?**

- Statewide service strategy division - responsible for allocation of ABHI money to SNAP funding
- Aboriginal Health Division

- Statewide ABHI Healthy Weight Network
- ABHI
- Healthy Weight Coordinating Group/ Regions
- SACOSS
- Health Consumers Alliance

#### **4. Timing**

The assessment should be completed before the end of December.

#### **5. Initial assessment of impacts**

Health impacts, distributional impacts, and capacity impacts the four implementation initiatives.

Impact and outcome is expensive data to include for each of the four. Therefore it will be important to focus on: evaluation and monitoring frameworks; developing a program logic; and accountability.

*Potential issues –*

Build equity into evaluations (including simple indicators) along with ‘best bets’.

An initial recommendation can be made that investment in a longer term strategy than three years will be required.

Measuring workforce capacity at regional level in terms of equity will help focus activities.

#### **6. Equity Assessment**

From an equity perspective there are issues of program reach and program responsiveness (i.e. characteristics of program, for example cost barriers). The ABHI focus on ‘Responsibility of individual’ may have unintended consequences. Guidance on equity dimensions will be useful.

Potential population groups to consider in the assessment include:

- Age (under 18 and other ages - e.g. under five)
- Gender
- Low SES (e.g. low income groups – especially appropriateness of social marketing)
- Indigenous (e.g. distribution of outlets / affordability of fresh food)
- Rural and remote (include mortgage belt for housing affordability and infrastructure)
- CALD – (include refugees)
- Current health status (include people with disabilities and mental health)

#### **7. Are other assessment tools more appropriate to use?**

No

### **8. How well documented are the impacts**

There is evidence that coordinator roles in the health regions may struggle with capacity. There is also local evidence providing a good baseline of programs that currently exist now.

### **9. Resources and capacity implications**

*Resources and capacity have been allocated to undertake the EFHIA*

### **10. Recommendations**

- The screening recommendation is to proceed with an EFHIA
  - That an additional steering committee meeting be held on the first week of October to agree on the EFHIA's scope
-

# Scoping

## **Purpose**

The purpose of the scoping step is to set the scope of the EFHIA by establishing the terms of reference for the Steering Committee, clarifying definitions of health and equity, the dimensions of equity to be considered in the EFHIA and planning the process through which the EFHIA will be undertaken and decisions made.

## **1. Setting up a steering committee**

### **Representation**

To ensure a broad spectrum of representation, it was agreed potential stakeholders to involve in the committee include:

- South Australian Council of Social Services
- Department of Health (those involved in the implementation of strategies)
- Healthy Weight Coordinating Group
- Representation from the Healthy Weight fora at regional levels
- Indigenous representation
- Health Consumer's Alliance

### **Terms of Reference**

*Chair* - Carmel Williams

*Secretariat* - CHETRE / Eva Forte

*Tasks* -

- To agree on the screening and scoping reports.
- To approve the project plan.
- To approve the identification stage, including commenting on the literature review and approving appropriate sources of information used.
- To approve the assessment stage, including summary report of the stage and initial recommendations.
- To agree on a process for developing recommendations
- To approve final recommendations
- To approve the final EFHIA report
- To agree on a process for monitoring and evaluation

*Meetings* – Three meetings will be held across the proposed activities of the HIA (See Appendix One):

- Meeting one: Scoping (Oct. 4<sup>th</sup> 2007).

- Meeting two: Assessment (November 2007).
- Meeting three: Recommendations, monitoring and evaluation, and final report (January 2008).

## **2. Choosing which impacts to assess**

The four components under the School and Communities Activities (see p.2-4 under ‘Screening’) will be assessed for their:

- health impacts
- distributional impacts, and
- capacity impacts.

The following equity focussed questions will guide the assessment:

- What is the initiative trying to do?
- Is there evidence of inequality?
- Who may be disadvantaged by the initiative?
- What are any unanticipated impacts?
- Equity recommendations for the initiative.

‘Investment’ in dollars will be included as part of the assessment of each impact

## **3. Values and Definitions for the EFHIA**

### **Health**

Health will be considered from a broad definition of health and wellbeing rather than a tight definition of health hazards or risks

### **Equity**

Equity is defined as the ‘unfair and modifiable differential distribution of health impacts’ (Harris et al, 2007).

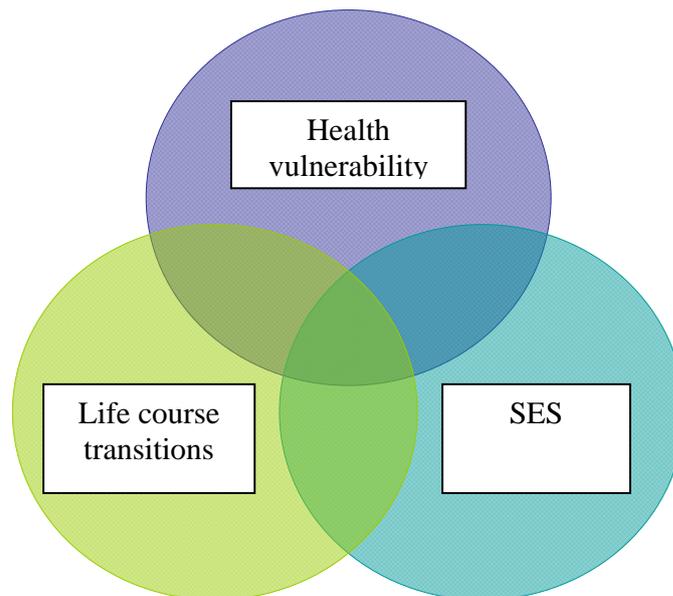
Equity will be considered from three perspectives:

- i. improving the health of everyone;
- ii. not worsening the health of those who are disadvantaged; and
- iii. reducing the gap between the most and the least disadvantaged.

The model of equity (shown in Figure 1) the EFHIA will use is concerned with three influences on inequitable health impacts:

- health vulnerability;
- socioeconomic position; and
- lifecourse transitions.

*Figure One: Venn diagram of influences on health inequity*



### **Differential impacts**

Differential impacts for purposes of the EFHIA, will be defined as the distribution of impacts affecting groups or sub-groups, specifically in terms of:

- Aboriginality and cultural identity
- Age (under 18 but across three 'transitions': before school, primary and secondary)
- Gender
- Socioeconomic position (including impacts of social marketing and health literacy)
- Locational disadvantage (including rural and remote communities)
- Culturally and Linguistically Diverse communities
- Current health status and familial health status (including existing levels of health and disability, mental health, domestic violence, drug and alcohol, and gambling)

- Workforce

### **Capacity building**

Capacity will be considered from its definition as ‘An approach to the development of sustainable skills, organisational structures, resources and commitment to health improvement in health and other sectors, to prolong and multiply health gains many times over.’ (Hawe et al., 1999; in NSW Health, 2001).

Dimensions of capacity building will be (NSW Health 2001):

- i. Organisational development
- ii. Workforce development
- iii. Resources
- iv. Partnerships
- v. Leadership

### **Prevention**

Prevention will be considered from its definition as ‘action to reduce or eliminate or reduce the onset, causes, complications or recurrence of disease’ (Australian Institute for Health and Welfare, 2004; in National Public Health Partnership, 2006)

### **Community participation**

Community representation will be achieved through involvement of the Health Consumer’s Alliance on the steering committee.

## ***4. Parameters for the EFHIA***

The focus will be from a health systems, rather than health service, perspective.

The approach will be intersectoral and involve collaboration with other sectors and agencies; however the recommendations will be driven from a health systems perspective.

The HIA will progress within the constraints of the four components under the Schools and Community Activities and will not offer additional components or strategies.

## ***5. Use of information / evidence***

It is recognised that there is limited direct evidence on the health impact of such initiatives. However, where possible evidence will be gathered and assessed using the traditional public health hierarchy of evidence. Where evidence does not exist in the formal hierarchy, additional sources will be used (e.g. Grey literature, other HIAs).

Appraisal of such evidence will include use of an evidence typology to match sources of information / evidence with the type and nature of the impact being assessed. Appendix 2 provides a typology of evidence for the EFHIA.

## **6. Level of Depth for the EFHIA**

The EFHIA will be of an intermediate scope due to:

- The scale of the proposed initiative being relatively large, and that it will be implemented over three years
- High significance in terms of potential impact on populations
- High degree of external (national) interest in ABHI, and internal (Department of Health) interest in the EFHIA as a tool and equity as an outcome of strategies aimed at preventing obesity.
- The collection of both primary (stakeholder consultations) and secondary (literature review, population profile and documentary analysis) data.

## **7. Preliminary Plan**

This represents a preliminary plan for the EFHIA. The detail will be revised following steering committee input. For a graphic representation see Appendix One.

### **Identification of Impacts (October / November 2007)**

CHETRE and a representative from HPB will identify impacts through (i) population profiles of the population or communities likely to be affected by the components of the initiative, (ii) a literature review (iii) stakeholder consultations (iv) a review of relevant documentation.

#### *o Profiling*

Profiling provides contextually-specific information on which to base social and health impact predictions. In this EFHIA profiling will consist of a broad profile of affected communities for the past five years.

#### *o Evidence Collection*

Evidence will be collected to identify potential impacts. This will be collected through:

- stakeholder consultations to elicit specific information about potential impacts;
- a review of the literature;
- a review of documentation on similar programs.

The evidence gathered will not only identify general nature of potential impacts but also report on:

- The magnitude of potential impacts;
- The severity of potential impacts;
- The likelihood of potential impacts occurring;
- The timing of impacts (potential latency);
- Potential differential impacts (see above);
- Whether the impacts identified are amenable to change;
- The sources of evidence were used to predict the impact;
- Possible triangulation of impacts (whether impacts are verified by more than one source).

○ *Stakeholder consultation*

Stakeholders (face to face group consultations and telephone interviews) to be consulted in October / November 2007 will include:

- South Australian Council of Social Services
- Department of Health (those involved in the implementation of strategies)
- Healthy Weight Coordinating Group
- Representation from the Healthy Weight fora at regional levels
- Indigenous representation
- Health Consumer's Alliance

**Assessment of Impacts (November 2007)**

CHETRE and a representative from HPB will appraise the evidence collected to identify health impacts and to identify changes that could be made to the proposal to enhance positive impacts and mitigated negative ones.

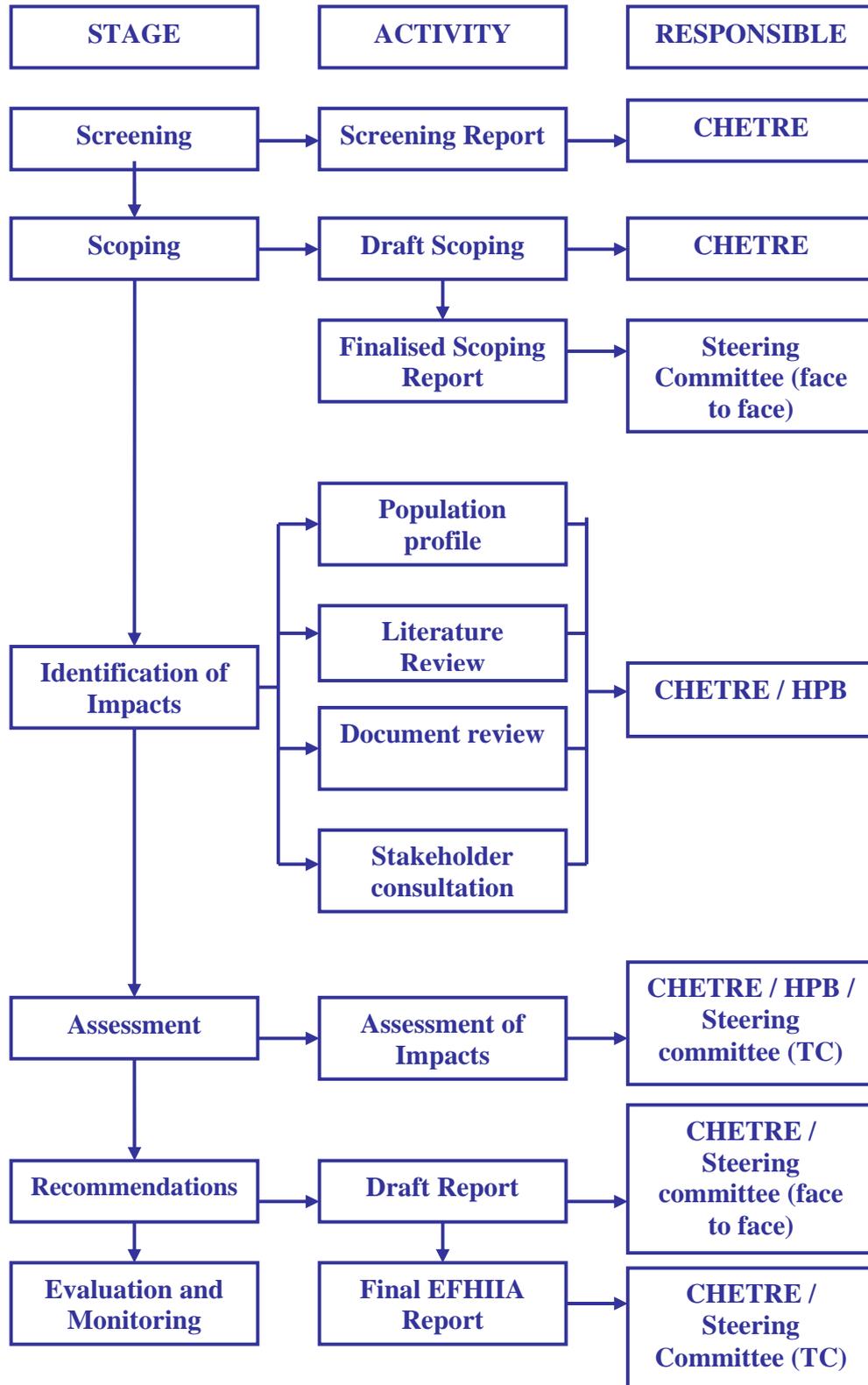
**Decision-making and recommendations (November 2007)**

A concise and action oriented set of recommendations will be developed and refined in consultation with the HIA steering committee.

**Monitoring and Evaluation (November 2007)**

A process evaluation will be done with the HIA team and steering committee. Mechanisms for ongoing monitoring and evaluation will be developed by the steering committee and written into the final HIA report.

## Appendix One: Proposed Approach for the EFHIA



## Appendix 2: Evidence Typology for EFHIA on ABHI ‘Schools and Community Programs’

Key Questions	Sources of Evidence				Steering Committee
	Population profile	Literature Review	Stakeholder Consultation	Document review	
<b>1. What is the strategy trying to achieve?</b>					
<i>a. Health outcomes:</i> i. Reduced levels of overweight and obesity ii. Increased levels of physical activity iii. Improved diet to guideline specifications	+	++	+	+++	+++
<i>b. Equity outcomes across scoped population groups</i>	+++	+++	++	+	++
<i>c. Capacity outcomes across 5 dimensions</i>	+	++	+++	++	++
<b>2. Is there evidence that this strategy will achieve its outcomes?</b>					
i. Direct evidence from similar programs	N/A	+++	++	+++	++
ii. Indirect evidence from other programs	N/A	+++	++	+++	++
iii. Practice	N/A	+++	+++	+++	+++
iv. Program logic/ theory	N/A	+++	+	+++	+++
<b>3. Who is likely to benefit from this strategy?</b> • Everyone • Particular sub-populations	+++	++	+++	++	+++
<b>4. Are there likely to be <i>unintended consequences</i> that may exacerbate or not address inequity?</b> • Who may not be reached by this strategy • What may be some unintended consequences	+++	++	+++	++	+++
<b>5. How could the strategy be <i>implemented</i> in ways that strengthen its positive outcomes and reduce unintended consequences?</b>	+++	++	+++	++	+++

**Note:** the number of pluses (+, ++, +++) indicates the extent to which that particular source of evidence will be drawn on to answer that question.

## **References**

Harris, P., Harris-Roxas, B., Harris, E., & Kemp, L. *Health Impact Assessment: A Practical Guide*, Sydney: Centre for Health Equity Training, Research and Evaluation (CHETRE). Part of the UNSW Research Centre for Primary Health Care and Equity, UNSW.

National Public Health Partnership (2006). *The Language of Prevention*. Melbourne: NPHP.

NSW Health (2001). *A Framework for Building Capacity to Improve Health*. Sydney: NSW Health.

## Aboriginality

Around half of the Aboriginal population of South Australia resides in metropolitan Adelaide (47.9%) and half in country South Australia (51.8%). On a proportional basis, Aboriginal people are more highly represented in country South Australia (3.0% of the state population) than in metropolitan Adelaide (1.1%).

The health regions with the largest indigenous populations are the Northern and Far Western region (n=5,921, 23.2% of the Aboriginal population of SA), the Northern sub region of Central Northern Adelaide (n=5,559, 21.7%), and the Western sub region of Central Northern Adelaide (n=2,942, 11.5%). There are fewer than 2,000 Aboriginal people residing in each of the other health regions (Table 1).

The health regions in which Aboriginal people are most highly represented in the population are Northern and Far Western (11.9% of the regional population), Eyre (5.5%), and Riverland (2.5%). Aboriginal people represent less than 2% of the population in all other health regions (Table 1).

**Table 1: Aboriginal population of South Australia**

Health regions	Number of Aboriginal persons	% of SA Aboriginal population	Number of persons	% of SA population
- Northern sub region	5,559	21.7	345,602	1.6
- Western sub region	2,942	11.5	212,741	1.4
- Central East sub region (Central Northern Adelaide)	1,058 (9,559)	4.1 (37.4)	233,537 (791,880)	0.5 (1.2)
- Urban Beaches District	935	3.7	139,381	0.7
- Hills District	273	1.1	78,526	0.3
- Outer Southern District (Southern Adelaide)	1,473 (2,681)	5.8 (10.5)	116,926 (334,833)	1.3 (0.8)
Metropolitan Adelaide (excl. Gawler)	12,240	47.9	1,126,713	1.1
Hills Mallee Southern	1,868	7.3	122,452	1.5
South East	776	3.0	64,615	1.2
Wakefield	1,286	5.0	104,858	1.2
Mid North	609	2.4	31,390	1.9
Riverland	844	3.3	33,460	2.5
Eyre	1,927	7.5	34,760	5.5
Northern & Far Western	5,921	23.2	49,956	11.9
Country South Australia (incl. Gawler)	13,231	51.8	441,491	3.0
<b>South Australia</b>	<b>25,562</b>		<b>1,568,204</b>	

The health regions with the largest populations of Aboriginal children (i.e. aged younger than 18 years) are the Northern sub region of Central Northern Adelaide (n=2,660, 24.1% of the population of Aboriginal children in SA), the Northern and Far Western region (n=2,382, 21.6%), and the Western sub region of Central Northern Adelaide (n=1,107, 10.0%). There are fewer than 1,000 Aboriginal children residing in all other health regions (Table 2).

The health regions in which Aboriginal children are most highly represented in the population are Northern and Far Western (18.5% of the regional population aged younger

than 18 years), Eyre (9.6%), and Riverland (4.5%). Aboriginal children represent less than 4% of the population of children in all other health regions (Table 2).

**Table 2: Aboriginal children in South Australia**

Health regions	Number of Aboriginal children	% of population of SA Aboriginal children	Number of children	% of population of SA children
- Northern sub region	2,660	24.1	83,752	3.2
- Western sub region	1,107	10.0	40,823	2.7
- Central East sub region (Central Northern Adelaide)	343 (4,110)	3.1 (37.3)	44,424 (168,999)	0.8 (2.4)
- Urban Beaches District	351	3.2	26,772	1.3
- Hills District	115	1.0	18,102	0.6
- Outer Southern District (Southern Adelaide)	751 (1,217)	6.8 (11.0)	28,206 (73,080)	2.7 (1.7)
Metropolitan Adelaide (excl. Gawler)	5,327	48.4	242,079	2.2
Hills Mallee Southern	876	8.0	28,764	3.0
South East	345	3.1	16,283	2.1
Wakefield	488	4.4	25,197	1.9
Mid North	273	2.5	7,651	3.6
Riverland	377	3.4	8,371	4.5
Eyre	847	7.7	8,814	9.6
Northern & Far Western	2,382	21.6	12,852	18.5
Country South Australia (incl. Gawler)	5,588	50.7	107,932	5.2
<b>South Australia</b>	<b>11,015</b>		<b>350,011</b>	

There is a high prevalence of smoking among Aboriginal women during pregnancy (57.5%) compared with the population of SA (19.7%). A difference in smoking prevalence is evident across almost every health region (Table 3); however, it should be noted that these figures are based on small numbers in most cases.

**Table 3: Smoking during pregnancy among Aboriginal women**

Health regions	Indigenous women smoking during pregnancy (n)	Indigenous pregnant women (n)	Indigenous women smoking during pregnancy (%)	Women smoking during pregnancy (%)
- Northern sub region	191	322	59.3	24.2
- Western sub region	112	220	50.9	17.5
- Central East sub region (Central Northern Adelaide)	26 (329)	45 (587)	57.8 (56.0)	8.0 (18.5)
- Urban Beaches District	10	27	37.0	12.8
- Hills District	0	8	0.0	7.5
- Outer Southern District (Southern Adelaide)	33 (43)	55 (90)	60.0 (47.8)	22.4 (15.5)
Metropolitan Adelaide (excl. Gawler)	372	677	54.9	17.6
Hills Mallee Southern	56	98	57.1	20.7
South East	20	32	62.5	24.2
Wakefield	33	48	68.8	21.8

<b>Health regions</b>	<b>Indigenous women smoking during pregnancy (n)</b>	<b>Indigenous pregnant women (n)</b>	<b>Indigenous women smoking during pregnancy (%)</b>	<b>Women smoking during pregnancy (%)</b>
Mid North	20	36	55.6	28.2
Riverland	34	46	73.9	31.1
Eyre	78	142	54.9	24.1
Northern & Far Western	197	330	59.7	34.3
Country South Australia (incl. Gawler)	438	732	59.8	25.0
<b>South Australia</b>	<b>810</b>	<b>1,409</b>	<b>57.5</b>	<b>19.7</b>

## **Culturally and Linguistically Diverse Communities**

Around 1 in 11 South Australians (9.1%) were born in non-English speaking (NES) countries. The overwhelming majority of these people (89.5%) live in metropolitan Adelaide, and represent 11.3% of the metropolitan population. Only 10.4% of South Australians born in NES countries reside in country SA; they represent 3.3% of the regional population.

The health regions with the largest populations of people born in NES countries are the Western (n=33,709), Northern (n=33,608), and Central East (32,297) sub regions of Central Northern Adelaide. These areas also contain the most people from NES countries as a proportion of the total population of the area (16.4%, 10.0%, and 14.5% respectively).

Only 1.1% of pre-school children (aged 0-4 years) were born in NES countries; this represents less than 1% of children in this age group in each of the country regions and 0.4%-2.1% of children in this age group from regions in metropolitan Adelaide. 2.0% of children aged 5 to 14 years were born in NES countries; this represents less than 1% of children in this age group in each of the country regions and 1.2%-4.4% of children in this age group from regions in metropolitan Adelaide.

## **Age**

Children (aged younger than 18 years) represent less than a quarter (22.3%) of the population of South Australia. 5.7% of the state's population is aged 0 to 4 years (approximately before school age), 10.0% is aged 5 to 12 years (approximately primary school aged), and 6.6% is aged 13 to 17 years (approximately secondary school aged).

Over two thirds (69.2%) of South Australian children live in metropolitan Adelaide, and 30.8% live in country SA. However, in proportional terms, children are more highly represented in country SA than in metropolitan Adelaide. This is true across all age groups: 0-4 years (6.1% of the total population in country SA versus 5.6% in

metropolitan Adelaide), 5-12 years (11.2% versus 9.5%), and 13-17 years (7.2% versus 6.4%).

## Socioeconomic Position

### *Welfare-dependent and other low income families*

Almost 1 in 10 (9.7%) of South Australian families are welfare-dependent or have a low income (less than \$23,000). These families are as likely to reside in metropolitan Adelaide (9.8%) as country SA (9.5%). Areas with the highest proportion of welfare-dependent or low income families are the Northern and Far Western region (14.4%), the Northern sub region of Central Northern Adelaide (13.6%) and the Outer Southern District of Southern Adelaide (12.7%).

Over 1 in 5 (21.5%) South Australian children aged younger than 17 years live in welfare-dependent or other low income families. These children are as likely to live in metropolitan Adelaide (21.9%) as country SA (20.5%). Over one quarter of children live in welfare-dependent or low income families in four regions: the Northern sub region of Central Northern Adelaide (28.4%), the Northern and Far Western region (26.6%), the Outer Southern District of Southern Adelaide (26.6%) and the Western sub region of Central Northern Adelaide (25.5%).

**Table 4: Welfare dependent and other low income families**

Health regions	% welfare-dependent and other low income families (<\$23,000)	% dependent children in welfare-dependent and other low income families (<\$23,000)
- Northern sub region	13.6	28.4
- Western sub region	10.6	25.5
- Central East sub region (Central Northern Adelaide)	5.1 (10.4)	11.7 (23.3)
- Urban Beaches District	6.9	16.2
- Hills District	4.7	10.2
- Outer Southern District (Southern Adelaide)	12.7 (8.5)	26.6 (18.8)
Metropolitan Adelaide (excl. Gawler)	9.8	21.9
Hills Mallee Southern	8.7	19.9
South East	8.8	17.5
Wakefield	8.0	18.2
Mid North	10.7	24.7
Riverland	10.5	22.5
Eyre	9.5	20.1
Northern & Far Western	14.4	26.6
Country South Australia (incl. Gawler)	9.5	20.5
<b>South Australia</b>	<b>9.7</b>	<b>21.5</b>

### *Housing assistance*

6.9% of South Australian dwellings are rented from the government housing authority. These dwellings are slightly more likely to be located in metropolitan Adelaide (7.1% of

dwellings) than country SA (6.3%). Areas with the highest proportion of housing authority dwellings are the Northern and Far Western region (17.4%) and the Western sub region of Central Northern Adelaide (10.0%).

On average, 12.2% of South Australian households receive rental assistance per year. Metropolitan households (12.7%) are more likely to receive rental assistance than those in country SA (10.9%). Areas with the highest proportion of households receiving rental assistance are the Outer Southern District of Southern Adelaide (14.3%) and the Northern sub region of Central Northern Adelaide (13.7%).

**Table 5: Housing assistance**

<b>Health regions</b>	<b>% welfare-dependent and other low income families (&lt;\$23,000)</b>	<b>% dependent children in welfare-dependent and other low income families (&lt;\$23,000)</b>
- Northern sub region	13.6	28.4
- Western sub region	10.6	25.5
- Central East sub region (Central Northern Adelaide)	5.1 (10.4)	11.7 (23.3)
- Urban Beaches District	6.9	16.2
- Hills District	4.7	10.2
- Outer Southern District (Southern Adelaide)	12.7 (8.5)	26.6 (18.8)
Metropolitan Adelaide (excl. Gawler)	9.8	21.9
Hills Mallee Southern	8.7	19.9
South East	8.8	17.5
Wakefield	8.0	18.2
Mid North	10.7	24.7
Riverland	10.5	22.5
Eyre	9.5	20.1
Northern & Far Western	14.4	26.6
Country South Australia (incl. Gawler)	9.5	20.5
<b>South Australia</b>	<b>9.7</b>	<b>21.5</b>

### **Unemployment**

South Australia has an unemployment rate of 3.1%. The unemployment rate is slightly lower in country SA (2.5%) than in metropolitan Adelaide (3.3%). The areas with the highest proportion of unemployed individuals are the Outer Southern District of Southern Adelaide (5.1%) and the Northern sub region of Central Northern Adelaide (4.0%).

**Table 6: Unemployment**

<b>Health regions</b>	<b>% unemployed</b>
- Northern sub region	4.0
- Western sub region	2.9
- Central East sub region (Central Northern Adelaide)	2.6 (3.3)
- Urban Beaches District	3.0
- Hills District	1.8
- Outer Southern District (Southern Adelaide)	5.1 (3.4)
Metropolitan Adelaide (excl. Gawler)	3.3

<b>Health regions</b>	<b>% unemployed</b>
Hills Mallee Southern	2.2
South East	2.5
Wakefield	2.1
Mid North	2.8
Riverland	3.0
Eyre	2.3
Northern & Far Western	3.5
Country South Australia (incl. Gawler)	<b>2.5</b>
<b>South Australia</b>	<b>3.1</b>

### ***Participation in full-time education***

80.1% of South Australians aged 16 years participate full time in secondary school education. The rate of full time school participation is slightly higher in metropolitan Adelaide (80.8%) than country SA (78.3%). The Northern and Far Western region has the lowest participation rate in the state, with only two thirds (67.3%) of 16 year old people in full time education. Participation rates are also relatively low in the Northern sub region of Central Northern Adelaide (76.0%) and the Outer Southern District of Southern Adelaide (77.2%).

**Table 7: Participation in full-time education**

<b>Health regions</b>	<b>% full-time participation at age 16</b>
- Northern sub region	<b>76.0</b>
- Western sub region	80.2
- Central East sub region (Central Northern Adelaide)	87.2 (80.1)
- Urban Beaches District	83.8
- Hills District	88.0
- Outer Southern District (Southern Adelaide)	<b>77.2</b> (82.4)
<b>Metropolitan Adelaide (excl. Gawler)</b>	<b>80.8</b>
Hills Mallee Southern	79.3
South East	78.7
Wakefield	81.1
Mid North	80.7
Riverland	79.8
Eyre	78.8
Northern & Far Western	<b>67.3</b>
Country South Australia (incl. Gawler)	<b>78.3</b>
<b>South Australia</b>	<b>80.1</b>

### ***After-school care***

After school hours care is provided for one in 15 (6.7%) South Australian children aged between 5 and 12 years. The provision of after school care is more common in metropolitan Adelaide (8.2%) than country SA (3.3%). The Hills district of Southern Adelaide has the highest rate of after school care, with places provided for 14.5% of children. After school care is lowest in the Mid North (0.6%), Eyre (2.1%) and Northern and Far Western (2.2%) regions.

**Table 8: After-school care**

<b>Health regions</b>	<b>% of children with after school care places</b>
- Northern sub region	7.9
- Western sub region	7.4
- Central East sub region (Central Northern Adelaide)	8.8 (8.1)
- Urban Beaches District	6.0
- Hills District	14.5
- Outer Southern District (Southern Adelaide)	8.7 (8.4)
Metropolitan Adelaide (excl. Gawler)	8.2
Hills Mallee Southern	4.4
South East	3.7
Wakefield	3.6
Mid North	0.6
Riverland	4.5
Eyre	2.1
Northern & Far Western	2.2
Country South Australia (incl. Gawler)	3.3
<b>South Australia</b>	<b>6.7</b>

***Regional socioeconomic disadvantage***

The socio-economic indicators of inequality reviewed suggest that disadvantage is concentrated in four regions in South Australia: the Northern and Far Western region, the Outer Southern District of Southern Adelaide, and the Western and Northern sub regions of Central Northern Adelaide (Table 9).

**Table 9: Indicators of socio-economic inequality by region**

<b>Indicator of inequality</b>	<b>AHS</b>	<b>Region</b>	<b>%</b>
<i>Welfare dependant of low income families</i>	CHSA	Northern and Far Western region	14.4
	CNAHS	Northern sub region of Central Northern Adelaide	13.6
	SAHS	Outer Southern District of Southern Adelaide	12.7
<i>Children living in welfare-dependent or low income families</i>	CNAHS	Northern sub region of Central Northern Adelaide	28.4
	CNAHS	Western sub region of Central Northern Adelaide	25.5
	CHSA	Northern and Far Western region	26.6
	SAHS	Outer Southern District of Southern Adelaide	26.6
<i>Housing authority dwellings</i>	CHSA	Northern and Far Western region	17.4
	CNAHS	Western sub region of Central Northern Adelaide	10.0
<i>Rental assistance</i>	CNAHS	Northern sub region of Central Northern Adelaide	13.7
	SAHS	Outer Southern District of Southern Adelaide	14.3
<i>Unemployment</i>	SAHS	Outer Southern District of Southern Adelaide	5.1
	CNAHS	Northern sub region of Central Northern Adelaide	4
<i>16 yr old participation in full time education</i>	CHSA	Northern and Far Western region	67.3
	CNAHS	Northern sub region of Central Northern Adelaide	76
	SAHS	Outer Southern District of Southern Adelaide	77.2

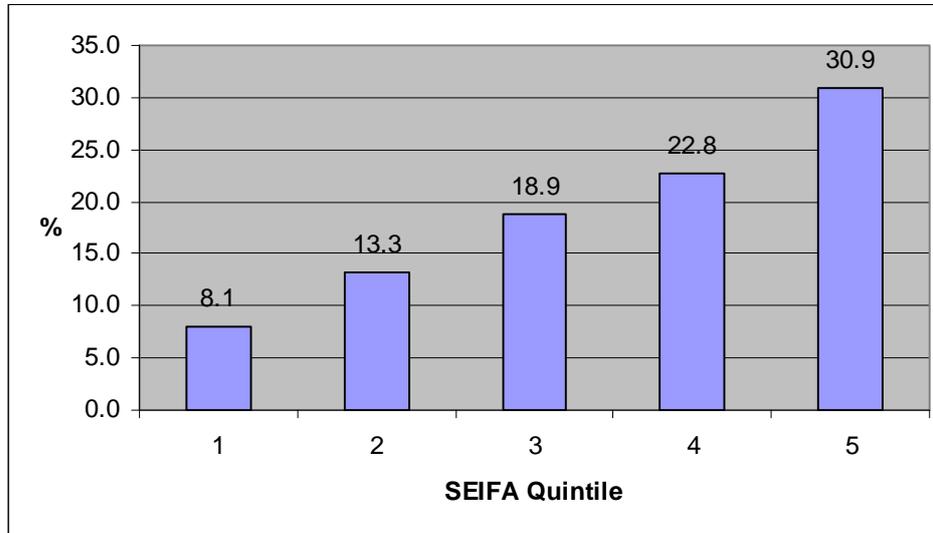
## **Health Status**

### *Smoking during pregnancy*

Around one in five South Australian women (19.7%) smoke during pregnancy. Smoking during pregnancy is more prevalent in country SA (25.0% of pregnant women) than in metropolitan Adelaide (17.6%). In each of the country health regions, the proportion of women who smoke during pregnancy is higher than the SA rate, with the highest proportions in the Northern and Far Western (34.3%), Riverland (31.1%), and Mid North (28.2%) regions. The only metropolitan regions in which the proportion of women who smoke during pregnancy is higher than the SA rate are the Northern sub region of Central Northern Adelaide (24.2%) and the Outer Southern District of Southern Adelaide (22.4%).

Smoking during pregnancy is strongly related to socioeconomic disadvantage: the most disadvantaged women (SEIFA Quintile 5) are 3.8 times more likely to smoke during pregnancy than the least disadvantaged women (SEIFA Quintile 1) (Figure 1).

**Figure 1: Smoking during pregnancy and socioeconomic disadvantage**

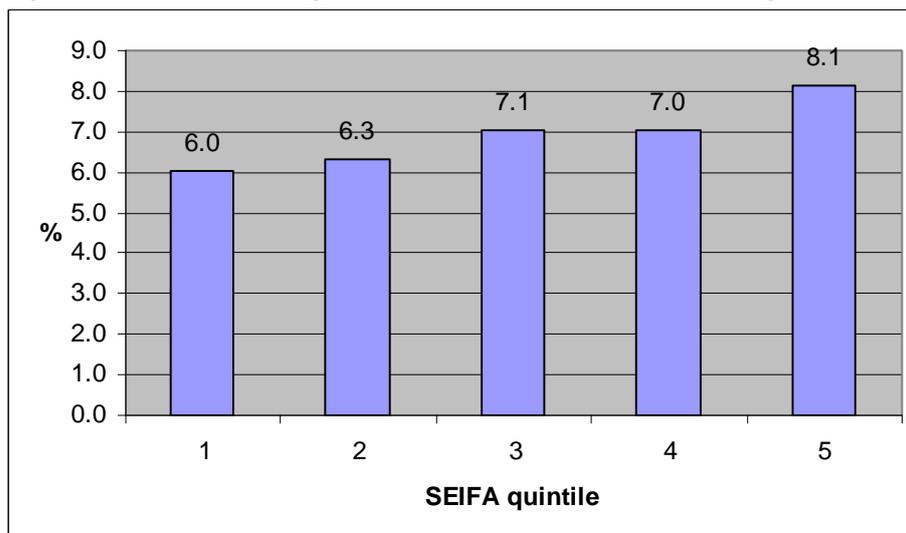


***Low birthweight***

Seven per cent of babies born in South Australia are low birthweight. Low birthweight babies are equally likely to be born in metropolitan Adelaide (7.0%) and country SA (7.1%). The only health region in which there appears to be an above average proportion of low birthweight babies is the Northern and Far Western region (9.4%).

The most disadvantaged women (SEIFA Quintile 5) are 1.3 times more likely to have low birthweight babies than the least disadvantaged women (SEIFA Quintile 1) (Figure 2).

**Figure 2: Low birthweight and socioeconomic disadvantage**

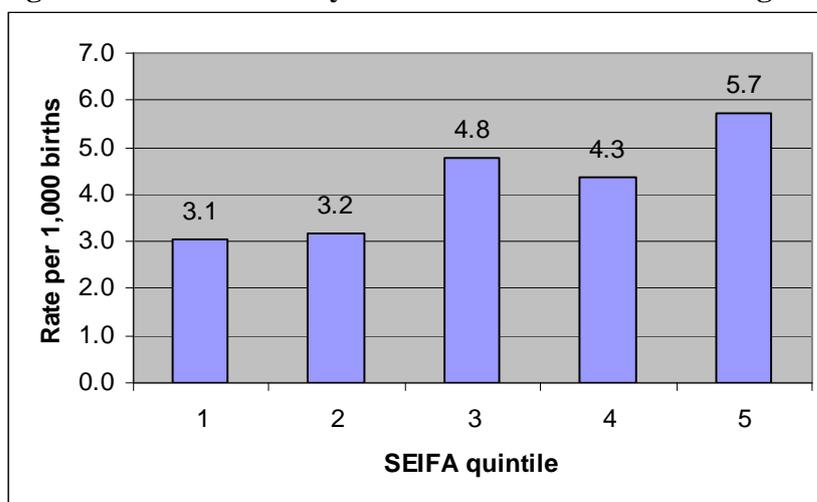


### ***Infant mortality***

South Australia has an infant death rate of 4.3 per 1,000 births. The rate is slightly higher for country SA (4.9 per 1,000 births) than metropolitan Adelaide (4.1 per 1,000 births). Of all the health regions, Riverland has the highest infant mortality rate (7.0 per 1,000 births).

Infant mortality is almost twice (1.9 times) as high among the most disadvantaged women (SEIFA Quintile 5) than the least disadvantaged women (SEIFA Quintile 1) (Figure 3).

**Figure 3: Infant mortality and socioeconomic disadvantage**

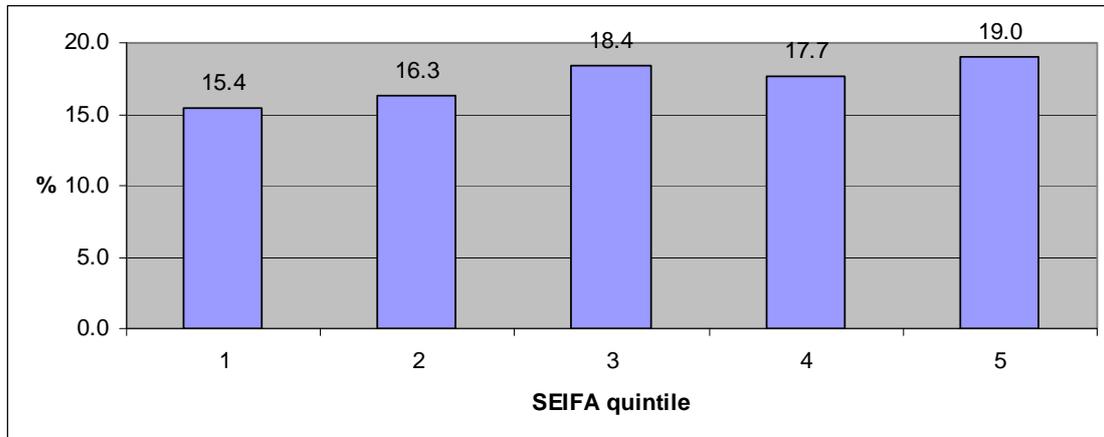


### ***Overweight and obesity***

17.5% of four year old boys in South Australia are overweight or obese. Overweight or obesity is slightly more prevalent in country SA (18.1%) than metropolitan Adelaide (17.2%). In three regions, more than one in five four year old boys are overweight or obese: Northern and Far Western (21.8%), Eyre (20.4%), and the Western sub region of Central Northern Adelaide (20.1%).

Boys from the most disadvantaged areas (SEIFA Quintile 5) are only slightly (1.2 times) more likely to be overweight or obese than those from the least disadvantaged areas (SEIFA Quintile 1) (Figure 4).

**Figure 4: Overweight, obesity and socioeconomic disadvantage**



### ***Disability***

*Note that as remote and very remote areas were not surveyed, LGAs with greater than 20% of their CDs classified as remote and very remote were excluded.*

It is estimated that approximately 21.5% of South Australians have a moderate disability; there is little difference in the prevalence of disability between metropolitan Adelaide (21.2%) and country SA (22.6%). Disability is most common among people aged 15 years or older (24.4%), and less common among those aged 10 to 14 years (11.5%), 5 to 9 years (10.0%), or under 5 years (4.9%). The region with the highest proportion of people with a disability is the Mid North (24.8%); this is largely due to a disability prevalence of 29.0% among residents aged 15 years or older.

### ***Gambling***

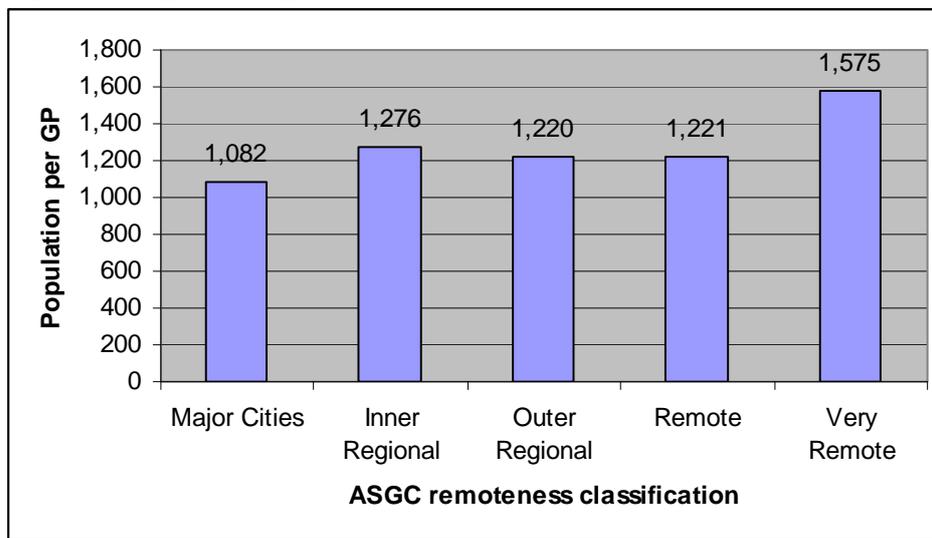
*Note that data from Adelaide SLA (City of Adelaide) are not included because of the very large expenditure associated with the presence of the Adelaide/Sky City Casino. This reduces the expenditure in Adelaide by \$52 per head. Data from country SA is not available.*

The average gambling loss from electronic gaming machines per adult in metropolitan Adelaide is \$509. Above average gambling losses are indicated among adults in the Western (\$607) and Northern (\$550) sub regions of Central Northern Adelaide.

## Locational Disadvantage

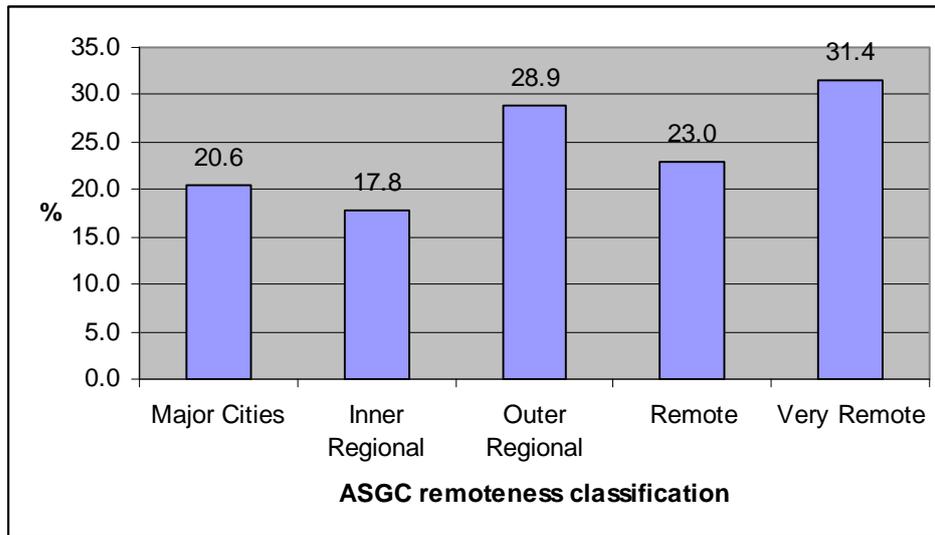
There are 1,126 South Australians per General Practitioner (GP); the number of people per GP is slightly higher in country SA (1,229 people per GP) than in metropolitan Adelaide (1,090 people per GP). The areas with the highest number of people per GP are the South East region (1,524 people per GP) and the Hills District of Southern Adelaide (1,474 people per GP). Population per GP was 1.5 times higher in very remote areas (categorised according to the Australian Standard Geographical Classification Remoteness classification) than in major cities (1,575 versus 1,082 people per GP) (Figure 5).

**Figure 5: Population per GP by remoteness**



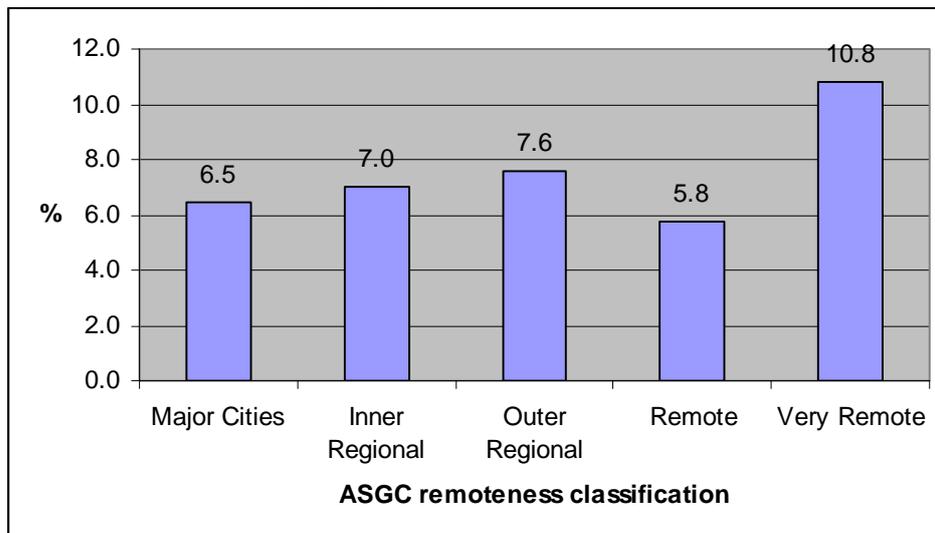
Women residing in very remote areas were 1.5 times more likely to smoke during pregnancy than women in major cities (31.4% versus 20.6% of pregnant women), and women in outer regional areas were 1.4 times more likely to smoke during pregnancy than those in major cities (28.9% versus 20.6% of pregnant women) (Figure 6).

**Figure 6: Smoking during pregnancy by remoteness**



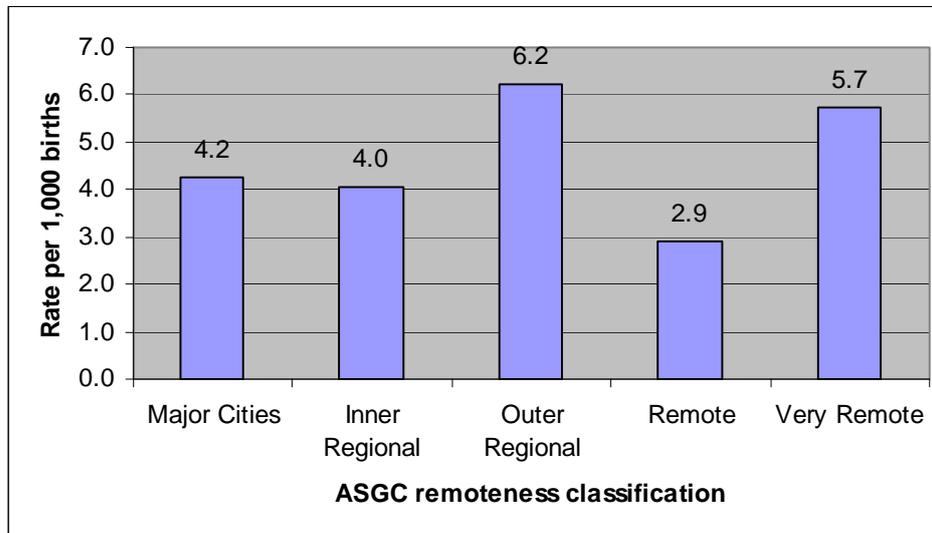
Babies born in very remote regions were 1.7 times more likely to be low birthweight than babies born in major cities (10.8% versus 6.5% of births) (Figure 7).

**Figure 7: Low birthweight by remoteness**



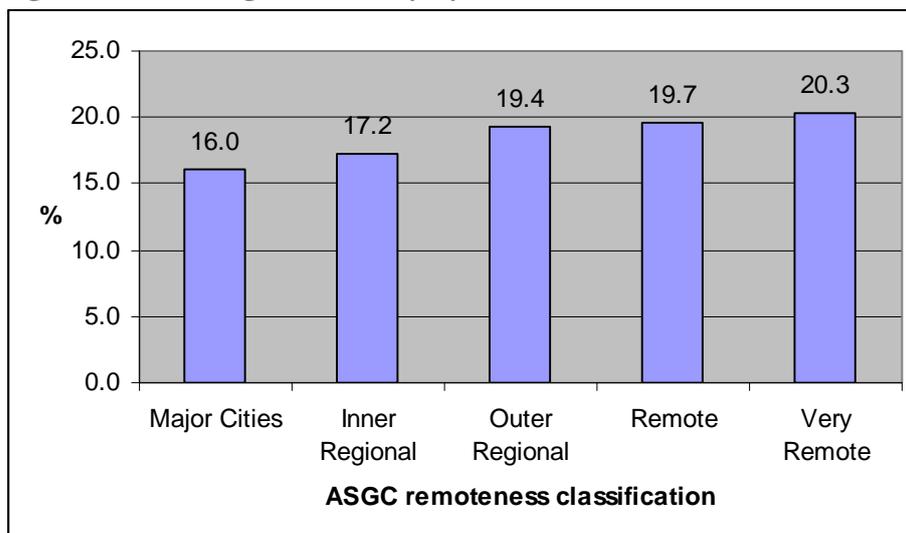
The infant mortality rate in very remote regions was 1.3 times higher than the rate in major cities (5.7 versus 4.2 per 1,000 births). The highest infant mortality rate was in outer regional areas (6.2 per 1,000 births); this rate was 1.5 times higher than that in major cities (Figure 8).

**Figure 8: Infant mortality by remoteness**



Four year old boys in very remote regions were 1.3 times more likely to be overweight or obese than those in major cities (20.3% versus 16.0% boys) (Figure 9).

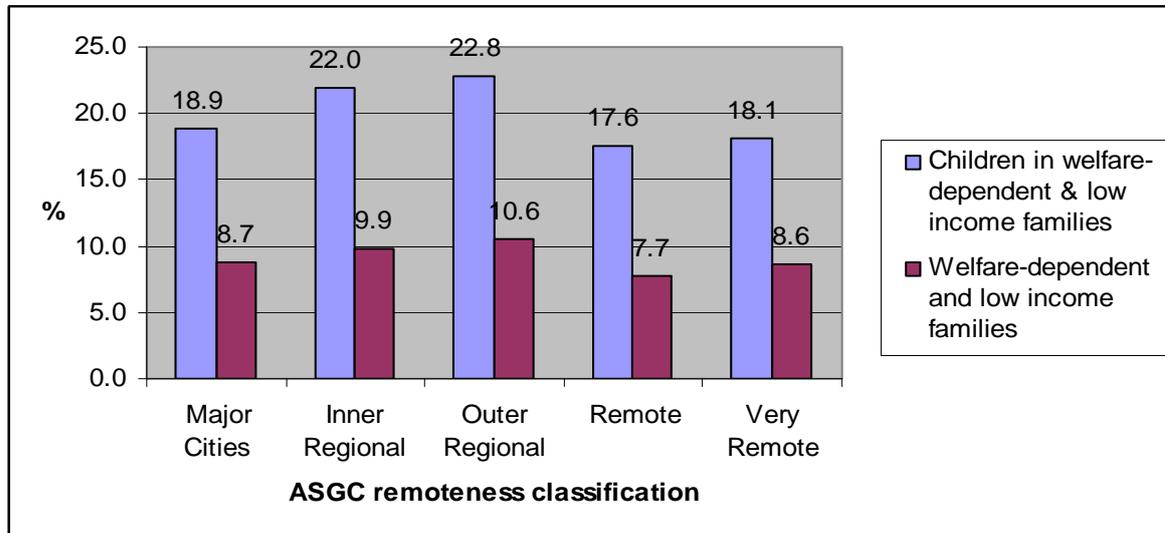
**Figure 9: Overweight or obesity by remoteness**



Children in very remote regions were as likely as their counterparts in major cities to live in welfare-dependent or other low income (less than \$23,000) families (18.1% versus 18.9% of dependent children, ratio 0.96). Children from low income families were most likely to live in outer (22.8%) or inner (22.0%) regional areas (Figure 10).

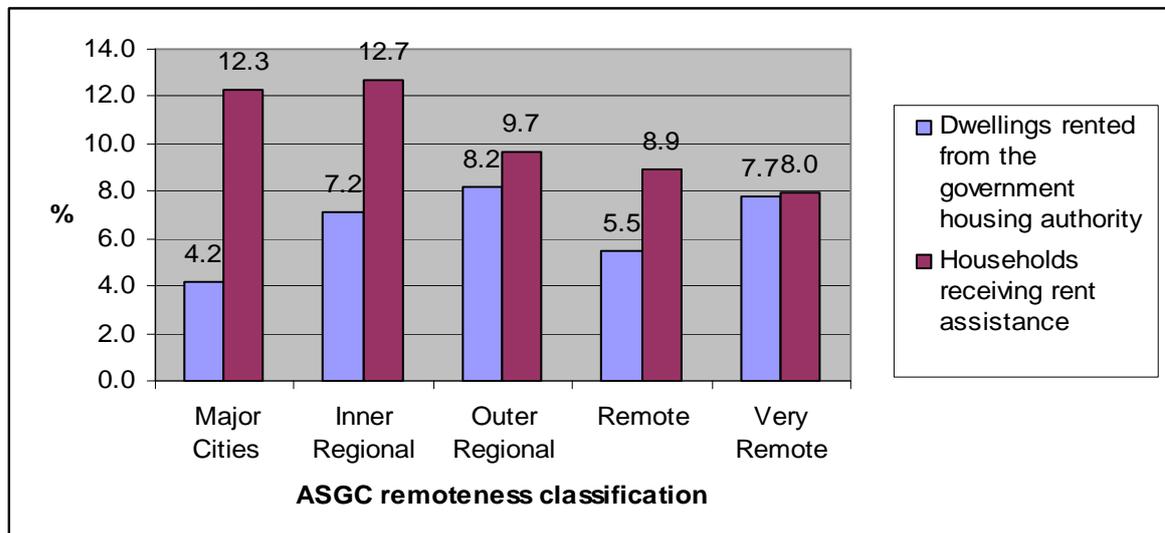
The proportion of welfare-dependent or other low income families was equivalent in very remote regions and major cities (8.6% versus 8.7% of families, ratio 0.99). The largest concentration of low income families was in outer (10.6%) and inner regional (9.9%) areas (Figure 10).

**Figure 10: Welfare dependence and low income by remoteness**



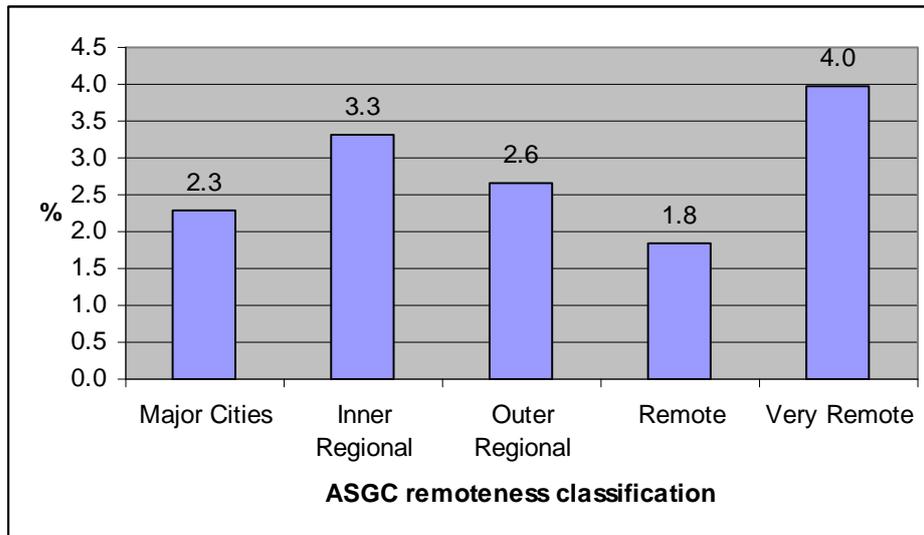
Dwellings in very remote regions were 1.8 times more likely to be rented from the government housing authority than those in major cities (7.7% versus 4.2% of dwellings), but very remote households were 0.7 times less likely to be receiving rent assistance (8.0% versus 12.3% of households) (Figure 11).

**Figure 11: Housing assistance by remoteness**



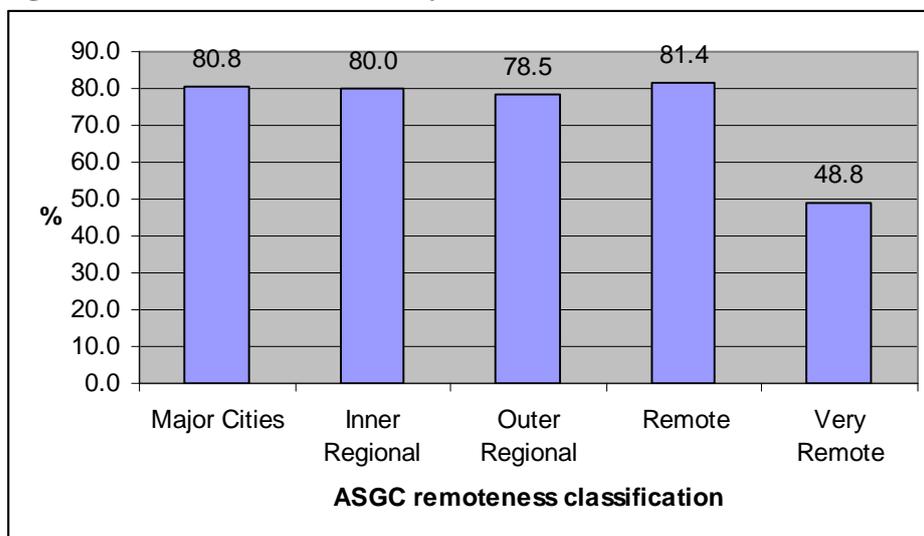
The level of unemployment in very remote regions was 1.7 times higher than in major cities (4.0% versus 2.3%) (Figure 12).

**Figure 12: Unemployment by remoteness**



Children aged 16 years from very remote regions were 0.6 times as likely to be full time school students as those from major cities (48.8% versus 80.8% of children aged 16 years) (Figure 13).

**Figure 13: Full time education by remoteness**



# **South Australia school and community-based ABHI strategies: An equity-focused review of the literature**

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## **Acknowledgements:**

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# 1. Background and Methods

## 1.1 Context

This literature review has been prepared as part of an equity-focused Health Impact Assessment (EFHIA) being undertaken on the South Australian (SA) Australian Better Health Initiative (ABHI) program for school and community-based activities. Its purpose is to inform the EFHIA by identifying and documenting the available evidence on healthy eating, physical activity and weight-related equity issues relevant to the school and community-based ABHI strategies.

The school and community-based program aims to facilitate healthy lifestyles for all South Australian young people and their families through the development of supportive environments. The program plan takes a capacity-building approach and is intended to closely align with existing SA priorities and frameworks, including the *Eat Well Be Active Healthy Weight Strategy for South Australia 2006-2010*.<sup>1</sup> Reducing inequalities and preventing the exacerbation of pre-existing inequalities is an explicit focus of *Eat Well Be Active*, which identifies equity-focused impact assessments as a key strategy in program planning.

The school and community-based ABHI program consists of four overarching initiatives (see Attachment 1 for more detail):

- Regional Healthy Weight Coordinators
- Healthy Ways Program
- CYWHS parent focused program
- Professional development for the workforce

The following key questions have been identified to guide the EFHIA process and have been used to guide this review:

1. What are the strategies trying to achieve?
  - a. Health outcomes
  - b. Equity outcomes
  - c. Capacity outcomes
2. Is there evidence that the strategies will achieve their outcomes?
3. Who is likely to benefit from the strategies?
4. Are there likely to be unintended consequences that may exacerbate or not address inequity?
5. How could the strategies be implemented in ways that strengthen their positive outcomes and reduce unintended consequences?

## 1.2 Search methods

A targeted approach was taken to reviewing the literature, in order to identify evidence directly and indirectly relevant to the four ABHI strategies. As this literature review was not intended to be exhaustive, the best and most relevant evidence to the SA ABHI initiatives was selectively identified.

A series of evidence reports recently prepared by the University of Sydney's Prevention Research Centres<sup>1</sup> were used as the primary source of information for this review. As a whole, these reports present a comprehensive synthesis of the recent evidence on the effectiveness of interventions to prevent weight gain and promote healthy weight in children and adolescents. The methods used in preparing the reports are described in detail in Appendix 2. For the purpose of this review, the evidence reports were searched thoroughly to identify direct and indirect evidence relating to the four ABHI strategies and within the scope of the review.

Targeted searches of the literature on equity-related rates of overweight and obesity among children and young people, and on capacity-building and workforce development were also conducted using select electronic databases (Medline, Pubmed, CINAHL) and Google Scholar.

## 1.3 Scope

The following were considered within the scope of the review:

- Evidence on rates and time trends of overweight and obesity among children and young people in South Australia
- Evidence on equity-related rates of overweight and obesity by:
  - Age
  - Gender
  - Country of birth
  - Indigenous status
  - Rural and remote living situation
  - Socio-economic status (SES)
  - Refugee status
  - Family environment
- School and community-based interventions to promote healthy weight in children and young people which included at least one of the following:
  - A marker for child overweight or obesity (weight, BMI, waist circumference, body fat)
  - A marker for a risk factor or behavioural determinant of overweight or obesity (physical activity, nutrition/diet, sedentary behaviours)
- Interventions targeting children and young people under 18 years of age and their families
- Evidence on workforce development and the capacity-building approach

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<sup>1</sup> NSW Centre for Physical Activity and Health, NSW Centre for Overweight and Obesity and NSW Centre for Public Health Nutrition

## 2. Findings

### 2.1 Evidence on equity-related rates of child overweight and obesity

Reported prevalence rates of overweight in Australian children remained relatively low and stable throughout most of the last century, and began to increase around the early 1970's.<sup>2</sup> Since then, the prevalence of child overweight has been shown to be not only increasing, but accelerating,<sup>2</sup> with a sharp increase between 1985-1997 during which combined prevalence of overweight and obesity doubled (in children 7-15 years).<sup>3</sup> An estimated 25% of Australian children are now considered to be either overweight or obese.<sup>4</sup>

Within SA, child overweight and obesity rates have also risen significantly,<sup>3</sup> with the greatest acceleration shown to have occurred in the mid-to-late 90's.<sup>5</sup> According to an analysis of measured height and weight data from preschool health assessments collected annually in SA between 1995 and 2002, 12.8% of four year old girls and 10.2% of four year old boys were reported to be overweight or obese in 1995.<sup>5</sup> By 2002, the prevalence had risen to 21.4% of four year old girls and 17.3% of boys.<sup>5</sup> It is uncertain how the prevalence has changed since 2002.<sup>5</sup>

There is some evidence from SA, as well as relevant evidence from other states and nationally within Australia, to indicate differences in prevalence rates of overweight and obesity between specific equity-identified groups, although the data is relatively inconsistent. Based on the analysis of preschool health assessment data identified above, Vaska and Volkmer<sup>5</sup> determined that rates of overweight and obesity among four year olds were significantly higher in female than male children in all study years (1996-2002) except obesity rate in 1995 ( $P < 0.001$ ). In a 2004 report to the SA Government, Hetzel et al<sup>6</sup> also reported a higher prevalence of overweight in female than male children in the most disadvantaged urban areas of SA. No gender-related differences were reported among children living in rural areas. The report also indicated that higher rates of child overweight and obesity were observed in rural than urban areas, with the highest rates observed in the most disadvantaged areas.

On the other hand, an analysis of national data from the Australian National Iodine Nutrition Study (NINS) 2003-2004, indicated no significant gender differences in prevalence of overweight among Australian school children aged 8-10 years, and no significant evidence of an association between socio-economic status (SES) and overweight or obesity overall ( $P = 0.33$ ), or among boys ( $P = 0.56$ ) and girls ( $P = 0.26$ ) separately.<sup>7</sup> An earlier assessment of national data also found no consistent associations between prevalence of overweight or obesity and sex, age or SES.<sup>8</sup> While a higher prevalence of overweight and obesity was observed in boys living in urban areas than in rural areas, no significant urban and rural differences were observed in girls. Cultural differences were identified, with the highest prevalence rates of overweight and obesity observed among students from Middle Eastern and European backgrounds.<sup>8</sup>

With limited evidence available on direct markers of overweight and obesity among children, evidence on the risk factors, or behavioural determinants, of overweight and obesity (physical activity, diet and sedentary behaviours) in equity-identified populations is of interest. While there is little data available from SA, two large studies from New South Wales (NSW) provide comprehensive information on factors known to be associated with weight among preschool and school-aged children. In light of socio-cultural and demographical similarities, the findings are likely to be applicable to the SA context.

Data from the 2004 NSW Schools Physical Activity and Nutrition Survey (SPANS), a representative population survey of school children in NSW, indicated significant gender, cultural and SES differences in physical activity and nutrition behaviours.<sup>9</sup> Girls in the study sample were less active than boys, children living in urban areas were less active than children living in rural areas, girls from lower SES backgrounds were less active, and children from Asian or Middle Eastern backgrounds were less active. Prevalence of being active declined with increasing age. Slight but not consistent associations were identified between poorer eating patterns and SES, place of residence, gender and cultural background. As such, fruit consumption was found to be slightly higher among rural than urban children, and increased slightly with increasing SES. No consistent associations were observed between vegetable consumption and place of residence or SES. Both boys and girls were reported to be drinking high levels of soft drinks however intakes were higher among boys than girls (almost 60% were found to be drinking more than 250ml per day, compared to just over 40% of girls). Children from Asian backgrounds tended to have the lowest intakes of soft drinks and the highest intakes of vegetables, while boys from Middle Eastern backgrounds reported the highest intakes of soft drinks.

From an earlier cross-sectional survey of randomly-selected NSW high school students,<sup>10</sup> reported that a smaller proportion of girls than boys were found to be vigorously active, and significant differences between girls from different cultural background were observed. Girls from Middle-Eastern and Asian cultural backgrounds had the lowest levels of physical activity. No differences were reported by SES or place of residence.

Data from the Australian Schools Health and Fitness Survey's conducted in SA in 1985 and 2004 were recently compared by Dollman and Lewis<sup>11</sup> to describe trends in health attitudes and self-perceptions among SA school children. Based on the 2004 survey findings, the authors reported significantly greater perceived importance of a good diet ( $P<0.0001$ ) and exercise ( $P<0.01$ ) among girls than boys. Comparing the 1985 and 2004 surveys, perceived importance of having a good diet decreased significantly among boys between the two surveys ( $P<0.0001$ ). No significant time trend was observed for this health attitude among girls. Perceived importance of exercise did not differ significantly between 1985 and 2004 in either boys or girls. The only health attitude found to be correlated with SES was girls' perceived importance of having a good diet, which fell from 82% in 1985 to 65% in 2004 in the lowest SES strata, while increasing from 66% to 74% among girls in the highest SES strata.<sup>11</sup>

**Summary:** While the data reported in the literature is relatively inconsistent, there appears to be some evidence of equity-related prevalence rates of child overweight and obesity in SA, as well as equity-related differences in behavioural determinants of weight. It appears that there are higher rates of overweight and obesity in girls in SA, and girls are less likely than boys to be physical active. The evidence on dietary differences between boys and girls is inconsistent. There is relatively consistent evidence to indicate that rates of overweight and obesity are higher in children from lower SES and disadvantaged families. Evidence from national and NSW-based studies indicates that children from some cultural backgrounds, including children from Middle-Eastern and Asian backgrounds may be less likely to be physically active and have a less healthy diet than the general population. The evidence on urban and rural differences is inconclusive.

## **2.2 Evidence that the proposed strategies will achieve desired outcomes**

Three of the four school and community-based ABHI initiatives (the Healthy Weight Coordinators, professional development for the workforce, and the parent-focused program) can be described as ‘capacity-building approaches’, where capacity building seeks to enhance service-delivery infrastructure, sustainability and problem-solving capability.<sup>12</sup> The Healthy Ways program involves the direct implementation of a specific initiative with remote Aboriginal communities.

There is limited knowledge about the most effective systems for delivering health promotion interventions overall,<sup>13</sup> and capacity building approaches, such as the three strategies identified above, are rarely the subject of evaluation. Further, the ABHI school and community-based program reference document made available to this review provides little information on the specific actions through which the proposed initiatives will be delivered. Thus there is limited direct information to bring to bear in addressing questions on the effectiveness of the proposed strategies. Nonetheless, for the purpose of this review, the available literature was searched for evidence both directly and indirectly relating to the proposed school and community-based approaches. Thus, school and community-based programs conducted within Australia and internationally which have sought to promote healthy weight, healthy eating and/or physical activity in children, which have utilized approaches or strategies of relevance to one or more of the ABHI strategies have been identified and discussed.

Overall, there is a large volume of literature on specific interventions which have sought to address child overweight and obesity and/or various behavioural determinants of weight in children, however the evidence is relatively disappointing. The range of programs assessed has been limited and there are considerable gaps in terms of target groups, settings and behaviours addressed. In addition, most reported programs have been limited by poor quality program design and evaluation, including short implementation and follow-up periods. Whilst it is feasible to make general judgments of the quality of evidence around the efficacy of these programs and identify those with the greatest level of potential, there is no generic list of ‘best buys’ available for promotion of healthy weight in children and the evidence needs to be considered within the context of program planning processes. It is well accepted that no single intervention alone will be sufficient to prevent child obesity and that the focus should be on developing an appropriate portfolio of actions. It is also accepted that the selection of programs to include within this portfolio are extremely context dependent and will be subject to the influence of a variety of factors.

### **2.1.1 Health outcomes**

The existing volume of evidence from interventions to promote healthy weight and prevent obesity in children tends to cluster around specific behavioural intervention points. These ‘evidence clusters’ also reflect major behavioural priorities for promoting healthy weight, based on analyses of epidemiological knowledge and potential for change, and can be broadly separated into those that should be encouraged in order to achieve appropriate weight-for-age (for example, physical activity), and those that should be limited (for example, sedentary behaviours, energy-dense foods). Interventions to address these behaviours have the potential to act as building blocks when applied in combination with strategies addressing other behaviours as part of a comprehensive obesity prevention approach.<sup>14</sup>

The vast majority of evaluated and published programs focused on promoting healthy weight, healthy eating and physical activity in children have been conducted in school settings. Schools are often considered as an obvious and appropriate setting for influencing children and adolescents, as large numbers can be reached in a sustainable, flexible and cost effective manner. While the majority of school-based intervention programs reported in the literature have been conducted overseas, their underlying processes and principles are such that they would be applicable in Australia.

### ***Physical activity***

Strategies to promote physical activity in children and young people which have either shown some level of promise or are worthy of consideration include:

- Creating supportive school environments and policy,
- Encouraging active transport,
- Developing teacher's skills to deliver enhanced physical education in school,
- Developing children's skills to engage in self-directed physical activity,
- Involving the family and/or community,
- Brief counseling and advice

The available literature on these strategies is likely to be of direct relevance to the specific approaches taken within the Regional Healthy Weight Action Plans, and supported by Healthy Weight Coordinators, parent-focused and professional development initiatives. While there is very little information available on programs conducted with parents and children during the very early years of life, a number of the best practice principles identified in programs targeting preschool and school-age children may be applicable to the Healthy Ways program.

Creating school environments that facilitate physical activity has been shown to be effective for increasing activity levels of children. In particular, redesigning school playgrounds with coloured markings and zones, and providing equipment for children to play with during break times, show potential as strategies for promoting physical activity in primary school-aged children during school hours in the short-term.<sup>15, 16</sup> The long term effectiveness of these strategies still needs to be determined. These strategies have the potential to reach large groups of children, of varying ages, at a relatively low cost and, therefore, may constitute a wise allocation of funds. It is feasible that these could be implemented across a large number of schools for an extended period of time and in a manner that suits the requirements of individual schools. Furthermore, they may be applied in non-school settings, including community parks and leisure centres.

The current evidence base on the effectiveness of transportation policy and/or infrastructure changes to promote active transport is limited. One particular focus has been on active transport to and from school. While there is limited evidence on the effectiveness of specific active transport interventions,<sup>17, 18</sup> they are considered to have relatively low cost-effectiveness.<sup>19</sup> From the limited evidence available, it would seem essential that active transport policy measures are supported by sufficient resources (time, funding, and expertise) to ensure that they are fully implemented and evaluated.

There is some evidence to indicate that providing professional development and support for general classroom teachers can result in increases in the amount of activity delivered as part of the school day for children.<sup>20-22</sup> The evidence available on professional development of the workforce is described in the capacity outcomes section (3.1.3) below.

Interventions integrated into formal health and physical education curricula and which target children and their skills related to being physically active have shown mixed results. Those interventions that have shown the most promising results are those which taught children skills on how they may engage in physical activity on their own. This encompassed elements such as providing children with information about the benefits of being active, providing them with opportunities to try different types of activities, teaching children to set physical activity goals and coaching them in how to monitor their own physical activity.

Switch Off-Get Active, a 16-week teacher-led health education program was delivered to fourth class children attending nine schools in high socially disadvantaged areas of towns and rural areas in the south east region of Ireland.<sup>23</sup> Using a quasi-experimental design, the intervention was planned to complement the existing health education curriculum and aimed to reinforce the need to increase physical activity and limit small screen recreation (SSR). During the ten lessons delivered as part of this program, children reflected on their use of leisure time, identified alternatives to small screen activities, set their own leisure time goals, monitored their achievement of these goals and identified opportunities to be physically active in their local area. After the intervention period, there was a significant increase in the time spent engaging in moderate-to-vigorous physical activity in children in both the intervention and the control schools. Furthermore, the change from pre to post-intervention in children's time spent participating in moderate-to-vigorous activity was significantly greater in the intervention group than in the control. There were no differences in screen time between children in intervention and control schools post-intervention. This study provides an example of building partnerships between different stakeholders to develop and implement health education interventions in schools. Health promotion specialists, national education authorities and school teachers were involved in the program, which is likely to have played a role in its incorporation into the school curriculum.

Only one RCT has been conducted in recent years and results suggest that a comprehensive physical activity promotion program in schools may slow the decline in children's total moderate-to-vigorous physical activity participation.<sup>24</sup> Based on the existing US program, SPARK, this Belgium-based program aimed to increase children's level of physical activity in physical education classes and outside of school. The intervention was implemented with 764 children from 16 elementary schools in Belgium over two school years. Intervention schools implemented strategies that included a health-related physical education program, classroom-based health education lessons and an extra-curricula physical activity promotion program. The intervention had an effect on reducing the decline in children's total moderate-to-vigorous physical activity participation, and increased children's self-reported time spent in moderate intensity leisure time physical activity slightly. The program was delivered by specialist physical education teachers limiting its generalisability to other teachers and increasing its potential costs somewhat. However, there is potential for the curriculum to be altered to meet the needs of non-specialist teachers, giving the program greater flexibility and increasing its sustainability. Alternatively, a train-the-trainer element could be introduced so that physical education teachers teach other classroom teachers to deliver the program.

When targeting children with strategies to promote physical activity it makes good sense to involve the family and/or community. A number of studies identified were school-based interventions complemented with family and/or community components and several studies have produced encouraging results. In the Pathways program, Caballero et al<sup>25</sup> used a multi-component approach to promote physical activity and healthy eating in American Indian children and provides a good example of best practice when implementing programs in schools and with indigenous communities. Similarly, in Canada, Paradis et al<sup>26</sup> used a participatory approach and emphasised community ownership as part of their Kahnawake Schools Diabetes Prevention Project implemented among Kanien'kehá:ka (Mohawk) elementary school children. However, while the initial two year results showed some promise, changes were no longer evident at the eight-year follow up.

There is no available evidence on the effectiveness of brief advice to promote healthy weight; however, this is worthy of investigation. Brief counseling programs delivered through primary health care allow participants to be identified through an existing system however will only reach those children who visit their general practitioner; thus population reach may be limited.

### ***Healthy eating***

The evidence on strategies to promote healthy eating in children is highly clustered around specific behavioral intervention points for the promotion of healthy weight. The dietary behaviors addressed to a reasonable extent by the existing volume of intervention evidence are: consumption of fruit and vegetables, water, healthy breakfast, family meals, energy-dense foods and sugary drinks. From a settings perspective, the vast majority of programs to promote healthy eating in children have been conducted through schools. There is very little evidence available on programs targeting the home and other community settings, yet home availability and accessibility are likely to be large determining factors on dietary intake in children.<sup>27</sup> There have also been very few programs reported which have targeted younger children or the pre-school setting.

Nonetheless, strategies to promote healthy eating in children and young people which have either shown some level of promise include:

- Whole-of-school programs incorporating school environment, organizational and policy changes, school-based education and involvement of parents and/or families
- Point-of-purchase prompts and preferential pricing strategies
- Peer-modeling, school-based gardening and taste-testing activities in combination with education

The available literature on these strategies is likely to be of direct relevance to the specific approaches taken within the Regional Healthy Weight Action Plans, and supported by Healthy Weight Coordinators, parent-focused and professional development initiatives. While there is very little information available on programs conducted with parents and children during the very early years of life, a number of the best practice principles identified in programs targeting preschool and school-age children may be applicable to the Healthy Ways program.

### *Evidence from school-based programs*

Some of the most promising evidence available has come from whole-of-school programs which have employed a mix of strategies that complement and reinforce each other (i.e. a combination of organizational and policy change, environmental modifications, and nutrition education and promotion, along with strategies to reach and involve parents and/or families).

Fresh Kids<sup>28</sup>, a program currently being conducted in inner-west Melbourne, aims to influence dietary consumption of fruit, water and sweet drinks among primary school students. The program has been implemented in thirty-five primary schools to-date however a recent outcome evaluation has been presented for only four of these schools, which are located in culturally diverse and socio-economically disadvantaged urban areas. Participating 'Fresh Kids' schools implement changes in three main domains: School-home-community interaction and partnerships; School organisation, ethos and environment; and School curriculum, teaching and learning. Throughout the first two years of the program, significant increases were observed in the proportion of children bringing filled water bottles and fresh fruit to school, and significant decreases were observed in the proportion of children bringing sweet drinks to school or ordering them from canteen.

'TOOTY FRUITY VEGIE' (TFV)<sup>29</sup> is a two-year health promotion program aimed at increasing fruit and vegetable consumption among primary school children in the North Coast of NSW. The project uses a whole-of-school approach in implementing a range of evidence-based school and community strategies including classroom activities, children's cooking and gardening programs, promotions and resources aimed at parents and carers, school canteens, school environments and gardens, and special TFV weeks involving the Sydney Marketing Authority. The project has been shown to improve children's fruit and vegetable-related knowledge, attitudes and preparation skills as well as their access to fruits and vegetables at home and school.<sup>29, 30</sup> The results of the outcome evaluation have not been published in a peer-reviewed journal however results on the project website ([www.ncahs.nsw.gov.au/tooty-fruity](http://www.ncahs.nsw.gov.au/tooty-fruity)) indicate that the program has been successful in increasing fruit and vegetable consumption. The program is well-accepted by teachers, students and parents, and the supporting website contains many ideas and hints for enhancing program implementation. The fun, practical and hands-on nature of many of the TFV strategies, and the parental involvement, seem to have been key factors in the project's success. Fruit and vegetable tastings, cooking lessons, gardening and videos were consistently considered to be the most successful activities and it is suggested that future implementations ensure that these activities are core components.

Two large, multi-component interventions conducted in the US, the Child and Adolescent Trial for Cardiovascular Health (CATCH)<sup>31, 32</sup> and PATHWAYS<sup>25</sup> programs, both employed complementary food-service, curriculum, physical education and family-participation strategies. Both programs primarily targeted children's dietary fat intake, although assessed changes in total dietary energy intake as well. The CATCH program successfully reduced children's lunchtime intake of total and saturated fat in intervention schools immediately post-intervention and at five years follow-up.<sup>32</sup> It also had some, limited, success at restricting increases in daily energy intake.<sup>31</sup> The PATHWAYS project was one of few studies directly aimed at reducing overweight and obesity rates, and targeting indigenous school children. It was more successful than the CATCH program at reducing energy intakes, in addition to positive outcomes in fat and saturated fat intakes, but did not affect BMI or physical activity levels.<sup>25, 33, 34</sup> It seems plausible that if the CATCH and PATHWAYS programs had focused their strategies on children's energy intake,

rather than on fat and saturated fat, they would have had more success at reducing children's energy intake and achieving changes in weight status.

Some evidence for the effectiveness of multi-component programs was also provided by the Healthy Start project,<sup>35</sup> another US-based intervention in which different combinations of food-service, curriculum and home-based strategies were implemented in participating Head Start pre-school centres. Once again, the intervention focused on changing dietary fat, rather than energy intake. The combination of food-service, curriculum and home-based strategies together had the greatest positive impact on children's nutrition knowledge, offering good evidence for the effectiveness of multi-component interventions.

Shi-Chang's Health Promoting Schools' project<sup>36</sup> in China offers model evidence for the benefits of taking a whole-of-school to health promotion. The 1.5 year project was conducted in a combination of primary and secondary schools, with a total target audience of 7500 students and their families, and 800 teachers and school staff. Project initiatives in the intervention schools included establishing school-based working groups, nutrition training for school staff, distribution of materials on nutrition, nutrition education of students, student competitions, school-wide health promotion efforts and outreach to families and communities. The control schools continued their routine health education activities. Nutrition knowledge, attitudes and behaviour improved among all target groups within the intervention schools, with the largest increases in nutrition knowledge occurring among parents and guardians. Improvements to school facilities and school health services, establishment of school policies and a positive school climate were observed in intervention schools.<sup>36</sup>

It is difficult to ascertain which have been the most effective components or individual activities of these multi-component interventions due to the myriad differences between the intervention designs, as well as the lack of evaluation, often, of the individual components. However, it can be determined based on the evidence available that although a single intervention component, such as nutrition education, or food preparation skills, alone is unlikely to be successful in achieving changes in behaviour; a whole-of-school program does not need to have a multitude of components to achieve some success.

It also appears that careful selection and prioritization of the specific behavioural intervention points to be targeted by a program is necessary. For example, whole-of-school programs which have not specifically focused on increasing fruit and vegetable consumption, such as the CATCH program,<sup>31</sup> which focused on reducing fat and sodium intake and increasing physical activity in primary schools, while including some strategies specific to fruit and vegetables, have generally had a limited effect on fruit and vegetable consumption. In contrast the two-year PLANET HEALTH program in the US targeted fruit and vegetable consumption, along with consumption of high fat foods, television viewing and physical activity, and was effective at increasing fruit and vegetable consumption, although only in girls.<sup>37</sup>

It is worth noting here that it is generally easier to effect a change in fruit intake than vegetable intake, with few programs reporting an increase in vegetable consumption, although most have had a broader focus on fruits than vegetables. There is in fact accumulating evidence that fruits and vegetables should not be promoted in the same way, within the same intervention.<sup>38, 39</sup>

In terms of individual components of a program, there is some evidence to indicate that school-based nutrition education can improve dietary knowledge and behaviour among students. It seems that nutrition education strategies are more likely to be effective when implemented in combination with other, reinforcing actions such as changes to food and beverage availability in the school environment, rather than as stand-alone strategies. Nutrition education strategies reported in the literature have included traffic-light nutrition tools, food pyramids, computer-based learning, individually tailored feedback, and peer modeling.

Computer-based learning is a relatively new approach to delivering nutrition education and the evidence base is limited, particularly in regards to the effect on nutritional intake. The available studies indicate computer based educational programs can be effective in increasing knowledge; however the results are mixed as to whether they are more effective than traditional modes of education.<sup>40-42</sup> From the available literature, it seems that computer-based nutrition education may be most effect as a tool to supplement and reinforce 'traditional' classroom teaching methods. This is a relatively resource-intensive strategy and may be outside of the capacity of some schools to deliver.

Peer modeling (for example, student leaders and fictional characters) is likely to be a useful component of any education program. Peer models or leaders have been used in a number of whole-of-school programs aimed at teenagers, including *TEENS*,<sup>43</sup> a whole-of-school program which indicated that the introduction of peer leaders to classroom curricula, along with changes to the school food environment increased the program's effectiveness. Comic books containing 'cool' characters (such as 'Freggie Man') were used in the '5-A-DAY POWER PLUS' program.<sup>44</sup> In this program, industry was also involved (Minnesota 5-a-Day Coalition partners) in the provision of free fruit and vegetable for home snack packs, classroom taste-testing, and school lunches, and classroom materials. After one year, fruit and vegetable intake at lunchtime, and daily fruit intake was higher in the intervention schools. This intervention was more effective than the 'cafeteria only' version of the program, '5-A-DAY CAFETERIA PLUS'.<sup>45</sup>

Another healthy eating strategy reported in the literature is the use of incentives or prizes together with peer modeling to promote fruit and vegetable consumption. One of the major programs to include both of these components was *FOOD DUDES*.<sup>46</sup> The use of extrinsic rewards is controversial however as there is concern that they can have a detrimental effect on food preferences in children. Nevertheless, rewards are seen as one way to ensure taste exposure that could otherwise not be achieved, leading to intrinsic rewards.<sup>47</sup> In *FOOD DUDES*, apparent improvements in consumption of fruit and vegetables were not sustained beyond the period of the rewards, indicating that rewards alone are unlikely to be effective for achieving long-term increases in fruit and vegetable consumption.<sup>46</sup>

The framing of messages used in nutrition education appears to be of critical importance in determining program success. For example, the need to work towards the goal of viewing fruit and vegetables as crucial and primary components of our diets rather than food items that must be eaten in order to make a '5-a-day' quota was highlighted in the editorial by Tseng;<sup>48</sup> and the potential for the '5-A-DAY' catchphrase to be a disincentive for use with children had also been raised by Thomas et al (2004).<sup>38</sup> The evidence indicates that messages that promote fruit and vegetables as 'tasty' rather than 'healthy', and learning about food in a 'non-nutrition sense' may be of greater benefit.

There is some suggestion in the published literature that gardening activities at school combined with nutrition education and taste-testing contribute to increased knowledge and consumption of fruit and vegetables. Taste-testing has been found to be difficult for teachers to implement, however;<sup>49, 50</sup> hence the funding of a trained resource person to visit schools could be considered. The use of rewards, such as stickers with younger children or competitions with older children, in response to taste-testing, may offer particular benefits.

School policy to restrict availability and consumption of unhealthy foods and improve availability of healthy foods appears to be a promising strategy, provided a whole-of-school and coordinated approach is taken. The evidence indicates that targeting all food outlets in schools is essential to prevent compensation (i.e. purchase of less healthy foods from other sources within the school environment) from occurring.<sup>51, 52</sup> In addition, school policy relating to food availability is likely to be undermined by ready availability of unhealthy foods in areas surrounding schools and in recreational and community settings. Nonetheless, increasing the availability of healthy foods and limiting the availability of competing unhealthy foods in school canteens and vending machines may be an effective complementary strategy when combined with other programs. While foods from school canteens and vending machines constitute only a small proportion of overall dietary intake, the suggested 'ripple' effect<sup>53</sup> might help to reduce the overall energy intake of children.

There is limited evidence to suggest that pricing and promotion strategies relating to food sold in vending machines may be effective in improving children's food consumption in-school;<sup>54, 55</sup> however, it does seem feasible that an optimal pricing and promotion strategy could be an effective complementary strategy to reduce children's overall energy intake, with minimal adverse impacts on machine revenue.

Point-of-purchase prompts are likely to encourage consumption of healthy foods. The use of a verbal prompt shows particular promise, although attractive displays, packaging and positioning of healthy foods, such as fruit and vegetables may also be effective and easier to implement. The use of verbal encouragement by food service staff, as involved in 5-A-DAY CAFETERIA PLUS<sup>45</sup> and the very short but effective intervention indicated by Schwartz et al<sup>56</sup> shows promise as an intervention for increasing consumption at lunchtime at least. Point-of-sale nutrition information on the fat and calorie content of foods sold in schools may result in improvements to the healthfulness of students' selections, although the evidence is limited.<sup>57</sup>

The provision of free fruit (and vegetables) or a paid subscription scheme in schools has been given considerable attention in recent years in some Scandinavian countries, the US and Europe. The evidence indicates that the provision of free fruit or paid subscription is likely to be an effective strategy for increasing intakes of fruit. It has been easier to affect an increase in fruit than vegetables through these schemes but this could be a result of the infrequent offering of vegetables; and many programs in the evidence base did not include vegetables. Most studies have been implemented through large-scale policy or programs, rather than local initiatives. A paid subscription scheme could be subsidised for disadvantaged schools or groups, such as the program conducted with primary school children in a remote Aboriginal community in New South Wales.<sup>58</sup> An analogous strategy is to encourage the differential pricing of fruit and vegetables and energy-dense, nutrient-poor foods in school food services to make fruit and vegetables more accessible.

High and increasing levels of consumption of energy-dense drinks are considered to be one of the factors contributing to recent increases in the prevalence of overweight and obesity amongst children and young people. There is also considerable focus on the potential to reduce consumption of these beverages as a way of preventing inappropriate weight gain. One approach to reducing the consumption of energy-dense drinks is to focus on increasing the consumption of water. Increasing the availability of water coolers in schools was shown to positively influence student's water consumption in the UK,<sup>59</sup> particularly when delivered in combination with promotion and education strategies; however the impact was small and there was no impact on soft drink sales. Therefore, while dietary intake was not measured, it is unlikely that this study would have reduced actual energy intake. A more intensive intervention conducted in Belgium addressed both water and sugary drink consumption utilising a number of complementary strategies, but had no impact on either sugary drink or water consumption.<sup>60</sup> These two studies therefore offer little evidence for the effectiveness of modifying school environments, and highlight the challenge of encouraging water as a drink as an alternative to, not in addition to, sugary drinks.

While school-based nutrition education addressing the benefits of replacing sugary drinks with water is likely to be a worthy strategy, the two recent studies to have assessed this approach, CHOPPS in the United Kingdom (UK)<sup>61</sup> and the APPLE project in New Zealand,<sup>62</sup> suffered from significant methodological limitations and were both of insufficient intensity to detect an effect. The effectiveness of this approach would likely be greatly enhanced by concurrently-run strategies to reduce availability of sugary drinks and improve access to palatable water within and around schools. Water filters were installed in intervention schools in the APPLE project; however the findings from this study were inconclusive.

When targeting children and young people, it makes good sense to involve the family and/or community. A number of school-based interventions incorporated family and/or community component. Several of these have produced encouraging results and indicate that family involvement is advantageous.

USA FIT WIC<sup>63</sup> and Memphis GEMS<sup>64</sup> both indicated the potential of parent education as a means of changing health-related behaviours of children across age groups. The FIT WIC program successfully increased the self-reported frequency of parents engaging in active play with their pre-school children, and offering water as a drink, although actual intakes were not measured.<sup>63</sup> The parent-targeted education group in the Memphis GEMS program significantly reduced sugar-sweetened beverages consumption and caloric intake from fat in adolescent African-American girls.<sup>64</sup>

#### *Evidence from early-childhood settings*

Very few programs have been conducted in early childhood settings and reported in the literature. There is some Australian evidence that childcare nutrition policies and practices can be influenced through training and support for cooks and directors.<sup>65</sup> There is also current local intervention research on combined physical activity and nutrition programs which show promising results (for example, Romp & Chomp in Victoria - <http://www.deakin.edu.au/hmnbs/who-obesity/ssop/ssop-projects-under5s.php>; and Tooty Fruity Vegie preschools in NSW North Coast - [www.ncahs.nsw.gov.au/tooty-fruity](http://www.ncahs.nsw.gov.au/tooty-fruity)).

In the US, Cason et al<sup>66</sup> implemented pre-school nutrition education among children enrolled in the Food Stamp and Nutrition Education Program (FSNEP). Significant improvements in fruit and vegetable identification, healthy snack identification, willingness to taste foods, and frequency of fruit, vegetable, bread, meat, and dairy consumption were observed. This intervention was short and no follow-up evaluation was conducted; therefore it cannot be determined whether the positive changes could be sustained.

The Healthy Start project, a three-year intervention modeled in-part on the CATCH program, modified the fat content of foods served in participating Head Start preschool centres, along with nutrition education curriculum in some of the intervention schools.<sup>35</sup> In addition to the food service fat content modifications, food service staff were trained for one full day on purchasing and preparation of heart healthy meals and snacks. Some parent involvement was facilitated through meetings with project staff. The food-service intervention was effective in reducing saturated fat consumption from school meals, as well as serum cholesterol levels, particularly in children at risk (i.e. with elevated cholesterol levels at baseline). While the combination of nutrition education with food service modification had no additional effect on serum cholesterol, increases in nutrition knowledge were greatest among children who were exposed to both the food-service and nutrition education interventions, illustrating the effectiveness of multi-component interventions.

On the limited available research evidence, breakfast programs do not appear to be a promising approach for reducing children's energy intake or influencing weight status.<sup>67-72</sup> While eating a healthy breakfast has clear health and nutritional benefits, programs that promote breakfasts do not themselves provide a promising component for comprehensive school or family-based obesity prevention initiatives. The evidence provides stronger support for other nutrition and physical activity strategies as part of comprehensive obesity prevention programs.

Eating meals with family members has been identified as a factor contributing to higher quality dietary intake in children. While the evidence for promoting family meals is very limited at this stage, this area has the potential for high gains and minimal negative effects. The identified intervention studies for developing healthy family meal patterns have focused on the early life period which is clearly important for establishing lifelong habits. Overall, however, the quality of these studies is poor and the samples are not representative of the general population. Story and Neumark-Sztainer<sup>73</sup> present strategies for promoting family meals both within the family and through a range of other channels such as the media, schools, worksites, sports and other organisations. They highlight the need to promote family meals without making life more difficult for parents, particularly mothers. Specifically, education needs to target time constraints and strategies for preparing healthful, easy, tasty, and convenient family meals. They also discuss the existence in some countries (such as Japan) of dietary guidelines relating to the enjoyment and value of family mealtimes, and propose that such a strategy could be easily implemented in Australia.

There is little evidence on interventions with parents of very young children, although a number of studies are currently underway (For example Healthy Beginnings, a community-based home visiting intervention being conducted in Sydney, NSW) and targeting this group has considerable potential. One prospective, long-term RCT delivered in Finland (the Special Turku Coronary Risk Factor Intervention Project (STRIP) for Children) involved 1062 children aged 7 months at baseline and their parents.<sup>74</sup> The intervention group receive individualised dietary and lifestyle

counseling every 1 to 3 months until 2 years of age, and thereafter twice per year until 10 years of age. Control parents received basic well-baby health information at a reduced rate; biannually until 7 years then annually thereafter. At 10 years, overweight prevalence was significantly lower in intervention group girls (10%) compared with controls (19.0%),  $P=0.043$ . There was no difference in weight status between groups for boys. This study offers only weak evidence for the effectiveness of individualised dietary and lifestyle whole-of-family counseling over many years. Considering the length and resource-intensity of this program (10 years), the outcomes were relatively unimpressive.

There is strong and convincing evidence to support the effectiveness of active initiatives by health workers to promote initiation and duration of breastfeeding;<sup>75</sup> however, other than in relation to breastfeeding, there is no available evidence on the effectiveness of antenatal education on infants' nutrition and activity.

### **2.1.2 Equity outcomes**

There is very limited information available in the literature on equity-related differential effects of intervention programs, however some common patterns have been observed.

#### ***Age***

The vast majority of the evidence available has come from programs conducted in the school setting, and therefore focusing on school-aged children. Very little evidence is available from programs targeting younger children and conducted in the early childhood setting, and most of the programs that have been conducted have focused on nutrition and healthy eating.

#### ***Gender***

In co-educational schools, strategies to modify the school environment appear to have greater effect on activity levels in boys than in girls. The Middle-School Physical Activity and Nutrition (M-SPAN) study,<sup>76</sup> a two year RCT conducted in twenty-four schools in the US, aimed to provide students with increased opportunities to be active, through changing school policies and environments. Strategies to encourage increased activity included using community providers, providing teachers with professional development, altering the design and context of physical education classes, and promoting physical education across the school. These activities were supported by actions to modify school environments which included purchase of new equipment, provision of extra activities and making equipment available to students during break times. Each year, schools identified policies for improvement and prepared action plans to achieve the desired improvements. At the end of the two-years, boys in the intervention schools had significantly increased participation in physical activity while at school, but in girls the effects were small and non-significant. This result occurred despite the quality of the intervention.

Haerens et al<sup>77</sup> studied the effects of a two-year program to increase physical activity and promote healthy eating among seventh and eighth grade students across fifteen schools in Belgium, and found that effectiveness differed between boys and girls. As part of this cluster RCT, intervention schools modified aspects of the physical environment to create opportunities for students to be more active within the course of their school day. The effectiveness of this

intervention varied across boys and girls. After the first year of implementation there were small and non-significant increases in the proportion of students in both the intervention groups who achieved the recommended sixty minutes of activity daily. At the end of the two-year implementation, daily school-related physical activity had increased significantly more among boys in the intervention group than boys in the control group. Increases in school-related physical activity in girls in the intervention groups were non-significant. This intervention had no impact on leisure-time physical activity in boys or girls.

At the same time, initial results from the ICAPS study<sup>78</sup> have demonstrated increased physical activity participation in both boys and girls. The longer-term effects of this study will be of interest as this may well prove to be promising for boys and girls.

#### *Physical activity programs targeting girls*

Overall, altering environments and school policies to encourage increased physical activity in girls appears to be most effective when the strategies specifically cater to their needs, and address their barriers to participation in activity. Within Australia, Cass and Price<sup>79</sup> applied the Health Promoting Schools framework to create a school environment which would facilitate and encourage increased participation in physical activity. A needs assessment was conducted to inform the program strategies, and in the process, strategies to increase girls' participation in physical activity were identified. These strategies focused on curriculum, the physical, social and organisational environments of the school, as well as partnerships with parents and outside agencies. This approach was somewhat effective in increasing activity of girls during school hours, particularly in those classified as inactive at baseline. Unfortunately the intervention was implemented in only one school and so it unclear whether this approach would be successful in a wide cross-section of schools.

Fairclough and Stratton<sup>80</sup> conducted a study in the UK aimed at increasing the amount of cardio-respiratory health-enhancing physical activity delivered as part of a gymnastics unit being taught in an all-girls school. The intervention activities aimed to influence the manner in which teachers planned and organised their lessons so that increased physical activity levels became an integrated lesson objective, without altering content. Teachers were asked to include a number of principles in the delivery of the gymnastics lessons including organisation of the space, pacing of the lesson, student-centered strategies and minimising the impact of teacher focused activities. The program was delivered through lessons taught as part of a unit on gymnastics, which is a good way of integrating a program into the curriculum. The intervention resulted in positive changes to the manner in which the intervention teacher planned and ran practical lessons and increased the moderate-to-vigorous activity of students while participating in these lessons. Changes such as those to lesson structure and management may well be sustainable in the longer-term.

Sedentary adolescent females in the tenth and eleventh grades from two high-schools in the United States were targeted by in a four month study, *Project FAB*.<sup>81</sup> Girls in schools randomly allocated to the intervention were enrolled in a single-sex physical education class, available only to study participants. This class met for sixty minutes each day, five days a week. Activities offered to the girls during this time reflected responses from focus groups. Once each week, girls took part in a discussion lesson focusing on the benefits of activity and strategies for becoming more active. *Project FAB* was found to have several effects on participants. Firstly, total energy

expenditure was greater in the intervention group than in the control. Additionally, the proportion of girls in the intervention group who reported participating in vigorous physical activity increased from 48% at baseline, to 84% at follow-up and while their participation in moderate physical activity decreased, the extent to which this occurred was less than in the control group. Girls exposed to the intervention also reported increased participation in leisure activities outside of school hours. Project FAB identified the needs and interests of girls and implemented innovative and potentially sustainable strategies to meet these needs and interests including creating a special physical education class for the four month intervention period.

New Moves, a school-based obesity prevention study, targeted inactive adolescent girls.<sup>82</sup> Instead of attending their regular physical activity class, girls in schools randomised to the intervention participated in a girls-only alternative physical education program for sixteen weeks and a maintenance component of lunch-time meetings for eight weeks. As part of the program, physical activity was offered to the girls four times each week and nutrition and social support lessons were offered once a week on alternate weeks. The physical activity component focused on promoting life-long participation in activity within a supportive and non-competitive environment that would increase enjoyment of activity and self-efficacy to be active. Average time spent in moderate-to-vigorous activity outside of physical education classes each week increased from three to six hours after twenty weeks, an increase that was maintained at the eight month follow-up. A greater proportion of the intervention group also moved along the stages of change than the control group which may augur well for their future physical activity participation. The strategies included as part of this program were flexible and catered to the needs of students which is good practice. Providing support and resources for teachers to deliver the program increases its sustainability and supports its integration into the existing curriculum. While the changes in physical activity were modest, the activity levels of a group of inactive girls increased and their stage of change status improved, which was encouraging.

The Lifestyle Education for Activity Program (LEAP),<sup>83</sup> which applied a whole-of-school approach to influence teaching practices and school environments in twenty-four schools in the United States, had a modest impact on girl's participation in physical activity, particularly vigorous physical activity. The program comprised six components: physical education; health education; school health services; staff health promotion; and family/community involvement. It incorporated girl-friendly, choice based instruction which aimed to increase enjoyment of activity, improve self-efficacy to be active and achieve participation in moderate activity for at least 50% of class time. Environmental strategies included staff role modeling positive activity behaviours, promotion of activity by the school nurse, and family and community-based activities.

Cardiovascular risk factors were the focus of an intervention targeting 442 teenage girls from diverse cultural backgrounds, attending three high-schools in the United States.<sup>84</sup> This two-year study, known as *Physical Activity and Teenage Health (PATH)*, was a personal wellness course that included components of physical activity, health education and behaviour modification. Girls in the intervention group attended five thirty minute lessons a week for twelve weeks. Each lesson began with an introductory lecture followed by about twenty to twenty-five minutes of vigorous physical activity. Girls in the intervention group increased their average number of weekly physical activity sessions (minimum of fifteen minutes) outside of school from 4.5 to 5.3 while girls in the control group increased their number of weekly sessions of activity outside school from 4.9 to 5.5. These differences were non-significant. This program was integrated into

the existing curriculum, delivered by physical education teachers and support materials were provided, all of which reflect good practice. The effects on activity outside of school were not significant and total activity time was not measured, therefore the overall effects of the program were not reported. The small sample size and manner in which activity was measured may have contributed to this lack of effect.

Strategies included in these interventions are potentially feasible and sustainable when integrated into school curriculum and teaching practices, and implemented in girls only schools. However, girls' only physical education classes may not be feasible or sustainable in all co-education schools.

### ***Culture and ethnicity***

An ethnicity difference was observed in a study involving the provision of free fruit and vegetables to primary school children of Dutch and non-Western descent in the Netherlands.<sup>85</sup> After one year of the program, vegetable intake (usual amount per day) was significantly higher in children of non-Western ethnicity and fruit intake was significantly higher in children of Dutch ethnicity. This intervention demonstrates a possible need to consider different intervention components for different ethnic groups, as well as for fruit and vegetables as separate targets for intervention.

A very small-scale study conducted in rural Australia involved the provision of free fruit and vegetables to a disadvantaged, mainly Aboriginal group of primary school children.<sup>58</sup> Although the findings of this study are limited substantially by the lack of measure of intakes of fruit and vegetables, the intervention led to a reduction in infection rates, particularly of otitis media ('glue ear'), and improved hearing, indicating that intakes of fruit and vegetables were likely to have substantially increased. The provision of free fruit and vegetables to disadvantaged groups could offer significant multiple advantages to the health system and increased equity.

### ***Disadvantaged and/or at-risk children***

Strategies to reach disadvantaged and/or at-risk children are likely to be best delivered with a focus on overall healthy development, as opposed to an emphasis on weight. A number of programs conducted in the US, and discussed in more detail earlier in this review, have focused on promoting healthy eating and/or physical activity in children at-risk or from disadvantaged families, including USA FIT WIC, Pathways, and Healthy Start.<sup>35, 63, 64</sup>

While no direct evidence was identified in this review, policy on combined universal and targeted home visiting programs is one particular strategy likely to be effective at focusing services delivery on disadvantaged and at-risk families.

## **2.1.3 Capacity outcomes**

### ***Professional development for the workforce***

One of the proposed ABHI strategies focuses on professional development for the health and education workforces. The published literature on the effectiveness of this approach in promoting healthy weight in children is very limited, as specific capacity-building strategies are rarely the

subject of evaluation in terms of their effectiveness. The evidence available has come from interventions conducted with front-line staff in the school and childcare settings. As such, here is some evidence to indicate that providing professional development and support for general classroom teachers can increase teachers' capacity to provide quality health and physical education experiences for their students. Interventions that have shown the most potential are those which have included continual support for teachers in the form of train-the-trainer or buddy systems over one year. While providing training to large numbers of teachers may be potentially expensive and resource intensive, programs which have used train-the-trainer approaches offer an alternative that has good potential for teacher empowerment and program sustainability.

The Move It Groove It model in particular is of interest to the ABHI strategies because it was developed and evaluated in Australia (NSW North Coast) with sound results.<sup>22</sup> This program aimed to increase students' fundamental movement skills (FMS) and participation in moderate-to-vigorous physical activity in physical education lessons through professional development of teachers. The program, targeting children in third and fourth class, was implemented in eighteen schools over one year and was evaluated using a quasi-experimental design. A range of strategies were implemented at intervention schools, including establishing a project team within each school; providing teachers with a buddy for support and information; developing a web-site with teacher resources; funding the purchase of equipment for the program; and conducting regular teacher workshops. At follow-up, boys and girls in the intervention schools had significantly improved their overall fundamental movement skills mastery in comparison to children in control schools. In addition, the intervention was associated with a non-significant 4.5% increase in moderate-to-vigorous physical activity and a significant 3.0% increase in vigorous physical activity in children during physical education lessons.

Action Schools! BC,<sup>21</sup> which used a train-the-trainer approach as part of the program, was the simplest of this intervention type which has achieved promising results. In an 11-month program, ten schools were allocated to one of three conditions: liaison school; champion school; or usual practice. Generalist teachers in liaison schools received professional development as well as support from a facilitator. One generalist teacher in each champion school received professional development and provided support and encouragement to their colleagues. At the end of 11 months, teachers in liaison schools delivered 160 minutes of activity each week while teachers in the champion schools delivered 147 minutes each week. This was significantly higher than the usual practice schools in which teachers delivered 105 minutes of activity each week. The teachers who participated in the study reported high levels of satisfaction with the program. Ninety-eight percent were very or extremely satisfied with the delivery of training, 75% indicated they would use the content of the training they received and 70% were confident in their ability to use the activities in their classroom. The outcomes of the program (increased physical education time) were well received by students.

The Energizers intervention involved small physical activity sessions embedded into the school day and were led in the classroom by general teachers who had received training on Energizers activities.<sup>20</sup> Successfully implementing a classroom-based physical activity program such as this is dependent on teacher compliance to ensure that children participate in prescribed Energizer activities each day. Given this was a short-term intervention it is unclear whether teacher compliance could be maintained in the longer term or whether there are any carry-on effects of the program into children's out-of-school physical activity. Furthermore, it is not clear whether teachers were provided with additional training or ongoing support. The short intervention

duration provides little indication of the long term impact of the Energizers program. Nonetheless, this novel strategy may integrate well with aspects of the Personal Development, Health and Physical Education Syllabus in Australian schools.

Professional development of teachers to enhance the delivery of nutrition education lessons has been conducted with mixed results in a number of school-based programs including Shi-Chang et al's Health Promoting Schools project and PLANET HEALTH.<sup>36, 37</sup> These programs have been discussed earlier in this review.

A small number of projects have investigated professional development of food service staff as a means of improving the availability of healthy foods and reducing the availability of unhealthy foods in schools

The Healthy Start project conducted in Head Start preschool centres in the US involved training of food service staff for one full day on purchasing and preparation of heart healthy meals and snacks.<sup>35</sup> Some parent involvement was facilitated through meetings with project staff. The food-service intervention was effective in reducing saturated fat consumption from school meals, as well as serum cholesterol levels, particularly in children at risk (i.e. with elevated cholesterol levels at baseline).

Training of food service staff was also one of a number of strategies involved in the highly successful HIGH 5 program.<sup>86</sup> Regular visits by trained nutritionists were also conducted to encourage implementation of the 'High 5' guidelines in food services. However, implementation of the guidelines was low and there was no change in the foods sold in the canteen pre- and post-intervention, hence, the success of this intervention could not be attributed to the food service component.

With the exception of breast-feeding promotion and support,<sup>75</sup> there is no evidence on the effectiveness of professional development of health workers in relation to healthy weight programs.

The use of coordinators in program delivery is a commonly used strategy which has been used effectively in Australia (for example delivery of women's health and HIV/AIDS prevention programs).

### ***Capacity-building approach***

Capacity building initiatives seek to enhance the capacity to act, and thus impact on the potential reach and sustainability of programs and their effects. Reach and sustainability are, in turn, important components in achieving population health outcomes, including healthy environments.<sup>12</sup> The overall rationale for a capacity building approach derives from professional understanding that adequate health promotion response requires the capacity to act, as well as a mandate to act (such as commitment to the ABHI) and a framework for action (such as the *Eat Well, Be Active* strategy).<sup>87</sup> The *Eat Well, Be Active* Strategy supports achieving target T2.6 of the SA Strategic Plan, to reduce the percentage of South Australians who are overweight or obese by 10% within 10 years. It is noted that there is no specific cross-reference between the program reference document for the proposed ABHI strategies, and the outcomes specified in the *Eat Well, Be Active* strategy.

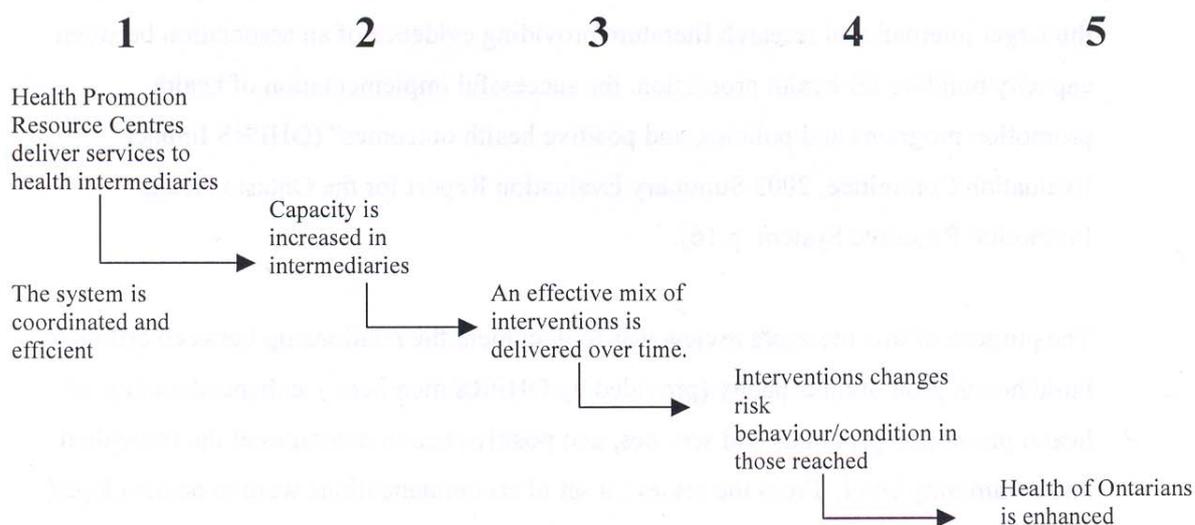
**Given the ABHI is seeking to support implementation of this strategy, explicit links would enable a more precise analysis and better monitoring of the links between capacity and subsequent program delivery and health and equity outcomes.**

In order to comment on the likely effectiveness of the proposed capacity-building strategies, it is important to clarify the anticipated effects and potential risks. Drawing upon more general understanding of capacity-building outcomes,<sup>88</sup> the immediate effects of these specific AHBI infrastructure and development initiatives might include increased capacity in the form of:

- Regional plans, which may specify new tasks, roles and programs for adoption and implementation across regional services
- Increased knowledge and skills amongst workforce groups
- Increased resources to support parent-focused initiatives

These changes in capacity would be expected to lead, in turn, to high quality and widespread implementation of specific initiatives, which should then lead to desired changes in environments, communities and/or individuals. The implied logic of these capacity building initiatives is depicted in Figure 1 [adapted from Sahay et al pg 13].<sup>89</sup> More specific analysis involves considering evidence in relation to each of the links connecting health promotion capacity and enhanced health outcomes, as depicted in Figure 1. This logical and sequential approach was adopted in a review of the literature on links between capacity building and health outcomes by Sahay (2004).<sup>89</sup>

**Figure 1: Links 1 to 5 from capacity building to health outcomes**



### ***Link 1: Evidence on how capacity can be enhanced***

The first link considers evidence about whether the specified activities can effectively increase capacity. Four publications, each based on case studies, provide some relevant evidence.<sup>87, 89-91</sup> In the light of Canadian case studies, Sahay considered that there was evidence for specific activities which increased health promotion capacity. A mix of partnership development and organizational development activities (including professional development, knowledge exchange, technical support, consultations and tracking) were found to be beneficial to building heart health capacity. In a case study of a large capacity building program with China, Tang et al describe and apply a capacity building model that addresses professionals and organisations, through workforce development and organizational policy changes respectively.<sup>90</sup> Similarly drawing on case studies, Heward et al conclude that organizational change processes are a necessary component of effective capacity building.<sup>87</sup> A review of the Territory Health Services health promotion capacity building model in 1998 also concluded that the model required organisational development processes, such as changes in other health workers' roles, plans and tasks, as well as workforce development.<sup>91</sup>

### ***Link 2: Evidence on how enhanced capacity can change delivery and sustainability***

Step 2 considers whether the increased capacity (skilled workforce, regional plans, supporting resources) leads to an effective mix of interventions being delivered (and sustained). Tang et al and Heward et al were not in a position to address this question in their case studies. Sahay, however, examined factors influencing implementation of heart health initiatives in Ontario 1994-1997 and found a strong and direct relationship between capacity and implementation.<sup>89</sup>

Evidence regarding how increased capacity can enhance sustainability is lacking. Indicators for assessing sustainability emphasise characteristics such as breadth of uptake, depth of absorption or embeddedness in an organization and the extent of problem solving capacity at organizational level.<sup>88</sup>

### ***Further links***

Analysis of further logical steps noted in Figure 1 is outside the scope of this review, and depends on the specific initiatives undertaken as part of regional plans.

### ***Risks***

There are a number of risks involved in a capacity building approach, including:

- Potential for dilution in the long pathway to outcomes;
- Risk of intermediary groups implementing different and weaker actions
- Diffuse responsibility amongst delivery groups
- The invisibility of initial steps and outcomes, which can compromise political and community support
- Difficulty of specifying and measuring appropriate milestones and evaluating the overall process.

### **3. Strengthening positive outcomes and reducing unintended consequences of the ABHI initiatives**

Overall, using school, family and community settings in combination to promote physical activity and nutrition in children is an approach that has reasonable supporting evidence. Almost all interventions to promote healthy eating and physical activity in children to-date have been school-based, while very few studies have been conducted in the home and other community settings. However, the scope and potential to adapt methods used in school settings and implement them in other settings, including home and communities, should not be overlooked. One example would be adaptation of school canteen strategies with canteens in sporting organizations. Possible compensatory effects between children's physical activity and diet in school and out of school also need to be addressed.

When working with schools, strategies reflecting promising evidence include: adopting a whole of school approach, integrating activities into the curriculum, providing professional development and ongoing support, and involving parents and families as an integral component.

The importance of age, gender and cultural differences in message and program design has been highlighted in the evidence. Firstly, it appears that specific physical activity strategies at the individual school level need to differ for boys and girls, and ideally are tailored to meet the needs of the target group. The dissimilar needs, interests and barriers to activity in boys compared to girls should be taken into account in program planning and implementation. This would be relatively straight forward in single-sex schools but may prove more problematic in co-educational schools. Consideration would need to be given to the needs of both boys and girls in co-educational schools to ensure that neither sex is adversely affected by changes that will increase activity in the other.

There is also evidence to indicate a need to consider tailoring of intervention components and the framing of message to children's developmental stage, and for children from different cultural backgrounds and ethnic groups, in order to be effective on a population level.

Directly relating to the capacity-building approach taken by the SA ABHI strategies, recognition of the significance of organisational change suggests that the regional Healthy Weight Action Plans will need to embrace an organizational change and service development approach in order to establish commitment, and other infrastructure changes such as new positions, roles, tasks and practices. They may also need to identify appropriate policy support, additional resources and protocols to support the next stage. The available intervention literature suggests that capacity-building at the frontline, including professional development of teachers and food service staff, is critical. Note that the likelihood of effectively ensuring more implementation through increased capacity would be greater when the capacity building initiatives were mutually reinforcing. That is, this would be increased where the workforce development initiatives addressed topics and provided guidance on key programs specified in regional plans, and the parent-focused initiatives produced complementary outputs.

From the evidence available, the following key principles should be applied to the ABHI initiatives:

- Implement programs over the school, family and community settings using consistent and reinforcing messages.
- Tailor delivery of programs designed to influence specific behaviours by age, gender and cultural background.
- To enhance program implementation, there is a need to link capacity-building strategies to desired health outcomes and specific programs
- Incorporate organizational development and service delivery components to allow for new roles, tasks, practices, and to implement specific initiatives and achieve specific objectives.

## **4. Attachments**

### **4.1 Attachment 1: The South Australia ABHI School and Community-based Initiatives**

#### **Regional Healthy Weight Coordinators**

Regional Health Services will be funded for regional Healthy Weight Coordinator positions. Regional coordinators will be expected to participate in statewide program planning, development, implementation, monitoring and evaluation activities.

#### **Healthy Ways Program**

Country Health SA will be funded to continue the Healthy Ways project in two country areas, Northern and Far Western and Eyre. This will include 1.5 FTE PSO 2 dietitians and 1.5 FTE Aboriginal Health Worker positions to work with remote communities. The placement of these positions will be negotiated with Country Health SA and the specific areas. Healthy Ways will focus on child and maternal health, healthy pregnancy and the early years of life to promote healthy lifestyles, healthy eating and physical activity.

#### **CYWHS parent focused program**

CYWHS will be funded to develop, implement and evaluate a plan to build the capacity of CYWHS to provide further support for parents and families around healthy weight, healthy eating and physical activity. This initiative will complement the work in the other initiatives in this priority area, specifically the professional development for the workforce and the work of the Regional Healthy Weight Coordinators. Strategies for consideration in this initiative include workforce professional development, complementing the Healthy Weight Short Course, and parent information and support materials for use across the sector.

#### **Professional development for the workforce**

To support this priority area workforce training and professional development will be provided, in the first instance, to the health and education workforce and the Aboriginal Health workforce.

## 4.2 Attachment 2: PRC Evidence Update Report Series: Search Strategy

Broad and inclusive systematic search for interventions, programs, and evidence reviews which included at least one of the following as an outcome measure:

- A marker for child overweight or obesity (weight, BMI, waist circumference, body fat etc)
- A marker for a risk factor/ behavioural determinant of overweight/obesity (physical activity, nutrition/diet, sedentary behaviours)

### Search terms:

(Intervention OR program) AND (child OR children OR adolescent) AND (nutrition OR diet OR (Intervention OR program) AND (child OR children OR adolescent) AND (physical activity OR (Intervention OR program) AND (child OR children OR adolescent) AND (sedentary OR inactivity OR television viewing OR small screen recreation)

### Databases and sources searched:

- All at OVID: including CINAHL, EMBASE, PUBMED, and MEDLINE
- EBM reviews databases (Cochrane, Trials Register, DARE, ACP)
- Google
- Also included Australian studies reported in the grey literature

### Inclusion criteria:

- Articles printed in English
- Articles published between January 2003 - April 2007
- Interventions targeting children aged 0-18years

### Exclusion criteria:

- Articles printed in a language other than English
- Articles on interventions or programs conducted prior to 1997
- Interventions targeting adults or young people aged 18 years or older

Clusters in the evidence base were observed around specific topics. Interventions meeting the inclusion criteria were grouped into a series of modules to reflect these clusters:

1. Promoting consumption of water and reduce consumption of energy-dense beverages (sugary drinks)
2. Promoting fruit and vegetable consumption
3. Promoting eating breakfast
4. Promoting family meals
5. Reducing consumption of fat
6. Promoting physical activity in children five to twelve years of age
7. Promoting physical activity in adolescents
8. Reducing small screen recreation and sedentary behaviour

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# **Strategies which aim to positively influence healthy weight in children aged one to five years.**

**A systematic review of the literature  
July 2006**

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*Commissioned by:*

The Centre for Health Promotion Adelaide to inform the  
*Healthy Weight Messages for Parents of Children Under 5  
Project.*

## EXECUTIVE SUMMARY

This report was commissioned by the South Australian Centre for Health Promotion to assist in the identification of effective means by which it may support parents to positively influence healthy weight in their one to five year old children. The task was to identify and summarise published literature in the area to inform evidence-based recommendations regarding effective strategies which may be employed within the *Healthy Weight Messages for Parents of Children Under 5 Project*.

This task has been addressed by:

1. Identifying reviews of childhood obesity prevention and/or interventions that target parents to effect change in childhood health outcomes (e.g. treatment of overweight, promotion of fruit and vegetable consumption).
2. Hand searching of these relevant reviews to identify key researchers and programs of work in this area.
3. Contacting key informants.
4. Systematic searching of databases including Medline, PsychINFO, Academic Search Premier, Communication and CINAHL.

The review focused on peer reviewed literature (not grey literature) that has been published since 1995 which has incorporated communication-based methods, messages and interventions to promote healthy weight in children. This review excluded literature focussed on obesity treatment, breast feeding or healthy body image.

While just nine studies were found to be of primary relevance to this review, growing acknowledgement of the importance of the early years as a time for the development of both overweight and its precursor behaviours is evidenced by the fact that most of the studies identified have been published since 2003.

This review reveals that most of the published studies come from the US, and that most of these targeted socioeconomically at-risk families through well-established

health service infrastructures. This focus on those families whose children are most at risk of progression to overweight was heartening, as was the finding that most studies were able to show some level of effectiveness on some obesity promoting behaviours in young children.

While the designs of studies varied substantially, some common themes emerged which may be useful in considerations of the most effective strategies by which to support parents to achieve healthy weight outcomes in their young children. For example:

- those who are most at risk of rearing children who will become overweight or obese were shown to be receptive and, in turn, could be supported to make dietary, physical activity or sedentary behaviours changes likely to influence the propensity for fatness.
- workers engaged with these socioeconomically disadvantaged groups of parents showed, in a number of studies, their willingness to run programs focusing on behaviours that will promote healthy weight, and to adopt and model some of these messages themselves.
- most interventions can be classified as high intensity interventions and most reported small but potentially meaningful behaviour changes, however, we found no evidence to support the premise that low level interventions would result in similar changes.
- most studies were underpinned by social behavioural theory and were thus designed to impact not only on knowledge, but on parental skills and competencies.
- It is noteworthy that we found only one study reporting the use of social-marketing to effect diet, physical activity and/or sedentary behaviours in children and this study involved older children (outside the age range of this review).

There are many limitations which must be acknowledged in this process. Published literature is likely to favour positive findings and thus many studies which find no effect are never published. Further, it is likely that most work in these areas is not conducted as publishable research and thus many lessons learnt at the coal-face are not readily accessed via the academic approach. An important example of this is likely to be the work undertaken to promote healthy lifestyles in our own Aboriginal and Torres Strait Islander communities. As noted in the methodology, no published studies were found that targeted healthy weight and early childhood in Aboriginal and Torres Strait Islander populations, however, given the allocation of two million dollars by the Commonwealth to the National Child Nutrition Program for grants specific to Aboriginal and Torres Strait Islander peoples, it seems likely that useful learnings may be gleaned from some of the funded projects. Further, it is possible that new research may be being published imminently.

## **Recommendations**

We recommend, given the recent emergence of literature in this area, the undertaking of regular screening of key journals and databases for newly published research to build upon the findings of this review.

We recommend, given the infancy of this area of research and the dearth of Australian studies, that serious consideration be given to the prospects of advocating for a co-ordinated body of research in this area. The examination of the capacity of existing infrastructures to support parents to promote healthy weight in their young children is a key area for research.

We recommend, given that many of the interventions reviewed targeted disadvantaged families and achieved desirable outcomes, that interventions with disadvantaged families in the Australian context be incorporated into any body of research in this area.

We recommend that any interventions undertaken in this area should incorporate and report a cost-benefit analysis.

We recommend that any interventions undertaken in this area should incorporate long term follow-up, beyond the end of the intervention period, to assess sustainability of any changes achieved.

We recommend, given the complexity of behaviour change, that multifaceted strategies supported by appropriate behavioural change theory underpin any attempts to support parents in their efforts to promote healthy weight in their young children.

# 1. INTRODUCTION

## 1.1 Overview

This systematic review of the literature of interventions which aim to support parents to positively influence healthy weight in their one to five year old children has been commissioned to inform the Centre for Health Promotion's (Adelaide) current work regarding obesity prevention in early childhood generally and the *Healthy Weight Messages for Parents of Children Under 5 Project* specifically.

## 1.2 Task Description/ Limits

The review has been commissioned to identify and summarise published literature in order to make evidence based recommendations about effective strategies which support parents to positively influence healthy weight for children aged one to five years.

The review focuses on peer reviewed literature (not grey literature) that has been published since 1995 which has incorporated communication-based methods, messages and interventions to promote healthy weight in children. As agreed by the Centre for Health Promotion and C-PAN, the review focuses on prevention and health promotion literature and excludes obesity treatment, breast feeding and healthy body image literature.

Evidence supports the premise that childhood obesity prevention will be achieved through strategies that might influence dietary, physical activity and/or sedentary behaviours of children. Given this, the review considers interventions that seek to effect change in body weight per se (e.g. incremental weight gain in childhood), interventions that seek to change diet and/or physical activity and/or sedentary behaviours and/or the precursors of these behaviours (e.g. maternal knowledge).

## **2. METHODOLOGY**

### **2.1 Attempts to identify literature concerned with social marketing and obesity prevention in children and obesity prevention in Aboriginal and Torres Strait Islander children.**

The areas of obesity prevention in Aboriginal and Torres Strait Islander children and the impact of social marketing on obesity prevention more generally had been identified in meetings with key staff at the Centre for Health Promotion as particular areas of interest. As such, in addition to the main search strategy detailed in the following section, we conducted specific search strategies in an attempt to identify research in these areas. For example, we conducted searches of Medline, PsychINFO, Academic Search Premier, Communication and Mass Media Complete and CINAHL on the terms “social marketing” and “obesity prevention” and/or “diet” and/or “physical activity” and/or “sedentary behaviours” and “families” or “parents”, and found no studies relevant to parents of children 0-5 years of age. One major study concerned with the impact of a physical activity marketing campaign, targeting older children and teenagers was identified and is discussed below. We also contacted Julie Saunders from the Health Promotion Evaluation Unit (WA) who has evaluated many social marketing strategies to promote, for example, increased fruit and vegetable consumption. She confirmed that evaluations have not assessed whether these social marketing campaigns have resulted in population behaviour changes or to changes to the prevalence of overweight. Focus has been on recognition of messages.

Further, we have conducted Medline searches on the terms “Australian Aboriginal” and “obesity prevention” and/or “diet” and/or “physical activity” and/or “sedentary behaviours” and “families” or “parents” and found no intervention studies seeking to effect obesity promoting behaviours in the target age range. We contacted key researchers in the areas of nutrition and aboriginal health Professor Michael Gracey (Professor of Aboriginal Health, Curtin University WA) and Dr Amanda Lee (Principal Public Health Nutritionist, Health Promotion Unit Queensland) who indicated that there were not aware of any published studies that could inform this review. However, broader web-based searches identified the Australian Government’s Department of Health and Aging National Child Nutrition Program, a community grants program aimed at boosting child nutrition throughout Australia. This program has recently provided funding of \$2 million over three years to programs specifically

targeting Aboriginal and Torres Strait Islander communities. On scanning funded projects just one project, the Maiku Kulintjaku (Food for Thought) program in Alice Springs, appears to focus on mothers and young children. Most programs indicate that they are school-based. It was not possible, within the limits of this review, to assess the effectiveness of funded projects as there did not appear to be any publications arising from these studies. The web-site containing information and contact details regarding these projects were forwarded to project staff at the Centre for Health Promotion in June. Further information regarding funded grants, including contact details is available at the following web address: <http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pubhlth-strateg-childnutrition-successful2.htm> .

While additional publications were not identified from these specific searches, the topics of social marketing and indigenous population groups have been highlighted, where appropriate, throughout the review.

## **2.2 Overview of search strategy employed**

The search strategy used for this review has involved the following steps.

1. Identification of reviews of childhood obesity prevention and/or interventions that target parents to effect change in childhood health outcomes (e.g. treatment of overweight, promotion of fruit and vegetable consumption). Nine reviews were identified and are listed in Appendix 1. Hard copies of these reviews are provided (listed alphabetically). While obesity treatment is not a focus of this work, reviews of this area were assessed for the potential leads on existing interventions that may target obesity promoting behaviours.
2. Hand searching of the retrieved reviews enabled the identification of key researchers and programs of work in this area. Key programs of work identified included: The Home Plate Pilot Study; NEAT (Nutrition Education Aimed at Toddlers); Healthy Habits and WIC (Special Supplement Nutrition Program for Women, Infants, and Children); PORSCHE Project (Prevention-Oriented System for Child Health Project); STRIP (Special Turku Coronary Risk Factor Intervention Project for Children) and; Hip Hop to Health Jnr. Literature database searches identified articles reporting on these key studies which were then retrieved for inclusion in this review.

3. Contacting key informants. These included Professors Mary Story, University of Minnesota, Professor Carolyn Summerbell, University of Teeside, Professor Tony Worsley, Deakin University. All researchers were contacted with a view to assessing any new/emerging literature that may not have been published. Two additional reviews of interventions relevant to weight were identified by this process.
  
4. Systematic searching of the Medline database using the search strategy outlined below. These searches generated approximately 580 potential articles, all of which were screened by KH. Twenty-three articles, not already identified, were considered to be potentially of interest and these articles were ordered to allow further assessment of their suitability of inclusion. The Medline search was limited to articles published between 1995 and 2006, English language, and to papers including children 0-5 years of age. This search was also undertaken in the following databases: PsychINFO, Academic Search Premier, Communication and CINAHL.

### **Search Strategy**

intervention studies OR communications media OR early intervention OR  
primary prevention OR health education  
*combined with each of the following*  
overweight  
child nutrition OR diet OR feeding behavior  
physical activity OR play OR exercise  
television OR sedentar\* OR inactivity

### **2.3 Overview of inclusion, exclusion and data extraction processes**

All papers identified as potentially relevant were screened by KC and KH. In all cases these authors have agreed on which papers should be included and excluded. Papers that have been sourced, read and then excluded are identified in Appendix 2.

All studies meeting initial inclusion criteria were reviewed by both KC and KH, while AS extracted data into a preliminary data extraction table. KC and KH then grouped these studies into three levels, determined by their relevance to this review. The first

level of relevance included studies within the target age group which reported outcomes of interest (anthropometry, diet, physical activity and/or sedentary behaviours). These studies were reviewed in detail by KC and KH and form the basis this review. In assessing these studies we have used the NHMRC levels of evidence for intervention studies (Level I, Level II, Level III-1, Level III-2, Level III-3, Level IV)<sup>1</sup>. Level I denotes the highest level of evidence. However, Level I can only be assigned to systematic reviews of Level II studies, therefore Level II is the highest level of evidence that can be assigned to an individual study. Further information regarding levels of evidence is presented in Appendix 3.

The second level of relevance included studies within the target age-group which reported either outcomes peripheral to this review (e.g. mothers' attitudes to infant feeding; perceptions of television advertising), or assessed only the feasibility of an intervention (i.e. no outcome data was reported). Information regarding these studies is presented in text and in tables in the Results section of this report. The third level of relevance included studies which described interventions of potential interest, however, did not meet all inclusion criteria (e.g. not in the target age-range; were school-based rather than family based). These studies are briefly described in the Results section.

After discussion with staff at the Centre for Health Promotion regarding the most suitable/useful approach for the presentation of studies we arrived at a matrix in which we could group the first and second level relevance studies based on delivery setting (i.e. family/home, group, primary care, pre-school/primary care, and mixed settings), and on intervention format (i.e. newsletter, video, internet learning, education, individual counselling, mixed). These matrices are presented in the Results section of this report.

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<sup>1</sup> NHMRC additional levels of evidence and grades for recommendations for developers of guidelines: pilot program 2005-2007, 2005.

### 3. RESULTS

#### 3.1 Studies of first level relevance

Nine studies were identified which met the criteria for first level relevance. As outlined in Table 1 these studies were conducted across each of the five delivery settings and most were multi-approach interventions. A comprehensive summary of each of the nine included studies is presented in text below under headings relating to the delivery setting as per the matrix, and in Table format in Appendix 4a – 4e.

Table 1: Matrix of Level 1 relevance studies indicating delivery setting, type of intervention and NHMRC rating level of evidence.

<b>Setting of delivery</b> → <b>Intervention</b> ↓	Family/home	Group	Primary Care	Pre-school/ child care	Mixed
Newsletter					
Video					
Internet learning					
Education	Harvey-Berino & Rourke, 2003 [Level II]**  Worobey, Pisuk & Decker, 2004 [Level IV]*				
Individual counselling			Langstrom et al 1997 [Level II]		
Mixed	Wardle, 2003 [Level II]	McGarvey et al, 2004 [Level III-2] *	Johnson et al, 2005 [Level IV] *	Dennison et al, 2004 [Level III-1]  Fitzgibbon et al, 2005 [Level II] *	Horodyski & Stommel, 2005 [Level III-2] *

\*high risk group (low SES); \*\* high risk group (indigenous at risk of overweight)

Note: Level II denotes the highest level of evidence for individual studies on the NHMRC scale

## **Summary of key studies**

Note that hard copies of these papers have been included (indexed alphabetically).

### Family/home setting

#### **Harvey-Berino & Rourke 2003 (USA & Canada) [Level II evidence]**

*Study aims and approach:* This study aimed to prevent obesity in children classified as high-risk due to having an overweight mother by improving parenting skills in the areas of diet and physical activity. The randomised controlled trial (RCT) compared generic parenting support (control group) with parenting support focusing on improving children's eating and physical activity behaviours (intervention group). The intervention was directed at overweight Native-American mothers (BMI > 25 kg/m<sup>2</sup>) of children aged nine months to three years who were walking.

*Intervention:* Mothers in both groups received weekly home visits for 16 weeks (16 hours of intervention) from an indigenous peer educator who delivered a parenting program emphasizing "the child's psychological and behavioural goals, logical and natural consequences, mutual respect, and encouragement techniques". For intervention group mothers the focus of the lessons was on how the parenting skills could be used to develop healthy eating and exercise behaviours in their children. The topics of eating and exercise were not discussed with control group mothers.

*Results:* Forty-three families undertook the program but two families were lost to follow-up and a further family had incomplete data resulting in analysis of data from 20 control families and 20 intervention families. Children in the intervention group had decreased weight-for-height z-scores between baseline and 16-week follow-up while there was an increase for children in the control group (-0.27 versus 0.31, p=0.06). Total energy intake decreased for children in the intervention group but was relatively stable for children in the control group (-39.2 versus 6.8 kcal/kg per day, p=0.06). There was no difference between intervention and control children for fat intake or physical activity and no differences between mothers in the two groups for BMI, diet or activity behaviours. Mothers' reports of restrictive child feeding practices on the Child Feeding Questionnaire indicated that those in the intervention group reduced their use of restrictive child feeding practices over the 16 weeks (-0.22 versus 0.08, p<0.05). There were no differences between the groups on the other subscales of the Child Feeding Questionnaire.

*Comments:* This study shows that a home visiting parenting skills intervention is feasible, with all but two mothers completing the entire 16 week program, and promising outcomes were achieved. Given the short time between assessments (16 weeks) and the small sample size, the detected differences between the intervention and control groups may in fact underestimate the effect of the intervention. This study utilised good outcome measures (measured height and weight, 3-day food records and accelerometry) and a single peer educator. However, as it was designed as a feasibility pilot study, the sample size was small and there was no follow-up beyond the end of the intervention. These results may not be generalisable to populations other than Native American children classified as high risk for overweight (due to having an overweight mother) and the time- and cost-expense of the home visiting model is likely to restrict the delivery of such a program to large populations.

**Worobey, Pisuk & Decker 2004 (USA) [Level IV evidence]**

*Study aims and approach:* This study aimed to improve child nutrition outcomes in at-risk families. It utilised a pre-post intervention design with no control group to assess the nutrition education component of a broader intervention in a low income, predominantly Hispanic (74%) population. The average age of children at baseline was 27 months.

*Intervention:* Participants were families involved in the Prevention-Oriented System for Child Health (PORSCHÉ) project in which a public health nurse develops an individualised parent-focused intervention strategy delivered through home visits (weekly, monthly or bi-monthly dependent on needs). To be eligible for PORSCHÉ, families must have a child less than 72 months of age, an income  $\leq 250\%$  of the federal poverty level and at least one of the at-risk circumstances (child identified for health risk e.g. iron deficiency or lead burden, identified as high-risk prenatally e.g. parent with history of emotional or physical abuse, teenage parent with inadequate social support, or other psychosocial reasons e.g. living in poverty and showing inappropriate parent-child interactions). Of the 60 families in this study, approximately 2/3 were enrolled because of high child lead burden, with the remaining 1/3 enrolled because the child was at psychosocial risk.

The nutrition education focused on increasing iron intake, supplementing diet with vitamins, increasing water and juice consumption, reducing high fat snacks and

increasing healthy snacks (e.g. yoghurt and fresh vegetables) plus topics focusing on reducing lead exposure. A 24-hour dietary recall was completed by interview at baseline and approximately eight months later.

*Results:* Total caloric intake decreased (1698 to 1411 kilocalories,  $p < 0.05$ ) but there was no change in macronutrient proportions, and vitamin supplement use increased (60% to 87%,  $p < 0.01$ ).

*Comments:* This study indicates it may be possible to decrease children's caloric intake using nutrition education for parents delivered in the home. However, as the intervention was tailored to each family and the frequency of visits was not consistent across families, it is unclear whether all "versions" of the program are equally effective. In addition, each family received different additional (non-nutrition related) components of the program which may have further confounded the results. Further weaknesses of the study design were a lack of control group, short follow-up period, the use of a single 24-hour dietary recall, lack of outcomes assessing key topics covered in the intervention (e.g. increasing water and juice consumption), and it was not clear whether the same nurse delivered the program to all participants or the duration of the intervention. These results may not be generalisable to other populations and the time- and cost-expense of this tailored home visiting model is likely to restrict the delivery of such a program to large populations.

### **Wardle 2003 (UK) [Level II evidence]**

*Study aims and approach:* This study aimed to increase 34-82 month old children's liking for and consumption of a previously disliked vegetable. It involved children and their principal carer and utilised a RCT-design with three conditions: control ( $n=45$ ), information ( $n=48$ ) and exposure ( $n=50$ ).

*Intervention:* All children participated in a preference taste test in their home prior to the intervention (baseline) and at the completion of the intervention (2-weeks). The control group received no intervention. Parents in the information group were told about the recommendation that children consume five portions of fruit and vegetables a day and provided with a leaflet containing advice and suggestions for increasing children's fruit and vegetable consumption. Parents in the exposure group were instructed to offer their child a taste of their target vegetable (chosen based on the child ranking the vegetable third most liked in the pre-intervention preference taste

test of six vegetables) every day for 14 days. They were provided with suggestions of how to encourage tasting and were informed of the importance of not offering their child a reward for tasting the vegetable. In addition, exposure group parents were provided with a colourful 'vegetable diary' to record their experiences and their child was provided with face stickers (indicating 'like', 'OK' or dislike') to record their liking for the vegetable after each tasting. At the completion of the intervention parents in all groups were given the advice provided to the exposure group.

*Results:* 95% of principal carers were mothers, they were predominantly Caucasian (74%) and highly educated (68% were 21 years or older when they left education). Of the 143 children, three (1 control group and 2 exposure group) withdrew during the 2-week period.

There was poor compliance in the exposure group with almost 1/3 (n=14, 29%) completing less than 10 tastings; the number of families completing all 14 tastings was not reported. While results did not differ significantly when children completing fewer than 10 tastings were excluded, results are reported for this reduced sample. The rated liking ('like', 'OK' or 'dislike') and preference ranking of the target vegetable increased for all groups but more so for children in the exposure group than the information ( $p<0.001$  and  $p<0.05$  for liking and preference respectively) or control groups ( $p<0.01$  and not-significant for liking and preference respectively). At follow-up 65% of the exposure group rated their target vegetable as liked and almost 30% rated it as the most liked (preferred). Voluntary consumption of the target vegetable at the taste test increased significantly for the exposure group only (47% to 77% of children,  $p<0.01$ ).

Six-weeks post intervention, 10 exposure group, 5 information group and 5 control group participants completed a semi-structured telephone interview. Of the 20, 17 thought the advice was useful and 11 had used the exposure method with other foods. 7/10 exposure group parents thought there was a lasting effect on their child's liking of the target vegetable and many thought it had increased their child's willingness to try other foods. However many of the parents criticised the duration of the exposure which was also reflected in the poor compliance rate during the intervention.

*Comments:* The strengths of this study include the parent-delivered nature of the intervention which makes it more feasible (cost-effective) for large-scale population

intervention than a home-visiting model. However, despite participants being predominantly highly-educated and self-selecting for the study, there was a relatively low compliance rate in the exposure group and feedback suggested parents thought 14 consecutive daily exposures was too many. This may limit the feasibility of this type of intervention, particularly in lower SES groups.

### **Summary of family/home based setting studies**

While each of the family/home based interventions involved quite different population groups, different interventions and outcomes of interest, all showed some positive impact on children's dietary patterns. Only one of these studies (Harvey-Berino & Rourke 2003) included physical activity as a target of the intervention but showed no impact on this behaviour.

#### Group Setting

#### **McGarvey, Keller, Forrester et al 2004 (USA) [Level III-2 evidence]**

*Study aims and approach:* this study employed a pre-test – post-test, non-randomised control group design to assess 1. whether it is feasible to implement a parent-focused child obesity prevention program in the established Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) clinics and, 2. the capacity of a program to promote targeted parental behaviours to prevent obesity in children of low income mothers served by the WIC clinics.

*Intervention:* In this study control group (n=151) participants received the standard education provided by the WIC program over the course of a year, thus attending educational groups once every 2 months (6 attendances over the year of the study) and an individual session with a WIC nutritionist every 6 months (2 sessions over the year). Intervention group (n=185) participants received the same number of contacts, however, the education sessions were modified to provide activities to reinforce six educational messages, these being; 1. increase physical activity 2. monitor mealtime behaviour, 3. limit household television viewing, 4. drink water instead of sweetened beverages, 5. consume five fruits or vegetables daily, and 6. increase family activities to promote fitness. Staff were provided with guidance cards for each targeted behaviour. These provided detailed instructions under headings including “what to expect”, “discussion points”, “setting goals”, “handouts” and “referrals”. A second component of this intervention involved the encouragement of clinic staff to participate in 6 “staff wellness

challenges” which ran concurrently with the group education classes. Emphasis was placed on the importance of clinic staff modelling the targeted behaviours. A third component of this intervention involved the promotion of identical educational resources via other community organisations/services in the intervention group’s district, thus reinforcing the health messages in a variety of venues.

*Results:* Process evaluation confirmed the feasibility of implementing this program in the established WIC clinics. It appeared that clinic staff sought to model targeted behaviours as requested, with intervention parents being significantly more likely to report observing staff engaging a variety of healthy behaviours. Thus 52% of intervention parents, compared with 6% of control group parents reported observing staff members engaging in 3 or more of the 6 targeted healthy behaviours. In addition, differences in the adoption of two of the targeted health behaviours were found between the intervention and control groups. Thus, intervention group parents were significantly more likely to report increased frequency of offering their child water rather than sweetened beverages, and they were also more likely to report that they were involved in active play with their child. No other differences were found between intervention and control group responses.

*Comments:* This study is of interest as it targets those parents of children most at risk of becoming overweight or obese and it utilises existing health service infrastructures. The findings provide support for the notions that both service staff and clients can be supported to change some aspects of health behaviours to promote healthy weight. It is difficult however, given the multi-pronged intervention to know how important each component of the intervention might be in effecting change.

#### Primary Care Setting

##### **Johnson, Birkett, Evens & Pickering 2005 (USA) [Level IV evidence]**

*Study aims and approach:* This large population study undertook to examine, at a population level, 1. the feasibility of disseminating television-reduction messages to socioeconomically disadvantaged families participating in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) and 2. the characteristics of WIC families who might benefit the most from television reduction efforts.

*Intervention:* This intervention was diverse and there is not capacity within the study design to describe the dose of intervention received by participants. Participants included those who attended WIC services over a 3-week period prior to a global intervention which lasted for 6 months and those who attended in a separate 3-week period after the global intervention had been delivered. It is possible therefore that the samples are unrelated to each other. The intervention included information regarding how to reduce television viewing times. Delivery methods were developed to address key components of social marketing (product, price, place, and promotion). Individual handouts & education approaches were based on client's stage of change.

WIC staff were encouraged to use the materials to accommodate local needs, to adopt healthy behaviours themselves and to share the materials with local partners. There were two main modules which both emphasised reduction in television viewing 1) concerned with turning television off during family meals 2) displacing television viewing by engaging in family physical activity. Each module included background materials, staff-training materials, banners, posters, interactive handouts for clients, bookmarks, children's colouring materials, detailed plans for group sessions, and other supportive materials (provided in both English and Spanish). These resources can be found at <http://depts.washington.edu/tvhealth/index.htm>.

*Results:* The proportion of WIC clients who reported watching less than or equal to two hours of television per day increased over the six month period from 64.2% to 70.5%. This change was statistically significant. Changes in viewing habits were strongest in families with lower parental education and in those from non-white ethnic groups. In addition, the proportion of respondents who reported that they never or rarely watch television during meals increased from 65% to 69%, and this change was also statistically significant. Those most likely to have the television off during meals were white, had larger families or had higher education levels.

*Comments:* This study cautiously supports the notion that large scale, well-designed interventions may be effective in reducing television viewing times and in reducing the proportion of families who watch television during meal-times. A number of difficulties in study design, most particularly the potential impact of season on hours of television viewed, and the inability to compare individuals within groups across time supports the view that more controlled studies need to be conducted to confirm the efficacy of this intervention.

**(1) Lagstrom, Jokinen, Seppanen et al 1997 & (2) Talvia, Lagstrom, Rasanen et al 2004 (Finland) [Level II evidence]**

*Study Aims and approach:* This prospective randomised clinical trial aims to reduce coronary heart disease risk factors in children over one year of age. The study was established to evaluate the impact of individualized and repeatedly given dietary counselling (parent) on fat intake and nutrient intake of children (1) aged 8 months to 4 years; (2) aged to 10 years.

*Intervention:* The intervention group parents (n=540) received repeated individualised dietary counselling by a dietitian, at 1-3 month intervals until the child was aged 2 years and then biannually after that. After the age of 7, separate sessions were organised for the child and the parents. Nutrition counselling was aimed at the reduction of the child's saturated fat intake and the promotion of an unsaturated to saturated fatty acid ratio of 2:1, while maintaining adequacy of all other nutrients. The control group parents (n=522) were seen biannually until the child was aged 7 years and thereafter, only once a year. These families did not routinely receive any detailed counselling focused on the risk factors of atherosclerosis. Beyond the recommendation that children over one year of age should have milk with at least 1.5% fat, no detailed suggestions concerning the quality or quantity of fat were given, and dietary issues were discussed only briefly.

*Results:* In both studies significant reductions in total fat intake were found between intervention and control group children. Reductions were achieved with maintenance of recommended daily intakes of other nutrients.

*Comments:* This well-designed prospective study shows that individualized infancy-onset dietary counselling of parents (and later children) influenced the intervention children's diet favourably, with reductions in total fat intake and maintenance of recommended dietary intakes of other nutrients (however, desired ratio of fats was not achieved). Early changes in intake (to 4 years of age) persisted between the ages of 4 and 10 years.

**Summary of primary care based setting studies**

The diversity represented by these two studies, one providing highly focussed/ tailored interventions to individuals, the other a more diffuse saturation of information to all clinic users, highlights the potential for primary care to deliver programs in

multiple ways. Both studies provide examples of the potential of this setting to positively impact on health behaviours of interest to this review.

### Preschool/child care setting

#### **Dennison, Russo, Burdick & Jenkins 2004 (USA) [Level III-1 evidence]**

*Study aims and approach:* This cluster-randomised controlled trial involved an intervention aiming to reduce children's television viewing which was part of a broader health promotion intervention, involving 16 preschool and day-care centres that enrolled 3-5 year old children.

*Intervention:* The intervention consisted of seven 20-minute interactive education sessions, delivered over six weeks with the final session a month later, at the preschool/child care centre plus complementary materials and suggested classroom activities for staff and take-home information and materials for parents. The sessions and complementary activities covered topics such as the importance of reading and television-free family mealtimes, alternative activities to television viewing, television viewing time budgets, calendars and stickers to record television-free days, and encouragement of family television-free weeks. The control group received eight monthly education sessions and complementary materials on health and safety. Anthropometric and television viewing measures were taken pre-intervention and approximately six months later.

*Results:* Data were available at both time points for 43 intervention centre children and 34 control centre children. While similar at baseline, children in the intervention group spent significantly less time watching television than control children following the intervention (adjusted mean difference -4.7 hrs/wk,  $p=0.02$ ) and significantly fewer exceeded the daily recommended viewing limit of two hours (19% versus 41%,  $p=0.007$ ). There were no differences between groups in time spent playing video/computer games, body mass index, frequency of snacking during television viewing, frequency of eating dinner together as a family, or frequency of watching television during dinner.

*Comments:* Weaknesses of this study include the discrepant timeline of education sessions/contacts for the intervention and control groups, the small sample size and poor retention rate (less than 50% of children involved in the intervention provided

follow-up data). Strengths of the study include follow-up assessments extending beyond the end of the intervention delivery (approximately 4.5 months later), although no longer term follow-up was conducted. The sample consisted of predominantly white children of highly educated, employed parents; it is unclear whether this type of intervention requiring parental involvement would translate to lower socioeconomic groups.

### **Fitzgibbon et al 2005 (USA) [Level II evidence]**

*Study aims and approach:* This cluster-randomised controlled trial, Hip-Hop to Health Jr, aimed to prevent obesity in minority 3-5 year old children.

*Intervention:* Twelve Head Start preschools servicing predominantly the African-American community were randomised to the weight control intervention or a general health program (control group). The weight control intervention consisted of a 14 week program with three 40 minute sessions per week delivered by early childhood educators. Each 40 minute session comprised a 20 minute lesson on an aspect of healthy eating or physical activity and 20 minutes of aerobic physical activity. In addition, parents received a weekly newsletter containing complementary information to that provided to children in their sessions, weekly homework assignments and twice weekly aerobics classes. The control group received a general health program involving 20 minute education sessions on general health topics once per week for 14 weeks and parents received a weekly newsletter containing complementary information.

*Results:* Outcomes were assessed at baseline (n=409), post-intervention (14 weeks), one (n=289) and two years follow-up (n=300). While body mass index did not differ between intervention and control children post-intervention, at the one and two year follow-ups, children in the intervention group demonstrated less increase in body mass index than those in the control group (0.02 kg/m<sup>2</sup> versus 0.64 kg/m<sup>2</sup>, p=0.002 at one year and 0.48 kg/m<sup>2</sup> versus 1.14 kg/m<sup>2</sup>, p=0.008 at two years). There was no difference between intervention and control children post-intervention or at two year follow-up for saturated fat intake, but at one year follow-up intervention group children had significantly lower saturated fat intake than control group children. No differences were observed between groups post-intervention, one or two year follow-up for measures of total fat intake, dietary fibre intake, exercise frequency, exercise intensity or daily television viewing time. Parental compliance with their aspect of the

intervention was quite low. Despite receiving a \$5 reward for submission of each homework assignment, only 61% of parents returned at least one of the 14 assignments but 88% reported reading the newsletters.

*Comments:* While a measurable difference in body mass index was not observed over the relatively short term of the intervention, a difference was noted at both follow-up time points suggesting the intervention may have long-term benefits for children's relative weight. However, impacts were not observed on measures of diet or physical activity. A major strength of this study was the longer term follow-up of subjects to assess sustainability of effects. As this intervention was conducted with a minority group within a specialised service, the results may not be generalisable to the wider population. Further, it may not be feasible to incorporate the 120 minutes per week required for the program into a general preschool curriculum.

### **Summary of pre-school/child care based setting studies**

While the two interventions undertaken in the preschool/child care setting involved vastly different populations and targeted different outcomes, both achieved success in modifying their respective outcomes of interest. These group-based interventions are likely to be more cost-effective than home-based studies and able to impact a larger number of children.

#### Mixed Settings (home and clinic)

### **Horodynski & Stommel, 2005 (USA) [Level III-2 evidence]**

*Study aims and approach:* this study used a quasi-experimental design with repeated measures to assess the effectiveness of the Nutrition Education Aimed at Toddlers (NEAT) intervention, delivered to caregivers of toddlers (age 11-36 months). This intervention aimed to improve caregiver-toddler interactions by empowering adults to become responsive to children's verbal and non-verbal behaviours.

*Intervention:* Control group participants received no program. Intervention group participants participated in four 90 minute group-based nutrition lessons over four

weeks. Class sessions were attended by 4-5 study participants in a clinic environment. These lessons included such concepts as adult modelling of positive eating behaviours for toddlers, introducing new foods to toddlers, addressing parents' concerns about what and how much their toddlers eat, and parenting skills. In addition, intervention group participants were provided with 18 individualised structured reinforcement sessions over a six-month period. These occurred during scheduled weekly home visits. These sessions dealt with child development, feeding, nutrition and parenting and promoted toddler feeding self-regulation and positive toddler-parent feeding interactions.

*Results:* evaluation by repeated measures of constructs concerned with child-carer mealtime behaviour, with carer nutrition knowledge and with carers' self-efficacy in feeding found significant differences only on scores of nutrition knowledge. Intervention group parents had significantly increased nutrition knowledge post intervention and when compared to controls. No other differences were found between these assessments. The authors also report on home observations of mealtime television watching undertaken in both intervention and control homes. While not statistically significant these observations showed that intervention homes became progressively less likely to have television on during meals (58% had the television on at meal-time at base-line, 39% at follow-up). Television viewing during meals stayed constant in the control group.

*Comments:* This study is of interest because it targets those parents of children most at risk of becoming overweight or obese and because it focuses specifically on the child-carer feeding dynamic, hypothesised to be influential in the development of eating behaviours. It is difficult to know whether the sample size was large enough to detect the differences it sought to achieve. This study correctly identifies the complexity of behavioural change and highlights that changes in knowledge are not necessarily reflected in changes in behaviours.

### 3.2 Studies of second level relevance

Summaries of studies of secondary level relevance (as described above) are presented in both text and matrix (Table 2) below. Note that hard copies of these papers have been included (indexed alphabetically).

Table 2: Matrix of Level 2 relevance studies indicating delivery setting and type of intervention.

<b>Setting of delivery</b> → <b>Intervention</b> ↓	Family/home	Group	Primary Care	Pre-school/ child care	Mixed
Newsletter	Keane et al 2005* King, 2006				
Video	Black & Teti, 1997*				
Internet learning	Bensley, 2004				
Education	Reid 2001	Hindin et al, 2004 *	Passehl et al, 2004		
Individual counselling	Valle et al, 2003 *				
Mixed					

\* at risk group (low SES)

#### Summary of level two relevance studies

Eight studies that described interventions meeting the inclusion criteria were not included in the main review as they did not report anthropometry, dietary, physical activity or sedentary behaviour outcome data. However, as the interventions are of potential interest they are described briefly here. Six of these studies were family/home-based, one was delivered in a group setting and one in a primary care setting. While these studies report diverse methodology and intervention approaches, all received positive feedback from participants. Together these studies provide an overall impression that parents are receptive to different forms of intervention and, for the most part, find such interventions useful. However, as obesity prevention behaviour outcomes were not reported, it is unclear whether the positive view of these interventions by parents translates into positive outcomes.

### Family/home setting

**Keane et al 2005 (UK)** – This intervention involved development and evaluation of an age-specific monthly parenting newsletter, posted to parents' homes, focusing on infant emotional development, parent interaction, play, infant stimulation and common problems such as crying and sleep from birth to six months of age. It targeted deprived inner city mothers of newborns, excluding those who did not speak English, and those whose babies were low birth weight (<2.5kg) or ill at birth, recruited at maternity hospitals. Evaluation of the newsletter by those in the intervention involved individual interviews with mothers (lasting approximately one hour) and six focus groups with teenage mothers. In addition, all copies of the newsletters were given to health visitors who then completed an evaluation questionnaire. Similarly, all copies of the newsletter were given to fathers in three father's groups who then attended focus groups to provide feedback. Ninety-seven mothers were involved in the intervention but resources only allowed for evaluation interviews to be conducted with 60 of these: 97% reported reading all or part of the newsletter, with positive comments on its readability, style and length; 28% spontaneously reported changing their parenting style, mainly around management of crying and television use, after reading the newsletter. Focus group discussions with teenage mothers and with fathers elicited mainly positive responses to the newsletters although fathers indicated a need for more information directed specifically at fathers. Only 66% of the 40 health visitors invited to comment returned questionnaires. Health visitors had mixed views on the newsletters: some thought they had good potential while others thought they may be repetitious of information provided to parents through existing resources.

**King 2006 (UK)** – This intervention consisted of monthly, age-specific newsletters, posted to the family for the first 12 months of the child's life. The newsletters provided information on a range of health and development topics as well as reference to local and national resources. 194 families were involved in the feasibility study and 60 (31%) returned evaluation forms. Families generally provided positive feedback on the newsletters with all but one indicating they would recommend the newsletter to other mothers. However, only 50% of families reported making changes based on information provided in the newsletter; most changes were in the area of play and stimulation, followed by unspecified changes and feeding/weaning.

**Black & Teti 1997 (USA)** – This randomised controlled trial consisted of a 15-minute, culturally sensitive video intervention that aimed to alter mealtime attitudes and communications between African-American adolescent mothers and their infants. The video showed images of African-American adolescent mothers feeding their infants, demonstrating both successful and unsuccessful strategies. Participants were 64 first-time mothers aged 14-19 years old with healthy infants <13 months old randomised to a no-treatment control group or intervention group. Mothers in the intervention group watched the video following the baseline measurements and were given a copy to take home. Measures taken at baseline and two weeks later consisted of observation of the mother feeding a snack to her infant and a questionnaire regarding their attitudes about infant feeding. Intervention group mothers also evaluated the video post-intervention. Retention rate was 92%; 5 mothers (3 intervention and 2 control group) did not participate post-intervention. Intervention group mothers had more positive attitudes to infant feeding and engaged in more communication with their infant during the meal than control group mothers post-intervention. Intervention group mothers reported watching the video again at home (mean 2.4 home viewings) and showing it to friends and family (mean 2.1 other people). Comments about the video were positive.

**Reid 2001 (UK)** – The Play@Home intervention involves the provision of age-specific information to parents which aims to promote physical activity in children from birth. Information is delivered by means of three books: for parents of babies (0-1 years), toddlers (1-3 years) and pre-schoolers (3-5 years). Books are colour-coded according to age and provide recommended activities for parents to engage in with their child. More than 90% of parents are reported to have received the babies' book which is distributed by health visitors. This program is reported to have been running in New Zealand for 10 years where only 75% of parents currently receive the books due to a more fragmented early childhood health service.

**Bensley et al 2004 (USA)** – This intervention involves internet-based delivery of nutrition education, focusing on parent-child feeding behaviour, for WIC (Special Supplemental Nutrition Program for Women, Infants and Children) clients. There are five modules provided on the internet site ([www.wichealth.org](http://www.wichealth.org)) that focus on providing regular meals and snacks, picky eaters, positive feeding environment, and delineating the roles of parents and children in child feeding. Running for two years, the project has provided nutrition education to >30,000 WIC clients with most (70%) accessing the site from home or work. Participants have generally provided positive

feedback about the internet site including ease of use (84-99%), and belief that they can make changes based on the information provided (87-90%).

**Valle et al 2003 (Brazil)** – This intervention involved individualised home visits to improve infant nutrition. Mothers of four children in each of four age groups (<4mths, 4-5mths, 6-11mths, 12-17mths) were included. Each family received three visits from a nutritionist or psychology student. The first visit involved assessment of the infant's current diet (24-hour recall plus general dietary questions) and family circumstances (food availability, culture, SES) from which individualised recommendations for infant feeding were formulated e.g. increase frequency of breastfeeding, diversify child's diet, use cup and spoon to feed child. The second visit involved providing the mother with feedback on the positive aspects of her current child feeding practices and suggesting improvements that could be made based on the individualised recommendations. Mothers selected the one or two improvements they would like to focus on for the coming week. The final visit involved discussion of the mother's experience trying to implement the recommendations and a repeat 24-hour dietary recall. One family of the 16 withdrew between the second and third visits. Mothers gave positive feedback on the intervention and their comments and the dietary data suggested most were compliant with implementing the recommendations. Only three mothers (all with children <12mths) said they had not followed through with the recommendation they had selected.

#### Group setting

**Hindin et al 2004 (USA)** – This study utilised a pre-post intervention design involving a 4-week control condition followed by a 4-week intervention condition. The control condition involved food safety education incorporating group activities, handouts and homework assignments. The intervention condition involved nutrition-based media literacy education focusing on the effects of food advertising on young children, how to talk to their children about television commercials, reading food labels to counter advertising claims, and how to critically evaluate television commercial claims. The education sessions involved interactive group activities, handouts and homework assignments. Education sessions in both conditions were taught by a single educator and each lasted approximately 2 hours. Participants were parents/carers of 35 children aged 3-6 years from four Head Start groups. No differences were observed pre- and post- control condition but significant

improvements were noted post-intervention condition for measures of both behaviour and knowledge related to talking about and analysing television commercials with their child and related to reading food labels (all  $p < 0.001$ ). In addition, attitudes relating to talking to their child about television advertising, self efficacy (confidence in ability to talk to their child about television advertising), value of outcomes of talking to their child about television advertising, outcome expectations/benefits related to talking to their child about television advertising and outcome expectations/benefits related to reading food labels all improved post-intervention ( $p < 0.05$ ). All participants attended all sessions, with three attending make-up sessions for those they had missed, however there was a large cash incentive (US\$100) for full attendance. Participants provided positive feedback on the intervention; they found it useful and helpful.

#### Primary care setting

**Passehl et al 2004 (USA)** – This study described the “Take Charge” parent education program developed to assist health care professionals to educate families of pre-school-aged children about overweight prevention and the development of healthy lifestyle behaviours. The program involves five modules that focus on (1) developing practical ways to become physically active, (2) establishing the roles of parent and child regarding food and eating (avoidance of restrictive approaches to eating), (3) mealtime management of picky eaters, (4) increasing water consumption, decreasing juice and sweetened beverage consumption and preventing overeating, and (5) decreasing sedentary activities (screen time). Modules can be taught to families in less than 10 minutes including development of individual health-centred goals for the family. Tools include parent/child booklets and a freestanding flip chart with parent messages on one side and information for the practitioner on the other side for use in the consultation room. A 60-90 minute on-site training program for primary health care providers (including nurses, pediatric nurse practitioners, physicians, dieticians and allied health care workers), teaching them to deliver the intervention, was evaluated at six sites involving a total of 98 providers. Two-months after the training, more than one-third of the participants indicated they used the materials on a daily or weekly basis. Almost all indicated that the messages were clear and easily understood by families and were a good addition to existing practitioner resources.

### **3.3 Studies of third level relevance**

While multiple papers were retrieved after initial assessment of abstracts as being of potential interest to this review, or to enable fuller assessment of relevance, just six of these will be reported below. Full copies of these papers can be found indexed under “third level relevance papers”. Remaining excluded papers can be found in Appendix 2. The six papers discussed below did not meet inclusion criteria as they targeted children of school-age. They are briefly discussed here as we considered these studies to have some potential relevance to the review, that is, that the methodologies employed may provide insights into innovative approaches for use in the early childhood period.

The “Food Dudes” program (Horne PJ et al 2004; Lowe CF et al 2004), is of potential interest because of its incorporation of empirical learning regarding the development of eating behaviours into a focused intervention that aimed to increase fruit and vegetable consumption (protective of obesity development). This high quality randomised controlled trial involved 749 children from 5-11 years of age in socioeconomically disadvantaged areas of London. The intervention employed factors empirically described as having an influence on children’s eating behaviours; taste, exposure, modelling and rewards. The intervention employed a series of 6 by 6-minute television episodes, featuring the “Food Dudes” (modelling), the concurrent use of “Food Dude” rewards (to reward fruit and vegetable consumption), letters and home packs, and the increased availability of fruits and vegetables at school breaks and lunch-times. Assessment immediately post intervention and at 4 months post-intervention showed that, compared to the control school, lunchtime consumption in the experimental school was substantially higher at intervention and follow-up than at baseline, while snack-time consumption was higher at intervention than baseline. The lunchtime data showed particularly large increases among those who initially ate very little fruit and vegetables. There were also significant increases in fruit and vegetable consumption at home.

The second school-based intervention was a pilot study (Levin et al 2002) that aimed to change young children’s knowledge, self-efficacy and attitudes about physical activity and heart-health. The intervention involved exposure to a 15-minute, interactive, educational video. Results showed that children involved in the intervention had greater gains in knowledge and self-efficacy than did the comparison group. While the results of this study are of potential interest, highlighting

positive short-term responses to a targeted educational video, the overall quality of the study is low, with small sample size, a non-randomised control group, single item measures of some constructs and no assessment of change beyond one day of the intervention.

Three studies are mentioned here because of their use of potentially innovative approaches in the home-setting (although targeting older children). One, the development of an activity calendar for overweight children (Yackel 2003) aimed to engage parents of overweight children in selecting and participating in a home-based physical activity intervention with their children in an effort to increase their awareness of the importance of exercise in childhood. This paper describes the development of an activity packet that included an exercise tracking calendar (cognitive feedback), star stickers (rewards), and a list of stretching activities and of exercises (information). This program was delivered and monitored by community nurses using weekly visits. This paper reports parental responses of the 12 study families to the program. With very small numbers, the generalisability of this study is low.

A second study, the "Got 5? Nutrition for Kids Program" (Kuczmarski & Aljadir 2003) provides a further example of an innovative home-based program. This study aimed to increase 7-8-year-old children's knowledge and understanding regarding the importance of eating and physical activity to promote health. The program consisted of five one hour lessons taught biweekly by a dietitian. One emphasis of this program was to establish the goal of consuming five fruits and vegetables daily. To this end a calendar was designed to promote child self-monitoring of intake (cognitive feedback). This paper reports significant increases in mean daily fruit (but not vegetable) intake of 54 children over the course of four weeks of calendar completion. Further, around two-thirds of parents found the calendar to be a valuable learning tool, making their child more aware of their eating practices. Approximately half of parents indicated that they noticed an increase in fruit and vegetable intakes as a result of calendar recording. This study is small, has no control group and a number of methodological challenges, however, provides some evidence to support the notion that young children will complete self-monitoring activities and that they may positively effect health behaviours

The third study (Dunn et al 1998) titled the HomePlate Pilot Study was designed to assess the success of an at-home nutrition education delivery method in reaching parents of primary school children and to compare two delivery systems, scheduled parent meetings and a mass distribution system (marketing brochures delivered through schools and other agencies). Parents in the latter group could send off a request slip to be sent the HomePlate kit. Results showed substantially greater uptake of the “send home” kits (555 requests) over attendance at scheduled meetings (21 parents only). Ninety-nine parents in the send home group were called three weeks after delivery of the HomePlate resources (video with four 5-minute segments designed for children, parent focussed tabloid-style paper covering topics of interest, quick recipes and activities to undertake with children). This assessment indicated that 84% had watched the entire video; 68% had read the newspaper; 22% had tried at least one of the recipes; and 22% had completed at least one of the children’s cooking activities. In addition, 54% of parents indicated on questioning that the program had caused them to change eating practices (not qualified by dietary measures) while 30% indicated that the program had caused them to change their cooking practices (not qualified by cooking practice measures). Perhaps not surprisingly, most parents (95%) indicated that they preferred receiving information through the mail than attending a workshop. This study is of interest as it highlights that in those parents interested enough to respond to offers of nutrition support, a send-home kit may provide a useful means by which to support parents to promote healthy eating. An important limitation of this study is that it tells us nothing about those who do not respond (possibly those most in need of support), nor of the impact of the dietary changes made on receipt of the kit.

Finally, one study was found which provides some insights into the efficacy and reach of mass media campaigns that aim to influence 9-13 year old children’s levels of physical activity (Huhman et al 2005). In this study 3120 child-parent pairs were assessed pre and one year post (82.3% retained) the running of a mass media intervention. The VERB campaign was a multiethnic campaign that combined paid advertisements (to promote physical activity as being fun, cool and a chance to have a good time with friends), with school and community promotions and internet activities to encourage children in the target age group to be physically active every day. Pre-post intervention comparisons showed that 74% of all children surveyed were aware of the campaign and that the levels of reported sessions of free time physical activity increased for subgroups of children 9 to 13 years of age. For example, 9- to 10-year-olds who were aware of the campaign engaged in 34% more

free-time physical activity sessions per week than did 9- to 10-year-olds who were unaware of the campaign. This paper highlights a number of study weaknesses, e.g. reliance on self-reported data, no control group and social desirability in responses, however, this study may provide interesting perspectives regarding the potential reach and impact of media-based campaigns directed at children.

#### 4. DISCUSSION

This review evaluated the published literature regarding interventions which may support parents to positively influence their young children's body weight via changes to dietary intake, to physical activity and/or to sedentary behaviours. The focus was on interventions involving children under the age of five, an important group given the current emphasis by government and others on the early years (birth to five).

It is perhaps surprising that at a time when the prevalence of childhood fatness is rapidly increasing, and in an environment where early childhood is considered to be a key time for the development of health behaviours, that relatively few studies were found that addressed these issues and that none of these were Australian-based. Traditionally the literature in this area has focussed upon interventions targeting school-aged children. However, growing acknowledgement of the importance of the early years as a time for the development of both overweight and its precursor behaviours is evidenced by the fact that most primary level relevance studies identified in this review have been published since 2003. The lack of identification of interventions in this review does not necessarily mean work with under-fives is not being conducted. It is possible that programs seeking to effect dietary, physical activity and/or sedentary behaviour change in this age group have been, or are currently being, conducted but have not yet been published in the peer-reviewed literature.

Nine studies were found to have primary level relevance to the aims of this review. Of these, the majority were studies from the US and targeted socioeconomically at-risk families through well established health service infrastructures such as the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). While these studies varied widely in their objectives, designs and subsequent quality, overall most studies were able to show some level of effectiveness on some obesity promoting behaviours in children. This finding is encouraging, however, it is important to recognise that publication bias is known to favour interventions that show positive impacts and thus that less successful studies simply may not be reported in the peer-reviewed literature.

While the designs of studies varied substantially, some common themes emerged which may be useful in considerations of the most effective strategies by which to

support parents to achieve healthy weight outcomes in their young children. For example:

- with so many interventions targeting socioeconomically disadvantaged groups, we are reminded that those who are most at risk of rearing children who will become overweight or obese are receptive to and can be supported to make effective changes, which in turn seem likely to influence the propensity for fatness.
- workers engaged with these socioeconomically disadvantaged groups of parents showed, in a number of studies, their willingness not only to run programs focusing on behaviours that will promote healthy weight, but to adopt and model some of these messages themselves.
- although the mode of delivery and the focus of messages differed across studies, most interventions can be classified as high intensity interventions. That is, parents were seen many times and in a range of settings by their health-service provider or the interventionist. These settings allowed for the repetition of targeted messages, often through different modes (tailored individual feedback, group education settings, use of pamphlets and posters in community facilities). These high intensity interventions resulted in small but potentially meaningful behaviour changes, however, we found no evidence to support the premise that low level interventions would result in similar changes.
- most studies were underpinned by social behavioural theory and were thus interested to impact not only on knowledge, but on parental skills and competencies.

We identified one physical activity intervention targeting older children using a social marketing campaign which demonstrated some positive short-term effects (see Huhman et al 2005 in third level of relevance papers). This intervention was quite intensive (involving mass media advertisements, school and community promotions, and internet activities), yet reached only three quarters of its target population (approximately one quarter of the target population were unaware of the campaign after it had been running for one year). While it is enticing to consider that social

marketing campaigns will provide simple and effective approaches to mediating behavioural change, we found no studies that used social marketing to target parents in their promotion of healthy weight behaviours to their young children. Therefore, there is currently no evidence to support the notion that the complex range of behaviours adopted by parents of young children in the promotion of healthy eating, physical activity and reduced sedentary behaviours can be positively influenced via this approach. It is important to acknowledge that this does not suggest that a social marketing campaign would be ineffective, but rather that it has not been researched and reported in the peer-reviewed literature. Given this, and the potential reach of social marketing it may be appropriate to examine the capacity of this approach to encourage behaviours likely to promote healthy weight in children. We stress the importance of examining this area within a well-designed and evaluated study which in turn would strengthen the evidence base.

It is important to acknowledge that differences in ethnicities and socioeconomic position are likely to limit the generalisability of the studies reported in this review, particularly in the Australian context. For example, studies that have had positive outcomes in one ethnic group may not be effective in another. Having said this, there are likely to be points of overlap in groups that are disadvantaged in any community, for example single mothers, and who have complex social histories, such as indigenous communities. Thus, the intervention targeting US indigenous communities (Harvey-Berino and Rourke 2003) may provide useful learnings and directions for work with our own Aboriginal and Torres Strait Islander communities. Further limiting the generalisability of the findings reported in this review is the heavy reliance by interventions on well-established modes of health service delivery in the US. Clearly these may not be replicable in the Australian context. Nonetheless, there is reason to feel optimistic regarding the potential of capacities within individual Australian state's infrastructures to support parents in their efforts to promote healthy weight via established early childhood service providers (e.g. Maternal and Child Health Nurses in South Australia and Victoria).

It is of interest that none of the studies report data on the cost-effectiveness of the intervention programs evaluated. Contextual differences between Australia and the countries in which these interventions were conducted may limit the generalisability of such cost-effectiveness estimates to our context. Nonetheless, given the rigorous/high intensity nature of many of the interventions reported it is likely that they were also high cost and it would be interesting to have some estimate of the cost-benefit of the outcomes achieved.

Despite the common perception that health behaviours (particularly eating and activity behaviours) are difficult to change these studies support, at a range of levels, the premise that parents are receptive and capable of some behavioural changes that may promote healthy weight in their young children. The small quantity of research identified provides promising insights on interventions targeting young children and their parents and heralds the need, particularly in the Australian context, to build in a substantial way upon this evidence base. In particular, examination of the capacity for existing Australian services to deliver healthy eating, physical activity and reduced sedentary behaviour messages provides an important area of future research.

## Appendix 1 – Reviews of childhood obesity prevention and/or interventions that target parents

Authors	Citation
Ammerman AS, Lindquist CH, Lohr KN, Hersey J.	The efficacy of behavioral interventions to modify dietary fat and fruit and vegetable intake: a review of the evidence. <i>Prev Med</i> 2002; 35(1): 25-41.
Contento IR, Randell JS, Basch CE.	Review and analysis of evaluation measures used in nutrition education intervention research. <i>J Nutr Educ Behav</i> 2002; 34(1): 2-25.
Doak CM, Visscher TL, Renders CM, Seidell JC.	The prevention of overweight and obesity in children and adolescents: a review of interventions and programmes. <i>Obes Rev</i> 2006; 7(1): 111-36.
Gardner MR, Deatrick JA.	Understanding interventions and outcomes in mothers of infants. <i>Issues Compr Pediatr Nurs</i> 2006; 29(1): 25-44.
Knai C, Pomerleau J, Lock K, McKee M.	Getting children to eat more fruit and vegetables: a systematic review. <i>Prev Med</i> 2006; 42(2): 85-95.
Kral JG.	Preventing and treating obesity in girls and young women to curb the epidemic. <i>Obes Res</i> 2004; 12(10): 1539-1546.
McLean N, Griffin S, Toney K, Hardeman W.	Family involvement in weight control, weight maintenance and weight-loss interventions: a systematic review of randomised trials. <i>Int J Obes Relat Metab Disord</i> 2003; 27(9): 987-1005.
Reilly JJ, McDowell ZC.	Physical activity interventions in the prevention and treatment of paediatric obesity: systematic review and critical appraisal. <i>Proc Nutr Soc</i> 2003; 62(3): 611-9.
Summerbell CD, Brown T.	Prevention Evidence Summary: interventions for pre-school children and family-based interventions. Found at <a href="http://www.nice.org.uk/page.aspx?o=296553">http://www.nice.org.uk/page.aspx?o=296553</a> through personal communications with Professor Carolyn Summerbell, University of Teeside.
Summerbell CD, Waters E, Edmunds LD, Kelly S, Brown T, Campbell KJ.	Interventions for preventing obesity in children. <i>Cochrane Database Syst Rev</i> 2005; (3): CD001871.
Summerbell CD, Ashton V, Campbell KJ, Edmunds L, Kelly S, Waters E.	Interventions for treating obesity in children <i>Cochrane Database Syst Rev</i> 2003; (3): CD001872.
Worsley A, Crawford D.	Review of children's healthy eating interventions. Public Health Nutrition evidence based Health Promotion and Resource Project. 2004. Found at <a href="http://www.goforyourlife.vic.gov.au/hav/admin.nsf/Images/Main_technical_250804.pdf/\$File/Main_technical_250804.pdf">http://www.goforyourlife.vic.gov.au/hav/admin.nsf/Images/Main_technical_250804.pdf/\$File/Main_technical_250804.pdf</a> through personal communication with Professor Tony Worsley, Deakin University.

## Appendix 2 – Excluded Studies

Authors	Citation	Details and reason for exclusion
Beech B, Klesges R, Kumanyika S, Murray D, Klesges L, McClanahan B, <i>et al.</i>	Child- and parent-targeted interventions: the Memphis GEMS pilot study. <i>Ethnicity &amp; Disease</i> 2003; 13: S1-40 – S1-53.	<i>School-aged population.</i>
Bollella MC, Boccia LA, Nicklas TA, Lefkowitz KB, Pittman BP, Zang EA, <i>et al.</i>	Assessing dietary intake in preschool children: the healthy start project - New York. <i>Nutr Res</i> 1999; 19(1): 37-48.	<i>Head Start / Healthy Start - School based.</i>
Bollella MC, Spark A, Boccia LA, Nicklas TA, Pittman BP, Williams CL.	Nutrient intake of head start children: home vs. school. <i>J Am Coll Nutr</i> 1999; 18(2): 108-14	<i>Head Start / Healthy Start - School based.</i>
Brownell KD, Kelman JH, Stunkard AJ.	Treatment of obese children with and without their mothers: changes in weight and blood pressure. <i>Pediatrics</i> 1983; 71(4): 515-23.	<i>Adolescent age group.</i>
D'Agostino C, D'Andrea T, Nix ST, Williams CL.	Increasing nutrition knowledge in preschool children: the healthy start project, year 1. <i>J Health Educ</i> 1999; 30(4): 217-21.	<i>Head Start / Healthy Start - School based.</i>
Evans AE, Dave J, Tanner A, Duhe S, Condrasky M, Wilson D, <i>et al.</i>	Changing the home nutrition environment. <i>Fam Community Health</i> 2006; 29(1): 43-54.	<i>4th &amp; 5th grade elementary school.</i>
Hays J, Power T, Olvera N.	Effects of maternal socialization strategies on children's nutrition knowledge and behavior. <i>App Dev Psychol</i> 2001; 22: 421-437.	<i>Cross-sectional without intervention.</i>
He M, Irwin JD, Bouck LM, Tucker P, Pollett GL.	Screen-viewing behaviors among preschoolers parents' perceptions. <i>Am J Prev Med</i> 2005; 29(2): 120-125.	<i>No intervention: qualitative focus groups.</i>
Hopper CA, Gruber MB, Munoz KD, MacConnie S.	School-based cardiovascular exercise and nutrition programs with parent participation. <i>J Health Educ</i> 1996; 27(5): S32-9.	<i>8 Year olds, school based.</i>
Ilett S, Freeman A.	Improving the diet of toddlers of Pakistani origin: a study of intensive dietary health education. <i>J Fam Health Care</i> ; 2004; 14(1): 16-19.	<i>Focus on preventing iron-deficiency in Pakistani-origin children.</i>
Koblinsky SA, Guthrie JF, Lynch L.	Evaluation of a nutrition education program for head start parents. <i>J Nutr Educ</i> 1992; 24(1): 4-13.	<i>Head Start / Healthy Start - school based.</i>
Langenberg P, Ballesteros M, Feldman R, Damron D, Anliker J, Havas S.	Psychosocial factors and intervention-associated changes in those factors as correlates of change in fruit and vegetable consumption in the Maryland WIC 5 a Day Promotion Program. <i>Ann Behav Med</i> 2000; 22(4): 307-315.	<i>Assessed outcomes in maternal not child consumption.</i>
Rooney BL, Gritt LR, Havens SJ, Mathiason MA, Clough EA.	Growing healthy families: family use of pedometers to increase physical activity and slow the rate of obesity. <i>Wisconsin Med J</i> 2005; 104(5): 54-60.	<i>Aged between 5-12 years.</i>
Lapinleimu H, Viikari J, Jokinen E, Salo P, Routi T, Leino A, <i>et al</i>	Prospective randomised trial in 1062 infants of diet low in saturated fat and cholesterol. <i>Lancet</i> 1995; 345(8948): 471-6.	<i>STRIP – non-relevant outcomes</i>

## Appendix 2 – Excluded Studies (continued)

Authors	Citation	Details and reason for exclusion
Niinikoski H, Viikari J, Ronnema T, Helenius H, Jokinen E, Lapinleimu H, <i>et al.</i>	Regulation of growth of 7- to 36-month-old children by energy and fat intake in the prospective, randomized STRIP baby trial. <i>Pediatrics</i> 1997; 100(5): 810-6.	<i>STRIP – non-relevant outcomes</i>
Rasanen M, Niinikoski H, Keskinen S, Helenius H, Talvia S, Ronnema T, <i>et al.</i>	Parental nutrition knowledge and nutrient intake in an atherosclerosis prevention project: the impact of child-targeted nutrition counselling. <i>Appetite</i> 2003; 41(1): 69-77.	<i>STRIP – non-relevant outcomes</i>
Rasanen M, Niinikoski H, Keskinen S, Tuominen J, Simell O, Viikari J, <i>et al.</i>	Nutrition knowledge and food intake of seven-year-old children in an atherosclerosis prevention project with onset in infancy: the impact of child-targeted nutrition counselling given to the parents. <i>Eur J Clin Nutr</i> 2001; 55: 260-267.	<i>STRIP – non-relevant outcomes</i>
Rask-Nissila L, Jokinen E, Terho P, Tammi A, Lapinleimu H, Tonnema T, <i>et al.</i>	Neurological development of 5-year-old children receiving a low-saturated fat, low-cholesterol diet since infancy: a randomised controlled trial. <i>JAMA</i> 2000; 284(8): 993-1000.	<i>STRIP – non-relevant outcomes</i>
Spark A, Pfau J, Nicklas TA, Williams CL.	Reducing fat in preschool meals: description of the foodservice intervention component of healthy start. <i>J Nutr Educ</i> 1998; 30(3): 170-77.	<i>Head Start / Healthy Start - school based.</i>
Simell O, Niinikoski H, Ronnema T, Lapinleimu H, Routi T, Lagstrom H, <i>et al.</i>	Special Turku Coronary Risk Factor Intervention Project for babies (STRIP). <i>Am J Clin Nutr</i> 2000; 72(suppl): 1316S-1331S.	<i>STRIP – non-relevant outcomes</i>
Stolley MR, Fitzgibbon ML, Dyer A, Van Horn L, KauferChristoffel K, Schiffer L.	Hip-Hop to Health Jr., an obesity prevention program for minority preschool children: baseline characteristics of participants. <i>Prev Med</i> 2003; 36(3): 320-9.	<i>Hip-Hop to Health Jnr – describes sample, no outcomes reported</i>
Williams CL, Squillace MM, Bollella MC, Brotanek J, Campanaro L, D'Agostino C, <i>et al.</i>	Healthy Start: a comprehensive health education program for preschool children. <i>Prev Med</i> 1998; 27(2): 216-23.	<i>Head Start / Healthy Start - School based.</i>
Williams CL, Strobino BA, Bollella M, Brotanek J.	Cardiovascular risk reduction in preschool children: the "Healthy Start" project. <i>J Am Coll Nutr</i> 2004; 23(2): 117-23.	<i>Head Start / Healthy Start - School based.</i>
Yankauer A.	An evaluation of nutrition classes for mothers in a pediatric clinic setting. <i>J Trop Pediatr Environ Child Health</i> 1975; 21(2): 90-2.	<i>Outside inclusion criteria (published &lt;1995).</i>



## Appendix 4a – Family/home based interventions

Study	Sample	Intervention	Measures	Outcomes	Evaluation
Harvey-Berino & Rourke, 2003  USA & Canada	<p><u>Age</u>: 9 months – 3 years</p> <p><u>N</u>: 20 control, 23 intervention</p> <p><u>Retention</u>: 93%, n=40 (2 intervention families lost to follow-up &amp; 1 intervention family with incomplete follow-up data)</p> <p><u>Demographics</u>: Native American families, average of 13 years maternal education</p> <p><u>Inclusion criteria</u>: (a) family had a child aged between 9 months &amp; 3 years old (b) child was walking (c) mother BMI over 25kg/m<sup>2</sup> (d) mother agreed to keep all treatment appointments</p>	<p><u>Focus</u>: physical activity &amp; healthy eating</p> <p><u>Study design</u>: RCT</p> <p><u>Data collections</u>: baseline (week 0) and post-intervention (week 16)</p> <p><u>Control condition</u>: 16 weekly home visits by indigenous peer educator. Parenting support program focusing on general parenting skills.</p> <p><u>Intervention</u>: 16 weekly home visits by indigenous peer educator. Parenting support program focusing on how improved parenting skills could facilitate the development of appropriate eating and physical activity behaviours in the children.</p>	<p><u>Anthropometry</u>: weight-for-height z-score and weight-for-height percentile based on CDC growth charts for children. Maternal BMI.</p> <p><u>Dietary intake</u>: Total calorie and fat intake derived from 3 day food record (2 weekdays and 1 weekend) for child and parent.</p> <p><u>Physical activity/sedentary behaviour</u>: 3 day accelerometer data for child and parent (same 3 days as diet recall)</p> <p><u>Other</u>: parental feeding beliefs and practices (Child Feeding Questionnaire), maternal outcome expectations, maternal self-efficacy, maternal intention to change diet and exercise behaviours.</p>	<p><u>Anthropometry</u>: Weight-for-height z-scores decreased in the intervention group and increased in the control group (-0.27 vs. 0.31, p = 0.06). No difference in proportions of children exceeding the 85<sup>th</sup> or 95<sup>th</sup> percentile. No difference in maternal BMI.</p> <p><u>Dietary intake</u>: Total energy intake decreased for intervention but not control group children (-39.2 versus 6.8 kcal/kg per day, p=0.06). No difference for children's fat intake or for maternal dietary intake.</p> <p><u>Physical activity/sedentary behaviour</u>: No differences observed for child or maternal physical activity.</p> <p><u>Other relevant outcomes</u>: mothers in the intervention group reduced their use of restrictive child feeding practices (-0.22 vs. 0.08, p &lt; 0.05). No other differences were observed.</p>	<p><u>General comments</u>: showed the home-visiting model to be a feasible means of delivering interventions. The intervention showed evidence of effectiveness for modifying relative weight and caloric intake in children but appeared to have no impact on children's fat intake or physical activity, or on maternal measures. This study focused on Native American families.</p> <p><u>Strengths</u>: good compliance (all but 2 mothers completed all 16 sessions), good outcome measures, intervention delivered by single peer educator.</p> <p><u>Weaknesses</u>: small sample, no follow-up beyond the end of the intervention to assess sustainability of demonstrated impacts.</p>

## Appendix 4a – Family/home based interventions (continued)

Study	Sample	Intervention	Measures	Outcomes	Evaluation
<p>Worobey, Pisuk &amp; Decker, 2004</p> <p>USA</p>	<p><u>Age</u>: mean 27 months</p> <p><u>N</u>: 87</p> <p><u>Retention</u>: 69%, n=60 with complete information</p> <p><u>Demographics</u>: mainly Hispanic families (74%)</p> <p><u>Inclusion criteria</u>:</p> <p>(a) child &lt;72 months</p> <p>(b) income ≤250% of federal poverty level</p> <p>(c) at least one of the at risk circumstances (child identified for health risk, identified as high risk prenatally, or psychosocial reasons)</p>	<p><u>Focus</u>: healthy eating</p> <p><u>Study design</u>: pre-post test intervention without control. Assessment of the nutrition education component of a broader child health program (Prevention-Oriented System for Child Health: PORSCHE)</p> <p><u>Data collections</u>: baseline and approximately 8 months later</p> <p><u>Control condition</u>: none</p> <p><u>Intervention</u>: individualised home visits (weekly, monthly or bi-monthly dependent on needs) to deliver child nutrition education to parents. Topics focused on increasing iron intake, vitamin supplementation, increasing water and juice consumption, reducing high fat snacks and increasing healthy snacks.</p>	<p><u>Anthropometry</u>: none</p> <p><u>Dietary intake</u>: 24 hour diet recall</p> <p><u>Physical activity/sedentary behaviour</u>: none</p> <p><u>Other</u>: developmental assessment</p>	<p><u>Anthropometry</u>: n/a</p> <p><u>Dietary intake</u>: children's total caloric intake decreased by approximately 17% (1698 to 1411 k/cal, p&lt;0.05). No change in macronutrient proportions. Vitamin supplement use increased (60% to 87%, p&lt;0.01).</p> <p><u>Physical activity/sedentary behaviour</u>: n/a</p> <p><u>Other relevant outcomes</u>: none</p>	<p><u>General comments</u>: showed individualised child nutrition education for parents has the ability to decrease children's caloric intake. However, it is unclear whether children consumed a more healthy diet post-intervention. Much of this intervention was designed to reduce lead exposure so many of the intervention messages and outcomes may not be relevant to non-lead exposed populations. This study focused on socioeconomically disadvantaged families.</p> <p><u>Strengths</u>: no specific strengths</p> <p><u>Weaknesses</u>: there was no control group. A single 24 hour recall was the only measure of dietary intake. Outcomes related to the key topics (e.g. increasing water and juice consumption) were not reported. It is unclear whether a single interventionist delivered the program to all families. As the intervention was tailored individually to families, the topics covered and frequency of home visits was not consistent. It is unclear whether other aspects of the child health program may have impacted on the outcomes. The duration of the intervention is unclear but there does not appear to be longer term follow-up to assess sustainability of impact.</p>

## Appendix 4a – Family/home based interventions (continued)

Study	Sample	Intervention	Measures	Outcomes	Evaluation
Wardle, 2003  UK	<p><u>Age:</u> 34-38 months</p> <p><u>N:</u> 45 control, 48 information intervention, 50 exposure intervention</p> <p><u>Retention:</u> 98%, n=140 (1 control &amp; 2 exposure group families withdrew)</p> <p><u>Demographics:</u> mainly Caucasian families (74%), 68% primary carers had been engaged in full-time education beyond 20 years of age.</p> <p><u>Inclusion criteria:</u> none</p>	<p><u>Focus:</u> increasing liking and consumption of vegetables</p> <p><u>Study design:</u> RCT</p> <p><u>Data collections:</u> baseline (0 weeks) and post-intervention (2 weeks).</p> <p><u>Control condition:</u> Waitlist</p> <p><u>Intervention:</u> <i>Information</i> – Parents were informed about the ‘5-a-day’ fruit and vegetable recommendations and given a leaflet with advice and suggestions for increasing children's fruit and vegetable consumption. They were invited to ask questions about healthy eating. <i>Exposure</i> – Parents were instructed to offer their child a taste of their target vegetable every day for 14 consecutive days. (Target vegetable was the vegetable ranked by the child as third out of six in a pre-intervention preference taste test). Parents were provided with suggested techniques to encourage tasting and the importance of not offering a reward for consumption was highlighted. In addition, a ‘vegetable diary’ was provided for parents to record their experiences and for children to record their liking for the vegetable using stickers each day.</p>	<p><u>Anthropometry:</u> none</p> <p><u>Dietary intake:</u> Liking for six test vegetables assessed using a 3-point faces scale. Test vegetables ranked for preference (1=most liked, 6=least liked). Consumption of target vegetable (ranked 3<sup>rd</sup>) assessed by weighing amount of vegetable before and after voluntary consumption.</p> <p><u>Physical activity/sedentary behaviour:</u> none</p> <p><u>Other:</u> semi-structured phone interviews to assess intervention materials and procedure with 20 parents 6 weeks post-intervention.</p>	<p><u>Anthropometry:</u> n/a</p> <p><u>Dietary intake:</u> Liking of target vegetable increased more in exposure than control (p&lt;0.01) or information (p&lt;0.001) groups. Preference ranking of target vegetable increased more in exposure than control (not significant) or information (p&lt;0.05) groups. At follow-up 65% of exposure group children rated their target vegetable as liked and almost 30% as most liked (preferred). Voluntary consumption of the target vegetable at the taste test increased significantly only in the exposure group (47% to 77% of children).</p> <p><u>Physical activity/sedentary behaviour:</u> n/a</p> <p><u>Other relevant outcomes:</u> 17/20 interviewed parents thought the exposure advice was useful and 11/20 had used the method with other foods. 7/10 exposure group parents interviewed thought there had been a lasting effect on their child's liking of the target vegetable. The duration of the exposure method was regularly criticised by interviewed parents.</p>	<p><u>General comments:</u> this parent-delivered intervention demonstrated improved liking, preference and consumption of a target vegetable by repeated exposure. The sample was predominantly high SES families which may limit its generalisability.</p> <p><u>Strengths:</u> a relatively simple parent-delivered intervention that could be widely implemented for low cost.</p> <p><u>Weaknesses:</u> there was poor compliance in the exposure group with 29% completing less than 10/14 tastings. There was no quantitative follow-up beyond the 2 week intervention period to assess sustainability of impact. The use of the “vegetable diary” may have constituted a reward and hence impacted the results.</p>

## Appendix 4b – Group-based interventions

Study	Sample	Intervention	Measures	Outcomes	Evaluation
<p>McGarvey, Keller, Forrester et al 2004</p> <p>USA</p> <p><i>Fit WIC</i></p>	<p><u>Age</u>: 3 years (0.65 SD)</p> <p><u>N</u>: 151 control, 185 intervention</p> <p><u>Retention</u>: 65% of intervention group; 43% of control group evaluated at 1 year follow-up</p> <p><u>Demographics</u>: Parents attending the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) clinics. 59% ≤ high school education 54% Hispanic 17% white 16% African American</p> <p><u>Inclusion criteria</u>: Attendees at the WIC program</p>	<p><u>Focus</u>: six key dietary and physical activity behaviours (described under “intervention”).</p> <p><u>Study design</u>: Prospective, pre-test post-test, non-randomised control group design.</p> <p><u>Data collections</u>: Baseline (week 0) and post-intervention (1 year)</p> <p><u>Control condition</u>: Participation in regular WIC program 6 educational groups and 2 individual contacts</p> <p><u>Intervention</u>: (A) 6 educational groups and 2 individual contacts promoting 1) increase PA 2) monitor mealtime behaviour 3) limit household TV viewing 4) drink water instead of sweetened beverages 5) consume 5 fruit or vegetables daily 6) increase family activities to promote fitness</p> <p>(B) Role modelling by WIC staff</p> <p>(C) Reinforcement by promotion of messages by collaborating organisations in the local community.</p>	<p>Reports from parents (usually the mother) on child behaviours observed within 24hrs or 7-days were used to assess the targeted behaviours.</p> <p><u>Anthropometry</u>: none</p> <p><u>Dietary intake</u>: offering fruits and vegetables daily was assessed with a 5-point scale (1=none to 5=always). Frequency of offering water instead of sweetened drinks was assessed according to a 6 point scale (1=none to 6=five or more times a day).</p> <p><u>Physical activity/sedentary behaviour</u>: engaging in active play with the child and modelling family activity were assessed with a 5-point likert scale (1=none/very inactive -5=always/very active)</p> <p><u>Other</u>: watching television while eating was assessed with a 5-point likert scale (1=never -5=always). Mealtime behaviour was assessed with 2 items: Parents were also asked how frequently they had observed staff members enacting the targeted behaviours, and were asked to complete a checklist of community resources collaborating with the program that parents had used.</p>	<p><u>Anthropometry</u>: n/a</p> <p><u>Dietary intake</u>: intervention group parents were significantly more likely to report increased frequency of offering their child water rather than sweetened beverages.</p> <p><u>Physical activity/sedentary behaviour</u>: intervention group parents were more likely to report that they were involved in active play with their child.</p> <p><u>Other relevant outcomes</u>: intervention parents were significantly more likely to report observing staff engaging in targeted health behaviours. They were also significantly more likely to use community activity centres.</p>	<p><u>General comments</u>: showed the existing health service delivery model to be a feasible means of delivering interventions. The intervention showed evidence of effectiveness for modifying parent behaviours regarding offering of water over sweetened drinks and taking opportunities to engage in active play, however did not affect four other targeted behaviours. It focused on socioeconomically disadvantaged families.</p> <p><u>Strengths</u>: moderately good retention of participants. Intervention delivered in existing infrastructure. Followed over a one-year period.</p> <p><u>Weaknesses</u>: measures used were not validated and involved only subjective self-report. Multiple points of intervention (potentially both a strength and a weakness) means that there is no capacity to understand which aspect (one or more) may have impacted on the behaviour changes. This has implications for the potential cost of interventions.</p>

## Appendix 4c – Primary care-based interventions

Study	Sample	Intervention	Measures	Outcomes	Evaluation
Johnson, Birkett, Evens, Pickering 2005  USA	<p><u>Age:</u> n/a</p> <p><u>N:</u> Convenience sample drawn from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Pre-intervention: 10,204 WIC clients and 205 WIC staff responded to survey. Post-intervention: 8977 clients and 211 staff responded to survey.</p> <p><u>Retention:</u> n/a</p> <p><u>Demographics:</u> 66% high school graduates, 59% non-Hispanic white, 5% non-Hispanic black or African-American, 6% American Indian or Alaska Native, 4% Asian, 2% Native Hawaiian or Pacific Islander, 25% Hispanic.</p> <p><u>Inclusion criteria:</u> (a) English or Spanish speaking people (surveys only provided in these two languages). (b) Respondents who had one or more children.</p>	<p><u>Focus:</u> to reduce television viewing by reducing viewing during meals and by displacing with increased physical activity</p> <p><u>Study design:</u> Data collected from a convenience sample during a 3- week period pre-intervention and another 3- week period after 6 months of the intervention.</p> <p><u>Data collections:</u> Baseline (week 0) and post-intervention (6 months)</p> <p><u>Control condition:</u> No control group</p> <p><u>Intervention:</u> TV-reduction messages &amp; delivery methods were developed to address key components of social marketing (product, price, place, and promotion). Individual handouts &amp; education approaches were based on client's stage of change. WIC staff were encouraged to use the materials to accommodate local needs, to adopt healthy behaviours themselves and to share the materials with local partners. There were two main modules which both emphasised reduction in TV viewing 1) family meals 2) family physical activity. Each module included background materials, staff-training materials, banners, posters, interactive handouts for clients, bookmarks, children's colouring materials, detailed plans for group sessions, and other supportive materials (provided in both English and Spanish).</p>	<p><u>Anthropometry:</u> none</p> <p><u>Dietary intake:</u> none</p> <p><u>Physical activity/sedentary behaviour:</u> Participants were asked how many hours of TV their children watch on an average day.</p> <p><u>Other:</u> Participants were also asked if they watch TV during meals.</p>	<p><u>Anthropometry:</u> n/a</p> <p><u>Dietary intake:</u> n/a</p> <p><u>Physical activity/sedentary behaviour:</u> Two or less hours of TV viewing per day was reported by 64% of WIC clients at baseline and 71% at 6 months (<math>p &lt; 0.001</math>). The portion of non-high school graduates who watched 2 or less hours per day increased 9% (from 58% to 67% at post-test), whereas there was a 5% increase for high school graduates (<math>p &lt; 0.001</math>). 82% of white staff reported watching 2 or less hours per day compared to 59% of non-white staff.</p> <p><u>Other relevant outcomes:</u> At baseline, 65% of respondents reported that they do not usually or never watch TV during meals, after 6 months 69% reported not watching TV during meals (<math>p &lt; .001</math>). These respondents were more likely to be white (<math>p &lt; .001</math>), have larger families (<math>p &lt; 0.001</math>), or have higher education levels (<math>p &lt; 0.001</math>). 76% of white WIC staff reported that they seldom or never watch TV during meals in comparison to 59% of non-white WIC staff (<math>p = 0.014</math>).</p>	<p><u>General comments:</u> this large population-based study provides some lower level evidence that an intensive education program delivered via clinic based services may have some reducing television viewing times in socioeconomically disadvantaged families.</p> <p><u>Strengths:</u> very large sample size. Followed over a six-month period. Characterised those WIC participants most likely to be watching more than 2 hours of TV and watching during meal-times.</p> <p><u>Weaknesses:</u> No description can be given of individual level of intervention received. Between 7 and 82% of participants were exposed to messages in this intervention. i No control group. Parental reports of child's behaviour. Study compared TV viewing in February (Winter; before the intervention) and August (Summer; after the intervention) thus differences may reflect existing seasonal patterns of viewing.</p>

## Appendix 4c – Primary care-based interventions (continued)

Study	Sample	Intervention	Measures	Outcomes	Evaluation
<p>(1) Lagstrom, Jokinen, Seppanen et al 1997</p> <p>(2) Talvia, Lagstrom, Rasanen et al 2004</p> <p>Finland</p> <p><i>STRIP - Special Turku Coronary Risk Factor Intervention Project</i></p>	<p><u>Age</u>: (1) 8 months to 4 years (2) to 10 years of age</p> <p><u>N</u>: 522 control, 540 intervention (1062 children from 1054 families)</p> <p><u>Retention</u>: not reported</p> <p><u>Demographics</u>: general population sample</p> <p><u>Inclusion criteria</u>: child aged 7 months at recruitment, without severe illness.</p>	<p><u>Focus</u>: reduction of fat intake and changes to fat profiles of children's diets</p> <p><u>Study design</u>: prospective randomised clinical trial</p> <p><u>Data collections</u>: multiple</p> <p><u>Control condition</u>: families were seen biannually and did not routinely receive any detailed counselling focused on the risk factors of atherosclerosis.</p> <p><u>Intervention</u>: parents were seen by a nutritionist at one to three month intervals until their child was two years of age, and then twice yearly. Individualised dietary counselling focused on appropriate fat reduction and appropriate ratios of saturated to poly- and mono-unsaturated fats.</p>	<p><u>Anthropometry</u>: length (height) and weight measured at 8, 13, 18 months and then at 6 month intervals after that.</p> <p><u>Dietary intake</u>: 3-4 days (including one weekend day) of food records kept by parents at 8, 13, 18 months and at 6 monthly intervals after that.</p> <p><u>Physical activity/sedentary behaviours</u>: none</p> <p><u>Other</u>: blood analyses done at various points throughout the study</p>	<p><u>Anthropometry</u>: no differences in growth between Intervention and control children</p> <p><u>Dietary intake</u>: intervention children's intake of saturated fat and cholesterol decreased throughout the study and remained below that of the control group throughout follow-up.</p> <p><i>Note that this study continues today and thus dietary data continues to be collected and continues to show positive dietary differences between intervention and control children.</i></p> <p><u>Physical activity/sedentary behaviours</u>: n/a</p> <p><u>Other relevant outcomes</u>: none</p>	<p><u>General comments</u>: this well-designed study shows that individualized infancy-onset dietary counselling directed at parents (and later children) influenced the intervention children's diet favourably, with reductions in total fat intake and maintenance of recommended dietary intakes of other nutrients (however, desired ratio of fats was not achieved). Early changes in intake (to 4 years of age) persisted between the ages of 4 and 10 years.</p> <p><u>Strengths</u>: high quality study, prospective with a randomised control group.</p> <p><u>Weaknesses</u>: regular interaction and dietary recording may change behaviours in the intervention group.</p>

## Appendix 4d – Pre-school / child care based interventions

Study	Sample	Intervention	Measures	Outcomes	Evaluation
Dennison et al, 2004  USA	<p><u>Age:</u> 2.5 - 5.5 years</p> <p><u>N:</u> 83 control , 93 intervention</p> <p><u>Retention:</u> 44%, n=77 (34 control &amp; 43 intervention) with follow-up data from 8 intervention and 8 control preschools / child care centres.</p> <p><u>Demographics:</u> predominantly Caucasian families with highly educated and employed parents.</p> <p><u>Inclusion criteria:</u> none</p>	<p><u>Focus:</u> reduce television viewing</p> <p><u>Study design:</u> cluster RCT</p> <p><u>Data collections:</u> baseline and approximately 6 months later</p> <p><u>Control condition:</u> 20 minute monthly interactive education sessions for eight months and complementary staff and parental materials on general health and safety.</p> <p><u>Intervention:</u> seven 20 minute interactive education sessions (six weekly sessions and a final session one month later) plus complementary materials and suggested classroom activities for staff and take-home information and materials for parents on reducing television viewing. Topics included the importance of reading, television-free family mealtimes, alternative activities to television viewing, television time budgets and family television-free weeks.</p>	<p><u>Anthropometry:</u> BMI z-score using CDC growth charts. Tricep skinfold measurement of left arm.</p> <p><u>Dietary intake:</u> none</p> <p><u>Physical activity/sedentary behaviour:</u> parent reports of average television viewing and video/ computer games by child on a Saturday, Sunday and average weekday (combined to provide weekly viewing hours). Children dichotomised to ≤2hrs TV per day or &gt;2hrs TV per day.</p> <p><u>Other:</u> parent reports of whether child has TV in their bedroom, number of days per week the child ate dinner with the TV on, number of days per week the family ate dinner together, frequency of the child snaking while watching television.</p>	<p><u>Anthropometry:</u> no differences between groups/</p> <p><u>Dietary intake:</u> n/a</p> <p><u>Physical activity/sedentary behaviour:</u> intervention group children watched significantly less television at follow-up than control children (adjusted mean difference -4.7hrs/wk, p=0.02) and significantly fewer exceeded 2hrs daily viewing (19% vs. 41%, p=0.007). No differences for video/computer games.</p> <p><u>Other relevant outcomes:</u> No differences between groups in frequency of snacking during television viewing, frequency of eating dinner as a family or frequency of watching television during dinner.</p>	<p><u>General comments:</u> this program appeared to be effective in reducing children's television viewing time and increasing the number of children meeting recommended viewing limits. The sample was predominantly high SES families.</p> <p><u>Strengths:</u> intervention delivered by a single early childhood educator. Follow-up extended beyond the end of the intervention. It was delivered within an existing infrastructure but using an external interventionist.</p> <p><u>Weaknesses:</u> part of a broader health promotion program (Brocodile the Crocodile 32 week intervention) so unclear whether other aspects of the program may have impacted the results. The timeline of education sessions was different for the intervention and control groups. There was a small sample and poor retention.</p>

## Appendix 4d – Pre-school / child care based interventions (continued)

Study	Sample	Intervention	Measures	Outcomes	Evaluation
<p>Fitzgibbon et al, 2005</p> <p>USA</p> <p><i>Hip Hop to Health Jr.</i></p>	<p><u>Age:</u> 3-5 years</p> <p><u>N:</u> 409</p> <p><u>Retention:</u> 71%, n=289 at 1 year follow-up; 73%, n=300 at 2 year follow-up.</p> <p><u>Demographics:</u> predominantly low-income African-American families</p> <p><u>Inclusion criteria:</u> child enrolled in Head Start Program</p>	<p><u>Focus:</u> overweight prevention (through healthy eating and physical activity)</p> <p><u>Study design:</u> cluster RCT</p> <p><u>Data collections:</u> baseline (0 weeks), post-intervention (14 weeks), 1 year follow-up &amp; 2 year follow-up</p> <p><u>Control condition:</u> 20 minute weekly education sessions for 14 weeks covering general health topics. Parents received a weekly newsletter containing complementary information.</p> <p><u>Intervention:</u> 40 minute sessions (20 minutes of education and 20 minutes of aerobic activity) three times per week for 14 weeks. Education topics covered healthy eating and physical activity. Parents received weekly newsletters containing complementary information to what the children were learning and a homework assignment requiring 15-35 minutes per week. Parents could also attend twice weekly aerobic sessions.</p>	<p><u>Anthropometry:</u> BMI</p> <p><u>Dietary intake:</u> 24 hour dietary recall (by parents for the part of the day the child was with them, by observation at preschools for meals consumed there).</p> <p><u>Physical activity/sedentary behaviour:</u> parents report intensity and frequency of child's current activities and television viewing time per day.</p> <p><u>Other:</u> child knowledge of healthy eating and exercise, parental modelling of healthy eating and exercise, parental eating and exercise habits.</p>	<p><u>Anthropometry:</u> no difference post-intervention but intervention children had lower BMI increases than control group children at 1 year (0.02 kg/m<sup>2</sup> vs. 0.64 kg/m<sup>2</sup>, p=0.002) and 2 year (0.48 kg/m<sup>2</sup> vs. 1.14 kg/m<sup>2</sup>, p=0.008) follow-ups.</p> <p><u>Dietary intake:</u> Intervention children had lower percent of calories from saturated fat than control children at 1 year follow-up (11.6% vs. 12.8%, p=0.002), but no differences post-intervention or at 2 year follow-up. No differences in total fat intake or dietary fibre intake.</p> <p><u>Physical activity/sedentary behaviour:</u> no differences.</p> <p><u>Other relevant outcomes:</u> none</p>	<p><u>General comments:</u> this intervention appeared to be effective over the longer term in impacting the primary outcome of interest i.e. reduced BMI increases. However it did not appear to have a large impact on dietary and physical activity outcomes. This study focused on socioeconomically disadvantaged families.</p> <p><u>Strengths:</u> follow up to 2 years post-intervention. This intervention was delivered within an existing infrastructure.</p> <p><u>Weaknesses:</u> low retention rate. Poor parental compliance with only 61% returning at least one of the 14 homework assignments (despite a cash incentive); 88% reported reading the newsletters. The measures of physical activity may not have been sensitive enough to detect changes.</p>

## Appendix 4e– Mixed setting interventions

Study	Sample	Intervention	Measures	Outcomes	Evaluation
<p>Horodynski &amp; Stommel 2005</p> <p>USA</p> <p><i>NEAT – Nutrition Education Aimed at Toddlers</i></p>	<p><u>Age:</u> mean age 19.3 months</p> <p><u>N:</u> 73 control, 62 intervention</p> <p><u>Retention:</u> 69% of intervention group; 71% of control group evaluated at 6 month follow-up</p> <p><u>Demographics:</u> Families enrolled in Early Head Start (EHS) programs (designed to provide child and family development services to low-income pregnant women and with families of infants or toddlers). Low income families. 24% left school before completing high school. 66% were not employed. Predominantly Caucasian (84%) and rural families. 48% caregivers married.</p> <p><u>Inclusion criteria:</u>            (a) low-income families (defined as family/household income at or below 100% of the Poverty Index.            (b) toddlers aged 11-25 months at the time of intake to the study.</p>	<p><u>Focus:</u> Enhancing parent-toddler feeding practices and promoting healthy eating behaviours.</p> <p><u>Study design:</u> Quasi-experimental with repeated measures</p> <p><u>Data collections:</u> Baseline (week 0), at 4 weeks (post group lessons) and 6 months (post individual reinforcement activities).</p> <p><u>Control condition:</u> No treatment</p> <p><u>Intervention:</u> The NEAT intervention consisted of two components;            1. Four group-based nutrition lessons: approximately 90 minutes long and offered weekly by trained nutrition instructors. Class sessions included such concepts as adult modelling of positive eating behaviours for toddlers, introducing new foods to toddlers, addressing parents' concerns about what and how much their toddlers eat, and parenting skills.            2. 18 individually structured reinforcement activities: The reinforcement dealt with both cognitive and affective activities, presenting the caregiver with a scenario he/she would likely to encounter in dealing with their toddler. During these activities emphasis was given to the toddlers' self-regulation, the division of responsibility in feeding, and parent-child interactions.</p>	<p><u>Anthropometry:</u> none</p> <p><u>Dietary intake:</u> 24-hour diet recall – not presented in this paper</p> <p><u>Physical activity/sedentary behaviour:</u> none</p> <p><u>Other:</u> 3 home visits including mealtime observations.</p> <p><i>Child-Parent Mealtime Behaviour Questionnaire:</i> Adapted from the Children's Eating Behavior Inventory (CEBI) (Archer et al, 1991). Assessed parents' self-report of child eating and mealtime behaviour.</p> <p><i>Facts on Feeding Children Questionnaire:</i> To assess the parent's knowledge of appropriate toddler feeding and behaviour during mealtime.</p> <p><i>The Feeding Self-Efficacy Questionnaire:</i> Provided a measure of parents' self-efficacy in feeding their toddler.</p>	<p><u>Anthropometry:</u> n/a</p> <p><u>Dietary intake:</u> n/a</p> <p><u>Physical activity/sedentary behaviour:</u> n/a</p> <p><u>Other relevant outcomes:</u>  <i>Child-Parent Mealtime Behaviour Questionnaire:</i> No changes in toddler feeding self-regulation (over the three measurement points).</p> <p><i>Facts on Feeding Children Questionnaire:</i> Intervention group carers were statistically more knowledgeable post-intervention than were controls</p> <p><i>The Feeding Self-Efficacy Questionnaire:</i> Caregivers' self-efficacy scores increased slightly from time 1 and time 3 in both the control and intervention groups (P &lt;0.05).</p> <p><i>Interviews and observations:</i> The percentage of caregivers who left the TV on during mealtime reduced from 58% (time 1), to 54% (time 2), to 39% (time 3). Within the control group these percentages remained stable 46% (time 1), to 48% (time 2), to 48% (time 3). Although the differences between the control group compared to the intervention group were not significant (p =.077).</p>	<p><u>General comments:</u> this intervention highlights the fact that changes in knowledge do not necessarily result in changes in targeted behaviours, thus reinforcing the understanding that emphasis on skills development and descriptions of predictors of behaviours are paramount. While dietary data was collected this was not reported. This study focused on socioeconomically disadvantaged families.</p> <p><u>Strengths:</u> moderately good retention of participants. Intervention delivered in existing infrastructure. Followed over a six month period. Assessments occurred at three time points.</p> <p><u>Weaknesses:</u> two of the three measures used were not tested for their reliability – thus we cannot be sure they were assessing what they intended to assess. No discussion of sample size and the capacity to detect change in the domains assessed.</p>

# **SOUTH AUSTRALIAN ABHI SCHOOL AND COMMUNITIES PROGRAM EQUITY FOCUSED HEALTH IMPACT ASSESSMENT**

## **SUMMARY OF KEY MESSAGES FROM STAKEHOLDER INTERVIEWS**

### **Evidence and the use of evidence**

- *There is a perceived lack of evidence of effective interventions with disadvantaged communities*
- *Schools and Communities Program have a role in growing evidence*
- *Causal links between program activities and outcomes are difficult to identify*
- *There is a lack of evidence based planning in the bigger picture*

### **Recruitment and retention of staff in key positions is critical**

- *Getting the right skill mix will determine outcomes*
- *Support and supervision is a key responsibility for senior and middle managers*
- *Structured communication mechanisms will assist in supporting and retaining staff*
- *Staff need training and ongoing support to change their clinical practice*

### **Impact of short term funding is greatest on disadvantaged communities**

- *Short term funding affects planning at all levels (those with least access excluded)*
- *Short term funding is counterproductive to achieving health gains*
- *Time to establish relationships and gain trust must be explicit in project management*
- *Looking for quick wins means more complex strategies are not considered*

### **There is a range of views on health inequities and on appropriate responses**

- *Policy makers, managers and practitioner perspectives are not well aligned*
- *Dialogue between policy and practice will help make implementation effective*
- *Understanding the objectives of universal and targeted approaches will help define roles and responsibilities*
- *A program logic and evaluation framework will help maintain overall focus*

### **A focus on individual behaviours alone is not effective in achieving outcomes**

- *Funding does not address social determinants or environmental disadvantage*
- *Formal AND informal exchange with partners and stakeholders will inform a broader whole-of-sector response*
- *Transferring learning across government agencies may increase program impact*

### **An explicit commitment to equity at Departmental level is critical to success**

- *Staff need leadership and support to respond effectively to inequities*
- *There may be differential adoption of equity based approaches*
- *A range of concrete strategies can strengthen practice (learning by doing)*
- *Structured reflections on practice should engage and inform policy development*

### **One size does not fit all**

- *Program planning should identify diverse client characteristics and integrate strategies which reflect cultural identities*
- *Social marketing targeting the “middle class” is unlikely to reach the disadvantaged*
- *A number of strategies exclude families with complex vulnerabilities*