# Factors contributing to the sustainability of an early childhood obesity prevention intervention: The *Infant Program*



















Dr Rachel Laws



A/Professor Kylie Hesketh

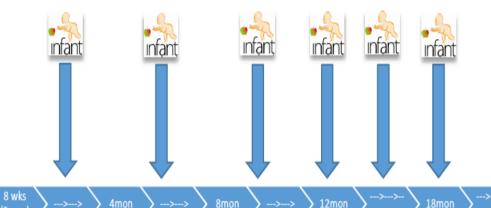


Professor Karen Campbell



# The Infant Program





Victorian Maternal and Child Health Key Ages & Stages Service







3-5years

2 wks

4 wks

Home visit

# The Infant Program

















# Evolution of the *Infant Program*: from trial to sustainability





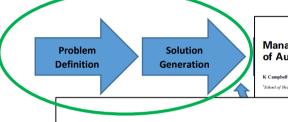
Rychetnik L, Bauman A, Laws R, King L, Rissel C, Nutbeam D, et al. Translating research for evidence-based public health: Key concepts and future directions. Journal of Epidemiology and Community Health. 2012;66(12):1187-92







## Evolution: formative research



Obesity Management: Australian General

Karen Campbell, \* Helen Engel, † Anna Timperio, \* Catherine Cooper, † and David Crawford \*

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Practitioners' Attitudes and Practices

International Journal of Obesity (2000) 24, 701-710

#### Management of obesity: attitudes and practices of Australian dietitians

K Campbell<sup>1</sup> and D Crawford<sup>1</sup>\*

School of Health Sciences, Deakin University, Burwood, Australia

des and current practices of Australian dietitians in the management of overweight r training needs. survey of a randomly selected sample of members of the Dietitians Association of

d measures of dietitian's views of obesity, education and training in weight manageons of success, professional preparedness, approaches to weight management, inht management, and problems and frustrations experienced. selves as potential leaders in the field of weight management, and saw this area as

While they considered themselves to be the best-trained professionals in this area, poor and many were pessimistic about intervention outcomes. Despite this, most current, and regularly employed many of the elements of known best practice in ant areas of weakness included: providing opportunities for long-term follow-up; ant interactions: reprocing self-providing opportunities for long-term follow-up; and interactions: reprocing self-providing opportunities for long-term follow-up;

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Interventions for preventing obesity in children (Review)

Campbell K, Waters E, O'Meara S, Kelly S, Summerbell C

# THE COCHRANE

Australian parents' views on their 5-6-year-old children's food choices

KAREN J. CAMPBELL, DAVID A. CRAWFORD and KYLIE D. HESKETH

Centre for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Deakin University, Burwood, Australia

Health Promotion International, Vol. 22 No. 1

doi:10.1093/hcapeo/dal035

The home food environment is central to the development of healthy eating behaviours, but associations between the home food environment and children's food choices are not yet fully understood. The aims of this study were to explore parents' views regarding factors that influence children's food choices and parents' decision-making regarding the food they provide to their children. In-depth one-on-one interviews were conducted using a semistructured interview schedule. Key concepts and themes were coded independently by two investigators. Participants include seventeen parents (16 mothers and 1 father) of children in their first year of formal schooling (aged 5-6 years). Five main themes emerged from the interviews: food marketing, food availability/food exposure, feeding

children was also seen to influence what a child ate. Yet, although some parents believed it was the parents' role to determine what foods were made available to their child. others offered food on the basis of the child's tastes or preferences. The use of food as a reward was a feeding strategy employed by many parents. Family mealtimes were seen as an important opportunity for modelling of eating behaviour by parents. Peers were also seen to influence children's food preferences and eating behaviour. Finally, many parents believed that involving children in the preparation of food had a positive impact on children's food choices. Associations between the home food environment and children's food choices are complex and involve multiple mediators. Parents' views on the promoters and reinforcers of their decision-making reparding food and

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**COLLABORATION®** 

obesity reviews

doi: 10.11115.1467-769X-2006.00005.x

Strategies which aim to positively impact on weight. physical activity, diet and sedentary behaviours in children from zero to five years. A systematic review of the literature

K. J. Campbell and K. D. Hesketh

Centre for Physical Activity and Nutrition Research, School of Exercise and Nutrition Sciences, Deakin University, Burwood,

Preventing the development of obesity in children is an international health priority. To assess the effectiveness of interventions designed to prevent obesity, romote healthy eating and/or physical activity and/or to reduce sedentary beha-

nature publishing group

#### Interventions to Prevent Obesity in 0-5 Year Olds: An Updated Systematic Řeview of the Literature

Kylie D. Hesketh<sup>1</sup> and Karen I. Campbell<sup>1</sup>

The small number and recency of the early childhood obesity-prevention literature identified in a previous review of interventions to prevent obesity, promote healthy eating, physical activity, and/or reduce sedentary behaviors in 0-5 year olds suggests this is a new and developing research area. The current review was conducted to provide an update of the rapidly emerging evidence in this area and to assess the quality of studies reported. Ten electronic databases were searched to identify literature published from January 1995 to August 2008. Inclusion criteria: interventions reporting child anthropometric, diet, physical activity, or sedentary behavior outcomes and focusing on children aged 0-5 years of age. Exclusion criteria: focusing on breastfeeding, eating disorders, obesity treatment. malnutrition, or school-based interventions. Two reviewers independently extracted data and assessed study quality Twenty-three studies met all criteria. Most were conducted in preschool/childcare (n = 9) or home settings (n = 8). Approximately half targeted socioeconomically disadvantaged children (n = 12) and three quarters were published from 2003 onward (n = 17). The interventions varied widely although most were multifaceted in their approach. While study design and quality varied most studies reported their interventions were feasible and acceptable. although impact on behaviors that contribute to obesity were not achieved by all. Early childhood obesity-prevention interventions represent a rapidly growing research area. Current evidence suggests that behaviors that contribute to obesity can be positively impacted in a range of settings and provides important insights into the most effective strategies for promoting healthy weight from early childhood.

The prevalence of obesity is high and increasing in all age groups and most countries worldwide (1,2), with these trends being observed from early in life (3). Behaviors that contribute to obesity, including high-energy dense food consumption (4) and frequent sedentary behavior (5-7), are also prevalent conducted to provide an update of the emerging evidence in during early childhood (0-5 years of age). Evidence regarding physical activity levels in young children remains inconclusive (8) which is likely due to issues of measurement. Declining diet quality (9) increasing sedentary behavior (10) and decreasing physical activity levels across childhood (11) suggest these tool aims to assist with comparison of disparate study designs. obesity-promoting behaviors observed early in life persist

obesity-prevention literature suggests this is a new and devel oping research area. A number of reviews of obesity prevention during early childhood have been published in recent years (13-17), all with differing inclusion criteria and predominantly focusing on the preschool age group. The current review was this area and to assess the quality of studies reported. The inclu sion in this review of a broad range of study designs enables a comprehensive overview of the obesity-prevention literature The incomporation of a published (18) study quality assessment

Given these trends, early intervention to positively impact METHODS AND PROCEDURES

# Evolution: intervention testing

Cluster RCT (2008) Follow-up (2011)



#### **BMC Public Health**



The Infant Feeding Activity and Nutrition Trial (INFANT) an early intervention to prevent childhood obesity: Cluster-randomised

Karen Campbell<sup>1</sup>, Kylie Hesketh<sup>1</sup>, David Crawford<sup>1</sup>, Jo Salmon<sup>1</sup>, Kylie Ball<sup>1</sup> and Zoë McCallum\*2

Address: <sup>1</sup>Centre for Physical Activity and N Victoria, Australia and <sup>2</sup>Department of Pedia Email: Karen Campbell - karen.campbell@ David Crawford - dcraw@deakin.edu.au: lo Zoë McCallum\* - zoe.mccallum@rch.org.a Corresponding author

Published: 31 March 2008

BMC Public Health 2008, 8:103 doi:10.1186/1-This article is available from: http://www.bior © 2008 Campbell et al: licensee BioMed Centr This is an Open Access article distributed under which permits unrestricted use, distribution, ar

Abstract



Contemporary Clinical Trials 34 (2013) 145-151 Contents lists available at SciVerse ScienceDirect

Contemporary Clinical Trials

journal homepage: www.elsevier.com/locate/conclintrial



The Melbourne Infant Feeding, Activity and Nutrition Trial (InFANT) Program follow-up

Kylie D. Hesketh a,\*, Karen Campbell a, Jo Salmon a, Sarah A. McNaughton a, Zoe McCallum b, Adrian Cameron a, Kylie Ball a, Lisa Gold c, Nick Andrianopoulos a, David Crawford a

<sup>a</sup> Centre for Physical Activity and Nutrition Research, Deakin University, 221 Burwood Hwy, Burwood, Melbourne VIC 3125, Australia

A Parent-Focused Intervention to Reduce Infant Obesity Risk Behaviors: A Randomized Trial



WHAT'S KNOWN ON THIS SUBJECT: While obesity-promoting eating, sedentary and physical activity behaviors, and increased prevalence of adiposity are evident from early life, few highquality studies have evaluated interventions that seek to influence the development of these behaviors in very early childhood.



WHAT THIS STUDY ADDS: This study highlights the receptivity of first-time parents to interventions focused on their new infant's eating and active play and provides evidence of effectiveness on some obesity-promoting behaviors in very early childhood.

AUTHORS: Karen J. Campbell, PhD.\* Sandrine Ligret, PhD.\* Sarah A. McNaughton, PhD," David A. Crawford, PhD," Jo. Salmon. PhD.\* Kylie Ball, PhD.\* Zoe McCallum, PhD.b Bibi E. Gerner, MPH.º Alison C. Spence, PhD.\* Adrian J. Cameron. PhD.\* Jill A. Hnatiuk, MSc.\* Obioha C. Ukoumunne, PhD.4 Lisa Gold, PhD," Gavin Abbott, PhD," and Kylie D. Hesketh,

"Centre for Physical Activity and Nutrition Research, and "Deakin Health Economics, Deakin University, Burwood, Australia: \*Department of Paediatrics, The University of Melbourne. Melbourne, Australia: Centre for Community Child Health, Royal Children's Hospital, Parkville, Australia: and \*Penninsula Collaboration for Leadership in Applied Health Research and Care, Peninsula College of Medicine and Dentistry, University of Exeter, Exeter, United Kingdom

nd Nutrition Trial (InFANT) Program, is a I of an obesity prevention intervention months. Conducted from 2008 to 2010. wed positive impacts on some dietary ed for a follow-up study of participants and 5 years). The follow-up study aims noderators of effects, and program

the Melbourne InFANT Program at ewed consent sought to participate in . Home visit data collections will occur Main outcomes to be assessed include (3 × 24-hour recalls: food frequency cele rome ter data: parent reported active meter and ActivPAL inclinometer data:

e InFANT Program at two and 3.5 years m intervention effects, investigation of and economic evaluation of the longer to researchers and policy makers in

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## Evolution: small scale implementation



#### RESEARCH ARTICLE

Open Access

Obesity prevention in early life: an opportunity to better support the role of Maternal and Child Health Nurses in Australia

R. Laws<sup>1,5\*</sup>, K. J. Campbell<sup>1,5</sup>, P. van der Pligt<sup>1</sup>, K. Ball<sup>1,5</sup>, J. Lynch<sup>2,5</sup>, G. Russell<sup>3,5</sup>, R. Taylor<sup>4,5</sup> and E. Denney-Wilson<sup>3,5</sup>

Abstract Backgrou arises for practices

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Campbell et al. BMC Public Health (2016) 16:166

**BMC Public** 

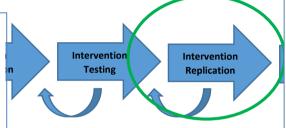
#### STUDY PROTOCOL

The extended Infant Feeding, Activity and Nutrition Trial (InFANT Extend) Program: a cluster-randomized controlled trial of an early intervention to prevent childhood obesity

Karen J. Campbell1\*, Kylie D. Hesketh1, Sarah A. McNaughton1, Kylie Ball1, Zoë McCallum2, John Lynch1 and David A. Crawford<sup>1</sup>

#### Abstract

Background: Understanding how we can prevent childhood obesity in scalable and sustainable ways is Early RCT interventions focused on the first two years of life have shown promise however, differences in Mass Index between intervention and control groups diminish once the interventions cease. Innovative effective strategies seeking to continue to support parents to engender appropriate energy balance behayoung children need to be explored.



Laws et al. BMC Public Health (2016) 16:748 DOI 10.1186/s12889-016-3361-x

**BMC Pul** 

Translating an early childhood obesity prevention program for local community implementation: a case study of the Melbourne InFANT Program

R. Laws<sup>12,3\*</sup>D, K. D. Hesketh<sup>1,3</sup>, K. Ball<sup>1,2</sup>, C. Cooper<sup>1</sup>, K. Vrljic<sup>4</sup> and K. J. Campbell<sup>1,2,3</sup>

#### Abstract

Background: While there is a growing interest in the field of research translation, there are few pur examples of public health interventions that have been effectively scaled up and implemented in This paper provides a case study of the community-wide implementation of the Melbourne Infant, and Nutrition Trial (InFANT), an obesity prevention program for parents with infants aged 3-18 mo explored key factors influencing the translation of the Program into routine practice and the respect policy makers, researchers and implementers.

Methods: Case studies were conducted of five of the eight prevention areas in Victoria, Australia who the Program, Cases were selected on the basis of having implemented the Program for 6 months or collected from January to June 2015 and included 18 individual interviews, one focus group and obse meetings. A total of 28 individuals, including research staff (n = 4), policy makers (n = 2) and implement contributed to the data collected. Thematic analysis was conducted using cross case comparisons and were verified through member checking.





check for

#### Factors Influencing Parental Engagement in an Early Childhood Obesity Prevention Program Implemented at Scale: The Infant Program

Penelope Love 1,2, \* 10. Rachel Laws 1,2, Eloise Litterbach 3 and Karen I, Campbell 1,2

- Institute for Physical Activity and Nutrition. School of Exercise and Nutrition Sciences. Deakin University. Geelong 3222, Australia; r.laws@deakin.edu.au (R.L.); karen.campbell@deakin.edu.au (K.I.C.)
- <sup>2</sup> Centre of Research Excellence, Early Prevention of Obesity in Childhood (EPOCH), Deakin University,
- School of Exercise and Nutrition Sciences, Deakin University, Geelong 3222, Australia; e.litterbach@deakin.edu.au
- Correspondence: penny.love@deakin.edu.au; Tel.: +61-03-5227-8484



Received: 29 March 2018; Accepted: 16 April 2018; Published: 19 April 2018

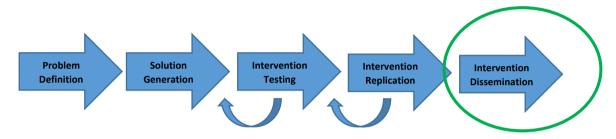
Abstract: The 'early years' is a crucial period for the prevention of childhood obesity. Health services are well placed to deliver preventive programs to families, however, they usually rely on voluntary attendance, which is challenging given low parental engagement. This study explored factors influencing engagement in the Infant Program: a group-based obesity prevention program facilitated by maternal and child health nurses within first-time parent groups. Six 1.5 h sessions were delivered at three-month intervals when the infants were 3-18 months. A multi-site qualitative exploratory approach was used, and program service providers and parents were interviewed. Numerous interrelated factors were identified, linked to two themes: the transition to parenthood, and program processes. Personal factors enabling engagement included parents' heightened need for knowledge, affirmation and social connections. Adjusting to the baby's routine and increased parental self-efficacy were associated with diminished engagement. Organisational factors that challenged embedding program delivery into routine practice included aspects of program promotion, referral and scheduling and workforce resources. Program factors encompassed program content, format, resources and facilitators, with the program being described as meeting parental expectations, although some messages were perceived as difficult to implement. The study findings provide insight into potential strategies to address modifiable barriers to parental engagement in early-year interventions.

Keywords: childhood obesity; parental engagement; maternal and child health; research translation; implementation; infant feeding; active play

#### 1. Introduction

The 'early years', more recently defined as the first 1000 days (conception to 24 months), is widely acknowledged as a crucial period in laying the foundation for life-long learning and development [1,2], and more specifically, for the prevention of childhood obesity [3]. Globally, an estimated 41 million children aged under five are overweight or obese [4]. In Australia, 20% of children aged 2-4 years are overweight or obese [5], with predictions that this could reach 33% by 2025 [6]. One in three children living in lower socioeconomic areas (33%) are overweight or obese compared with those living in higher socioeconomic areas (19%), while levels are comparable across urban (26%) or regional (27%)

# **Evolution:** sustainability



### AIM:

To explore the enablers and barriers to the sustained implementation of the *Infant Program* within Victorian, Australia







## Methods

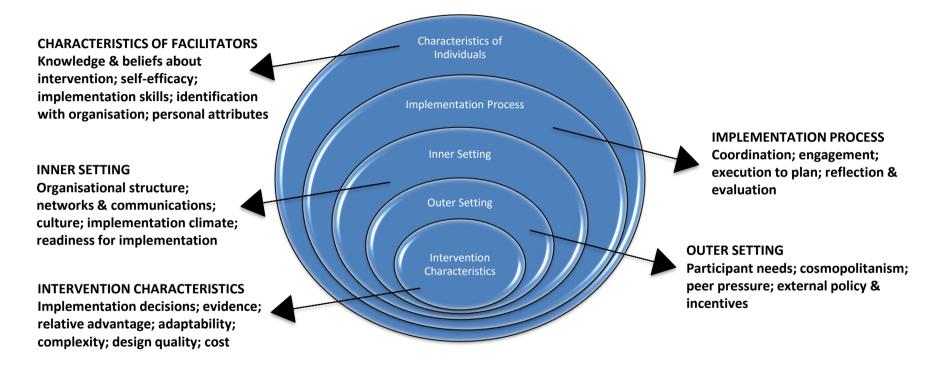
- Convergent parallel mixed methods study
- Online survey of trained facilitators since scale-up (RR: 52.4%)
  - ongoing implementation (5 LGAs)
  - discontinued implementation (5 LGAs)
  - no implementation (4 LGAs)
- Follow-up telephone interviews of sub-sample
  - ongoing implementation (4 LGAs)
  - discontinued implementation (4 LGAs)
  - no implementation (3 LGAs)







## Thematic analysis



Damschroder, L.J., et al., Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. Implementation Science 2009, 4(1):50



# Results

CHARACTERISTIC		TOTAL (n=33)	Ongoing (n=15)	Discontinued (n=11)	Never (n=5)	Don't know (n=2)
Gender	Female	33	15	1	5	2
Age	20-29 years	3	3			
	30-39 years	6	3	1		2
	40-49 years	12	5	6	1	
	50-59 years	10	4	3	3	
	60+ years	2		1	1	
Position	MCHN	15	8	5	2	
	Dieiitian	9	6		2	1
	HP Officer	3	1	1		1
	Early Intervention/ Childhood Professional	3		2	1	
	Children/Families Professional	3		3		
Capacity	full time	12	5	3	2	2
	part-time	21	10	8	3	
In role	<5years	7	5	2	0	
	5-10years	11	6	3	0	2
	11-15years	4	2		1	
	>15years	11	2	5	4	
LGA since trainin		31	15	11	5	
	different	2				2

## Results

ENABL	ERS	BARRIERS		
ONGOING (n=15)	INITIAL (n=11)	DISCONTINUED (n=11)	NEVER (n=5)	
Management surport	Availability of funding	Availability of funding	Availability of funding	
Availability of ding	Availability of staff to deliver	Ability to maintain attendance of parents	ailability of staff to deliver Availability of staff to co- ordinate	
Evidence to sur Confidence to deliver Availability co-ordinate co-ordinate	Evidence to support the decision Management support Availability of staff to co- ordinate	Availability of staff to deliv Availability of staff to coordinate Manage	Ability to incorporate as routine practice bility to maintain attendance of parents	
HIGH likelihood of continuing implementation	Alignment to organisational priorities Ability to incorporate as routine practice Confidence of staff to deliver Ability to recruit parents Ability to maintain attendance of parents	LOW likelihood of (re) starting implementation		
Ability to maintain attendance of parents		Confidence of staff to deliver		
Availability of staff to deliver		Evidence to support the decision		

## CONCLUSIONS

### **ENABLERS OF SUSTAINABILITY**

- Management support
- Sufficient funding and staff
- Incorporation into routine practice
- Alignment to organisational priorities
- Recruitment & retention of adequate participant numbers
- Confidence of staff to deliver & coordinate the program

### **CFIR Constructs**

Inner setting - Leadership engagement

Inner setting - Available resources

Inner setting - Compatibility

Inner setting - Relative priority

Outer setting - Patient needs

Individual Characteristics - Attributes







obesity reviews doi: 10.1111/obr.12675

#### **Obesity Prevention**

## Sustaining obesity prevention in communities: a systematic narrative synthesis review

J. Whelan D. P. Love, L. Millar, S. Allender and C. Bell

A group or individual who provide strategic direction, mobilizes

intervention, preferably established through a memorandum of

program delivery and ongoing sustainability (32). Two papers vention. We agree with Scheirer (2011) that 12 months is a

Factor		<b>***</b>	
Resourcing	Resourcing n used to employ importance of huma- capacity to enhance sustan- outcomes.	resourcing	esources .dd capacity. .ce needs
Leadership	Leadership was leadership w capacity, int come from al.	leadership	CEO level) and roughout //
Workforce	Workforce develo		ers at the start
development	workforce and teaching aspects of the intervention.		also important in supporting
Community	Community eng		entions.
engagement	relevant stak those engag	partnerships	ence
Partnerships	Partnerships I	partificionipo	culate this
Communication	Communication complete enhance reach of the intervention		an appropriate budget of effectiveness of communication
Policy	intended audiences. Policy includes rul		and regulations to
Tolloy	guidance or m	policy &	w these polici
Adaptation	encouragem Adaptation re		e. reat emp
	ensure context	procedures	zontext.
Evaluation	Ongoing checking to re-balancing of implements.	p. o o o a a i o o	regularly, not only pre

funding and resourcing and ensures the intervention keeps to the guidance and oversight, keeping the end goal in sight. Good long-term vision A specific structure that guides the direction of the governance structures will mobilize resources and advocate for

Develop a clear governance structure to provide strategic

the intervention. Document roles and responsibilities and meeting

Lennox et al. Implementation Science (2018) 13:27 DOI 10.1186/s13012-017-0707-4

Implementation Science

#### SYSTEMATIC REVIEW

Open Access

Navigating the sustainability landscape: a systematic review of sustainability approaches in healthcare

L Lennox1,2\*, L Maher3 and J. Reed1

resourcing

training & capacity building

leadership

program effectiveness

stakeholder participation

monitoring progress

intergation into existing programs/policies

Project type 2%

Satisfaction 11%

## **Lessons learnt**

- Streamlined administration and evaluation processes
  - > Online registration and evaluation system
- Accessible facilitator training
  - > Online training course
- Capacity building on implementation processes
  - > Case studies and facilitator networking
- Participant online options to complement sessions
  - > Program app and website
- High level organisational support
  - > Partnership engagement
  - > System wide approach to roll out









"I've been able to incorporate *Infant* into my role whereas I think other dieticians or maternal and child health nurses don't have that flexibility"

"I think if you get really, really good training, that puts you in a good place to then deliver" "Infant provided a structure and some resources for providing a program to mothers addressing many of the issues that we wanted to address"

"The reason we can run so many *Infant* programs and offer so much support is because we have the funding to do it" "In the early stages the scheduling was quite difficult.. at age specific times, and juggling the dieticians' diaries....but we've come up with a reasonably good scheduling system now"