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Romp & Chomp

Healthy Eating + Active Play for Geelong Under 5s

PROCESS REPORT FOR OBJECTIVE 8: To achieve an integrated population growth monitoring program within Maternal & Child Health

Nichols M, Crellin M & de Silva-Sanigorski A (2009) PROCESS REPORT FOR OBJECTIVE 8: To achieve an integrated population growth monitoring program within Maternal & Child Health

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Executive Summary

Romp & Chomp was a community-based and community-wide obesity prevention project conducted in the City of Greater Geelong and the Borough of Queenscliffe, targeting approximately 12, 000 children aged 0-5 years and their families. The project funding for implementation was $111,000 over 4 years (2004-8), and implementation activities were strongly focused on capacity building and involved predominately environmental and settings based strategies.

At present the prevalence of overweight and obesity in young children is not well documented. Regular and reliable prevalence data would enhance our understanding of the extent and nature of the problem, and changes over time, which then enables the development of appropriate public health interventions. At the moment, a national system providing such data does not exist in Australia; however growth monitoring for infants and preschool children do exist in each state of Australia. In Victoria, children have their height and weight routinely measured by maternal and child health nurses at 10 key age and stage visits from birth to age 3 ½ years. This data have important public health utility and can provide valuable information for practitioners, policy- and decision-makers, program evaluators and researchers.

The value of such a system for monitoring secular trends in weight status is dependent on a range of factors and in this objective of Romp & Chomp we explored the use of the Maternal and Child Health (MCH) routinely collected data for both monitoring secular trends in childhood overweight and obesity, and also for program evaluation. This objective was completed by the evaluation and support group within the WHO collaborating centre for obesity prevention at Deakin University, in partnership with the City of Greater Geelong (COGG) MCH service and the State Government Office for Children.

Important outcomes from the work include:

- the development of partnerships between research academics, local government service providers and state government to access and make use of this child health data

- the development of protocols for use of the MCH data to monitor trends in childhood overweight and obesity and program evaluation

- the use of MCH data to determine the anthropometric outcomes from the Romp & Chomp intervention (ongoing)

- piloting the use of this data to monitor trends in the prevalence of overweight and obesity over time.

The work conducted under this objective has provided strong evidence that the large volume of child health data collected across the City of Greater Geelong is consistent and of high quality and can provide valuable information for a range of users including practitioners, health service providers, policy- and decision-makers, program evaluators and researchers.

In addition, based on the findings from this research we make a number of recommendations:

- The implementation of quality control measures at all levels of data collection, processing, cleaning and analysis using standardised protocols to ensure high quality data that can be compared across the State, and in time, across Australia.

- The implementation of a standardised electronic MCH data collection system across all LGAs in Victoria.

- The use of child growth monitoring data and proportion of children who have a healthy weight as key indicators within annual reporting requirements for local and state government

- Increased and enhanced knowledge translation and exchange between government, service providers and the community to 'close the data loop' by providing evidence to support best practice and inform policy and decision making related to childhood overweight and obesity at a population level.

Background to *Romp & Chomp*

The Deakin University (DU) Sentinel Site for Obesity Prevention was established in the Barwon-South Western Region with funding from the Department of Human Services (DHS) and the Department of Health and Ageing. As a consequence obesity prevention resources and expertise were being focussed within this region to trial and evaluate innovative demonstration projects. This site was within the WHO Collaborating Centre for Obesity Prevention.

In 2003, an interim steering committee was formed from a collaboration between DHS, DU, Barwon Health, City of Greater Geelong (COGG), Geelong Kindergarten Association (GKA) and Leisure Networks and it was determined that one demonstration project would support healthy eating and active play in children under 5 years within the Geelong region.

The *Romp & Chomp* project was subsequently developed as a community-based and community-wide obesity prevention demonstration project targeting preschool children in the Geelong region and Borough of Queenscliff targeting about 12,000 children under 5 years of age from 2004 to 2008.

The broad aim of the *Romp & Chomp* project was to increase the capacity of the Geelong community to promote healthy eating and active play and to achieve healthy weight in children less than 5 years of age. This was to be achieved by targeting key settings with four key messages; 1) daily active play 2) daily water and less sweet drinks 3) daily fruit and vegetables 4) less screen time.

Throughout the project *Romp & Chomp* was supported by a number of key community organisations. A management committee of stakeholders, oversaw the implementation of the action plan and assisted the project coordinators (employed through Barwon Health and DHS) to fulfil their duties.

Logic Model development

The Romp & Chomp project was developed within the socio-ecological model of health and the logic model (figure 2) is therefore multi-level and multi-setting. From this basis, the evaluation was also designed to measure all aspects of the project and a complex project such as Romp & Chomp requires a multi-level design. The evaluation is repeat cross-sectional with a control group and draws on existing population data as well as data collected specifically for this program evaluation.

R&C Program Activities

Community, Organisational and individual-level Impacts

Individual-level Outcomes

Moderators (Location, Education, Occupation, SES, Ethnicity, Age, Gender)

Health promoting early childhood environments[2]

Population Mediators

Capacity building (targeted to early childhood settings)

Policy development and implementation (targeted to early childhood settings)

Social marketing

Increased community capacity to support healthy eating and physical activity[1]

Improved healthy eating and PA policies in ECS

Improved organisational practices

Improved Knowledge, skills, beliefs, perceptions

Increased physical activity

Increased healthy eating

Individual Mediators

Reduced unhealthy weight gain

Increased skills and competencies

Improved oral health

Reduced prevalence of overweight & obesity

1. Capacity is leadership, skills, knowledge, structures, resources , partnerships
2. Environments (built, social, economic, policy) include community-based organisations, early childhood services, homes, neighbourhoods, health services

Figure 1 *Romp & Chomp* **Logic Model**

Governance Structure

In 2003 the Department of Human Services provided funding to target health concerns related to obesity in the Barwon-South West region. The Sentinel Obesity Site at Deakin University was to support the development of, coordinate and evaluate three regional projects-*Be Active, Eat Well* (4-12 year olds), *It's Your Move!* (12-18 year olds) and *Romp & Chomp* (0-5 year olds).

Romp & Chomp – Had a target group of over 12,000 children aged 0-5 years in an area of the city of Geelong and surrounding areas, including the Bellarine Peninsula and Borough of Queenscliffe. It is a partnership project targeting early childhood settings throughout this region, working together with the *Smiles 4 Miles* and *Kids 'Go for your life'* projects to improve health and weight outcomes.

The *Romp & Chomp* project management structure:

<u>The Steering committee</u> contained members of partner organisations at, or equal to, CEO level, in order to ensure management support for the project. This committee met infrequently and comprised the following:

Person	Role	Agency	Tenure
Anna Fletcher	General Manager, Community & Mental Health	Barwon Health	2004 - 2007
Nola Ganly	Manager, Community Partnerships	Barwon South-Western Regional Office, DHS	2004 - 2006
Donna Mant-Smith	Manager, Family Services	City of Greater Geelong (CoGG)	To June 2005
Annie O'Loughlin	Manager, Early Years	Barwon South-Western Regional Office, Department of Human Services (DHS)	2006 - 2008
Boyd Swinburn	Professor, Population Health	Deakin University, WHO Collaborating Centre for Obesity Prevention (WHO CC)	2004 - 2008
Robert Were	Manager, Family Services	City of Greater Geelong (CoGG)	2005 - 2007

Table 1 *Romp and Chomp* **Steering Committee members**

<u>The Management committee</u> contained members of partner organisations who had direct management responsibilities of early years services/agencies. This committee met monthly and comprised:

Person	Role	Agency	Tenure
Colin Bell	Research Fellow & Project Manager	Deakin University, WHO CC	2004 - 2006
Mark Brennan	Dietitian & *R&C* Project worker	Barwon Health *EFT: 0.4*	2006 - 2007
Brooke Connolly	Healthy Communities Team Leader	Leisure Networks	2005 - 2008
Maree Crellin	Co-ordinator Maternal & Child Health Services	COGG	2004 - 2008
Lisa Demajo	Co-ordinator City Learning & Care Services	CoGG	2004 - 2008
Kathleen Doole	Community Health Nurse & *R&C* Project Co-Coordinator	Barwon Health *EFT: 0.5*	2004 - 2006
Debbie Elea	Co-ordinator Family Day Care Services	CoGG	2004 - 2008
Melanie Nichols	Research Assistant & PhD Student	Deakin University, WHO CC	2005 - 2007
Janet Park	Executive Officer	Geelong Kindergarten Association (GKA)	2005 - 2008
Andrea Sanigorski	Research Fellow & Project Manager	Deakin University, WHO CC	2005 - 2008
Janet Torode	Dietitian & *R&C* Project Co-Coordinator	DHS *EFT: 0.5*	2004 - 2006
Louise VanHerwerden	Dietitian & *R&C* Project Coordinator	Barwon Health *EFT: 0.6*	2006 - 2007
Helen Walsh	Regional Health Promotion Officer	DHS	2005 - 2007

Table 2 *Romp & Chomp* Steering Committee members

The Management committee also included representatives from other health promoting projects active within the region:

Person	Role	Agency
Sharon Sharp	Coordinator *Smiles4Miles* (*S4M*)	Barwon Health-Dental
Vanessa Philips	Health Promotion Officer	Dental Health Services Victoria
Amanda Stirrat	Coordinator *Kids-'Go For Your Life' (KGFYL)*	CoGG

As all coordinators had left the project prior to completion, the final activities and write up of the process report was completed by:

Person	Role	Agency
Floor De Groot	International intern & Research Assistant	Free University of Amsterdam &Deakin University WHO CC
Melanie Nichols	Research Assistant & PhD Student	Deakin University, WHO CC
Susan Parker	Health Educator	Barwon Health
Narelle Robertson	Research Assistant	Deakin University, WHO CC
Andrea Sanigorski	Research Fellow & Project Manager 2006 - 2008	Deakin University, WHO CC

Introduction to objective 8

As one of the biggest health threats facing Australian children, it is vital that the prevalence of obesity is regularly monitored. Presently, very little is known about overweight and obesity prevalence in young children. An ongoing source of reliable prevalence data is required to understand the extent and characteristics of the problem over time, and if prevention and intervention efforts are required. Currently, a national system providing such data does not exist in Australia.

Growth monitoring of infants and preschool children does occur in each state of Australia and generally includes anthropometric measurements taken by a nurse at scheduled intervals up to age 4, but there is some variation in the ages of measurement and the coverage obtained in each state. In Victoria, children have their height and weight routinely measured by maternal and child health nurses at 10 key age and stage visits from birth to age 3 ½ years.

A range of research papers have been published with international and Australian height and weight data [1-3][4] with measurements (and in some cases a variety of socio-demographic factors) collected from preschool children in the course of routine health and growth assessments. These studies have demonstrated the significant potential for routine measurements to provide valuable monitoring data to practitioners, decision makers and researchers.

The value of such a system for monitoring secular trends in weight status is dependent on a range of factors, including: the proportion of children included in the dataset (i.e. the percentage of children who attend the scheduled health assessments); the representativeness of the sample, the quality of the measurements themselves, and the method of data storage. Determining the useability of the child growth monitoring data in the City of Greater Geelong was the primary aim of the activities undertaken for this objective, which were primarily completed by the evaluation and support team from Deakin University, in partnership with the Maternal and Child Health service in Geelong and the State Government Office for Children.

Strategy Overview

As this objective was exploratory in nature, the strategies evolved considerably throughout the Romp & Chomp intervention period. Detailed below are the strategies that emerged during the course of the project, in relation to using routine growth measurements for monitoring overweight and obesity prevalence at a population level. Strategies relating to growth monitoring through the school nursing service were abandoned as they were not considered feasible within the capacity and scope of the Romp & Chomp program.

Strategy 8.1: To strengthen growth monitoring and attendance at M&CH milestones

- Process: to work with Maternal and Child Health Service in the City of Greater Geelong to examine the potential for using routine growth measurements for monitoring overweight and obesity prevalence.

This process was developed to guide the overall objective by exploring the ways in which growth data were collected, recorded and stored at the local government level. At the beginning of the Romp & Chomp project, little was known about these processes and data, and no formal links between either state, or local government and researchers for examination of these data had been established.

- Process: To the extent possible, access and analyse available growth monitoring data to determine data quality and prevalence and trends of overweight and obesity in the City of Greater Geelong.

This process followed on from the previous one to access the available data and conduct analyses that would determine the usefulness of the data for the purposes of population monitoring. The analysis was also designed to provide estimates of prevalence and trends in overweight and obesity among preschool aged children in Geelong.

- Process: provide feedback to participating Local Government Areas relating to the results of the process and analysis and provide support for further use of available data

This process was essential to inform future practice

Strategy 8.2: To facilitate the inclusion of consistent growth monitoring by the school nursing system

This strategy was deemed not feasible within the capacity of the project

Strategy 8.3: Facilitate and support the availability of resources on growth monitoring for parents

This strategy was deemed not feasible within the capacity of the project

Strategy 8.4: Facilitate and support health sector staff to access effective training for their role in growth monitoring

This strategy was deemed not feasible within the capacity of the project

Strategy 8.5: Linking with kind

This strategy formed a part of the recommendations for a future consistent approach to growth monitoring. It was not deemed feasible to execute this strategy during the life of the project.

Processes

Strategy 8.1

Process: work with Maternal and Child Health Service in the City of Greater Geelong to examine the potential for using routine growth measurements for monitoring overweight and obesity prevalence.

The major activity within this strategy was consultation and discussion with staff members from the City of Greater Geelong's Maternal and Child Health Service and the service manager. These consultations provided a large amount of information about the type of data collected, the way that the data are entered and stored and the structure of the database itself.

In line with State government procedures, in the COGG height and weight are measured (in addition to other measures) for most children at each of the KA&S consultations they attend by Maternal and Child Health Nurses. The measurements are entered into the child's health record book (kept by parents) and into the electronic health record located within a central council database. The growth measurements from a particular consultation can therefore be linked to measurements taken at other consultations, and to all of the available socio-demographic characteristics of the child or family that are held in the database. The database is linked across the City of Greater Geelong which allows records from any of the 22 MCH centres to be accessed.

For this objective, growth data from two KA&S consultations (2 year old and 3.5 year old) were accessed to test the quality and usefulness of the data for program evaluation and monitoring of overweight and obesity prevalence in children. These are visits number 9 and 10, the final two scheduled visits. These visits were chosen primarily because before the age of 2 years, no international classification for overweight and obesity is available for use in epidemiological or population health studies[5]. Data on the number and percentage of children attending KA&S consultations are reported annually to the State Government (the Office for Children within the Department of Human Services at the time, which later relocated to the newly formed Department of Education and Early Childhood Development) and these reports (which are available online) provide an indication of the level of coverage of the population for each of the KA&S consultations. Across Victoria, approximately 60 to 65% of children attend their scheduled visit for 2 years of age and approximately 50% attend the 3.5 year consultation, although there are some year to year variations and substantial variations between different local government areas.

It was established that data from the central database (called MaCHs) could be extracted by running a database query. Database queries were regularly run by MCH manager and her staff

centrally at the Council to provide mandatory reports to the Department of Human Services on attendance rates and breastfeeding rates at the end of each financial year. A number of routine reports inbuilt into the system were regularly run and used as a management tool to assess progress on participation rate targets however to gain access to the specific data assistance was required and given by the Information Technology Department staff with additional support for the Family Services Department administration team. .

Confidentiality of the data was a very important concern for both researchers and MCH staff and identifying details such as name, or address were not included in any data extraction. The child's date of birth and date of measurement were required however, to accurately calculate the child's age at the date of measurement, for comparison to age- and gender-specific growth standards and definitions of overweight and obesity. As this could not be avoided, it was agreed that it would be included, and then removed after necessary calculations for analysis had been made. Ethics approval for this study was gained from Deakin University and the Department of Human Services Human research Ethics Committees.

Summary

The work conducted for this strategy identified that there is significant potential to accessing and analysing data from MCH consultations for monitoring childhood overweight and obesity prevalence in the population. The lower attendance rates at the 2 year and 3.5 year consultations may be a limitation to the dataset, however it was unknown whether there was a systematic bias in the characteristics of children or families who did or did not attend the consultations. There was considerable enthusiasm from both nurses and coordination staff members in MCH in CoGG for accessing and analysing the data and it was viewed as a good use of their collected data and carefully maintained records to support ongoing population health strategies and planning.

Process: to the extent possible, access and analyse available growth monitoring data to determine data quality and prevalence and trends of overweight and obesity in the City of Greater Geelong.

After the discussions described above to scope the potential for using routine MCH data for population monitoring, a list of required variables was compiled and supplied to Maree Crellin, Co-ordinator, MCH service for the City of Greater Geelong (CoGG).

The data that were selected for examination included the following variables:

Table 3: Variables extracted for analysis

General variables extracted:	Variables extracted for both 2 year and 3.5 year consultations:
- Date of birth	- Date of consultation
- Gender	- Height in centimetres
- Postcode	- Weight in grams
- Birth weight in grams	

The requested data were supplied to the Deakin research team in two Microsoft Excel files, one for 2 year old KA&S and one for 3.5 year old KA&S consultations. There was no identifying number available which would have allowed researchers to link the data between the two files. The dataset (received in late 2004), included children who attended MCH consultations between 1/7/1998 (the beginning of electronic records in this system) and 30/6/2004.

Data cleaning was then conducted to remove inaccurate, implausible or incomplete data or records from the file. The tables on the following pages (tables 4-6 for 2 year old children and tables 7-9 for 3.5 year old children) detail the steps taken and the data excluded for various reasons from the final file for analysis, as well as some summary statistics for age, height, weight and BMI. Note that where 'corrections' are specified, this relates to data that could obviously be corrected by a change in the units or decimal point (i.e. where weight had been entered in kilograms rather than grams). If there was any doubt about possible corrections the data were excluded and not used.

2 year olds (visit number 9)

Table 4: Total 3-5 year olds (visit number 9)

	Total	1998	1999	2000	2001	2002	2003	2004
Total number of records	9788	657	1488	1521	1515	1469	1545	1593
Response rate[1]	65	60	63	64	65	74	63	64
Number of U sex	27	7	6	6	1	1	4	2
Number of males	5068	351	747	795	775	752	817	831
Number of females	4693	299	735	720	739	716	724	760
Number of corrections to weight	228	73	77	45	14	7	8	4
Number of corrections to height	2	0	0	1	0	0	0	1
Missing Weight	299	21	55	66	45	45	32	35
Missing Height	386	28	63	82	59	62	45	47
COMPLETE RECORDS	**7404**	**503**	**1123**	**1133**	**1154**	**1084**	**1178**	**1229**

Table 5: Total MALE 3-5 year olds (visit number 9)

Males	Total	1998	1999	2000	2001	2002	2003	2004
Corrections to weight	120	45	37	25	4	3	5	1
Corrections to height	1	0	0	1	0	0	0	0
Missing Weight	159	14	27	37	19	28	18	16
Missing Height	202	17	33	46	24	37	24	21
Total missing either (no BMI)	221	19	40	47	26	39	25	25
Implausible BMI[2]	15	3	3	3	0	2	2	2
Age outside range[3]	1028	74	138	161	160	155	172	168
Age misclassified[4]	54	1	8	16	10	10	4	5
COMPLETE RECORDS	**3828**	**262**	**568**	**589**	**586**	**560**	**622**	**641**
Mean age (yrs)	2.1 (0.2)	2.1 (0.1)	2.1 (0.2)	2.1 (0.2)	2.1 (0.1)	2.1 (0.2)	2.1 (0.2)	2.1 (0.1)
Mean weight (kg)	13.6 (1.6)	13.6 (1.6)	13.6 (1.7)	13.7 (1.7)	13.6 (1.6)	13.6 (1.6)	13.6 (1.6)	13.7 (1.7)
Mean Height (cm)	89.7 (0.04)	89.5 (0.04)	89.9 (0.04)	89.8 (0.04)	89.6 (0.04)	90.1 (0.04)	89.4 (0.04)	89.6 (0.04)
Mean BMI (kg/m^2)	16.9 (1.5)	17.0 (1.4)	16.8 (1.5)	17.0 (1.5)	16.9 (1.5)	16.8 (1.4)	17.0 (1.4)	17.0 (1.5)

[1] Response rates are by financial year (July –June), beginning with 1997/98
[2] Implausible BMI was defined as <10kg/m^2 or >27 kgm^2
[3] 'Age outside range' includes children aged under two years at the time of consultation
[4] 'Age misclassified' included children aged 3-5 years at the time of consultation, who were reclassified into the 3-5 year old database

Table 6: Total FEMALE 3-5 year olds (visit number 9)

Females	Total	1998	1999	2000	2001	2002	2003	2004
Corrections to weight	108	28	40	20	10	4	3	3
Corrections to height	1	0	0	0	0	0	0	1
Missing Weight	140	7	28	29	26	17	14	19
Missing Height	184	11	30	36	35	25	21	26
Total missing either (no BMI)	192	11	33	38	36	25	21	28
Implausible BMI	9	1	1	2	0	2	1	2
Age outside range	942	48	151	138	138	166	152	149
Age misclassified	53	0	6	20	8	8	5	6
COMPLETE RECORDS	**3576**	**241**	**555**	**544**	**568**	**524**	**556**	**588**
Mean age (yrs)	2.1 (0.2)	2.1 (0.2)	2.1 (0.2)	2.1 (0.1)	2.1 (0.2)	2.1(0.2)	2.1 (0.2)	2.1 (0.2)
Mean weight (kg)	13.0 (1.7)	13.0 (1.7)	13.0 (1.7)	12.9 (1.7)	13.0 (1.6)	13.0 (1.6)	13.1 (1.7)	13.0 (1.6)
Mean Height (cm)	88.4 (0.04)	88.5 (0.04)	88.6 (0.06)	88.4 (0.04)	88.6 (0.04)	88.6 (0.04)	88.3 (0.04)	88.1 (0.04)
Mean BMI (kg/m^2)	16.6 (1.5)	16.5 (1.4)	16.5 (1.6)	16.5 (1.6)	16.5 (1.5)	16.5 (1.5)	16.7 (1.5)	16.7 (1.5)

3-5 year olds (visit number 10)

Table 7: Total 3-5 year olds (visit number 10)

	Total	1998	1999	2000	2001	2002	2003	2004
Total number of records	5779	420	875	926	880	985	834	859
Response rate[5] %	50	50	48	55	50	52	48	50
Number of U sex	117	35	63	7	2	4	2	4
Number of males	2861	203	402	464	453	507	413	419
Number of females	2801	182	410	455	425	474	419	436
Number of corrections to weight	261	91	73	63	15	11	4	4
Number of corrections to height	12	1	2	0	4	1	3	1
Missing Weight	115	18	18	19	20	13	11	16
Missing Height	147	20	26	27	22	16	16	20
COMPLETE RECORDS	**5531**	**362**	**789**	**898**	**860**	**970**	**815**	**837**

Table 8: Total MALE 3-5 year olds (visit number 10)

Males	Total	1998	1999	2000	2001	2002	2003	2004
Corrections to weight	139	53	34	37	7	4	3	1
Corrections to height	6	0	0	0	2	1	3	0
Missing Weight	67	13	10	9	12	8	7	8
Missing Height	79	11	16	14	12	8	8	10
Total missing either (no BMI)	83	13	16	14	13	8	8	11
Implausible BMI[6]	3	0	1	0	1	0	1	0
Age outside range[7]	1	0	0	0	0	0	1	0
Age misclassified[8]	4	0	0	0	2	2	0	0
COMPLETE RECORDS	**2792**	**190**	**388**	**453**	**443**	**501**	**406**	**411**
Mean age (yrs)	3.7 (0.22)	3.7 (0.24)	3.7 (0.24)	3.7 (0.23)	3.7 (0.21)	3.7 (0.20)	3.7 (0.22)	3.7 (0.23)
Mean weight (kg)	17.3 (2.4)	17.2 (1.5)	17.2 (2.5)	17.5 (2.6)	17.2 (2.3)	17.3 (2.4)	17.2 (2.3)	17.3 (2.3)
Mean Height (cm)	102.7 (0.05)	102.0 (0.05)	102.4 (0.05)	103.2 (0.05)	102.9 (0.04)	102.8 (0.05)	102.4 (0.05)	102.5 (0.05)
Mean BMI (kg/m2)	16.4 (1.6)	16.5 (1.6)	16.4 (1.7)	16.3 (1.6)	16.2 (1.6)	16.3 (1.5)	16.4 (1.5)	16.5 (1.5)

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[5] Response rates are by financial year (July –June), beginning with 1997/98
[6] Implausible BMI was defined as $<10 kg/m^2$ or $>27 kgm^2$
[7] 'Age outside range' includes children aged under two years at the time of consultation
[8] 'Age misclassified' included children aged 2 to <3 years at the time of consultation, who were reclassified into the 2 year old database

Table 9: Total FEMALE 3-5 year olds (visit number 10)

Females	Total	1998	1999	2000	2001	2002	2003	2004
Corrections to weight	122	38	39	26	8	7	1	3
Corrections to height	6	1	2	0	2	0	0	1
Missing Weight	48	5	8	10	8	5	4	8
Missing Height	68	9	10	13	10	8	8	10
Total missing either (no BMI)	68	9	10	13	10	8	8	10
Implausible BMI	6	0	2	0	1	0	2	1
Age outside range	1	0	0	1	0	0	0	0
Age misclassified	4	2	1	0	0	0	0	1
COMPLETE RECORDS	**2739**	**172**	**401**	**445**	**417**	**469**	**409**	**426**
Mean age (yrs)	3.7 (0.2)	3.7 (0.2)	3.7 (0.3)	3.7 (0.2)	3.7 (0.2)	3.7 (0.2)	3.7 (0.2)	3.7 (0.2)
Mean weight (kg)	16.8 (2.5)	16.9 (2.3)	16.7 (2.4)	16.9 (2.6)	16.8 (2.5)	16.7 (2.5)	16.9 (2.4)	16.8 (2.4)
Mean Height (cm)	101.6 (0.05)	101.6 (0.04)	101.6 (0.05)	101.6 (0.05)	101.7 (0.05)	101.8 (0.04)	101.6 (0.04)	101.4 (0.04)
Mean BMI (kg/m2)	16.2 (1.7)	16.3 (1.5)	16.2 (1.5)	16.3 (1.8)	16.2 (1.7)	16.1 (1.6)	16.3 (1.7)	16.2 (1.6)

The tables above clearly show that the number of errors and corrections reduced significantly over the period that the data were collected. This was important feedback to users of the system and suggested that increased familiarity with the system and improvements to the user interface decreased rates of errors and missing data.

Preliminary results from this study were presented at a number of forums, including a presentation to all Maternal and Child Health Nurses in CoGG in January 2006, the Barwon-South Western Regional Nutrition Network, and an academic forum on Data Linkage and new research using existing data sources. Data analysed at this stage were also included in an abstract submitted to the Australasian Society for the Study of Obesity (ASSO) National Scientific Meeting which was accepted for presentation as a poster at the conference in October 2005 (see appendix 1).

Summary

The majority of data extracted and analysed was of high quality and could be used for analysis of prevalence and trends of overweight and obesity in the City of Greater Geelong. The results of the analysis were of great interest to both practitioners and researchers and demonstrated the significant capacity of such data use. The initial data problems underscored the importance of both detailed checking of the data before commencing analysis and of having expert input into the process and analysis. If the process of using the available data for population monitoring is to be incorporated into a system operated by either state government or individual LGAs, important steps need to be taken to ensure the completeness and quality of the data extracted.

Process: provide feedback to the COGG of the process and analysis and provide support for further use of available data

In the City of Greater Geelong, feedback has been provided on an ongoing basis about the use and analysis of the data through both formal and informal channels. As noted above, preliminary findings have been presented to Geelong Maternal and Child Health nurses at their monthly meetings (in January 2006 and March 2008). Final results have also been prepared and provided to Maree Crellin, manager of Maternal and Child Health in Geelong (April 2009) for inclusion in the COGG Annual Plan to provide an indicator of 3.5 year old children who have a BMI in the healthy weight range.

Further Outcomes

As a result of the lessons learnt in the Geelong project, researchers from Deakin University approached the Office for Children to expand the analysis of routinely collected MCH data state-wide, primarily to provide an anthropometric data for a comparison group, to the COGG intervention group. The then Office for Children undertook the development of software for the extraction of the data across all LGAs and in total, data for 191,179 children were received from the databases of 41 of the 60 eligible local government areas (68% of eligible, 52% of entire state). Of these, 150,555 were data for the 2 year consultation, 122,202 were data for the 3.5 year consultation and 43% of children (81,578) had data available for both consultations. A total of 61,478 had complete data for both consultations (32% of entire dataset, 75% of those who had attended both consultations). The process and use of this data is detailed in process report 3 related to the evaluation design.

The data extracted and analysed for this strategy formed an important part of the PhD thesis of Melanie Nichols, which examined a range of issues relating to early childhood obesity.

Lessons Learned & Recommendations for future practice

This exploratory work completed as part of Romp & Chomp has been extremely valuable and will inform future practice, policy and research. Important outcomes from this objective include: the development of partnerships between research academics, local government service providers, and the state government to develop and pilot this use of routinely collected child health data; and the development of protocols for use of this MCH data to monitor trends in childhood overweight and obesity. This work has shown that the large volume of MCH data that is consistently collected and of a high quality can provide valuable information for a range of users including practitioners, health service providers, policy- and decision-makers, program evaluators, and researchers.

In addition, based on the findings from this research we make the following recommendations:

- The implementation of quality control measures at all levels of data collection, processing, cleaning and analysis using standardised protocols to ensure high quality data that can be compared across the State and over time across Australia.

- The implementation of a standardised electronic M&CH data collection system across all LGAs in Victoria and the co-ordination of this database for use by government, public health practitioners and researchers for program evaluation and population monitoring.

- The use of child growth monitoring data and proportion of children who have a healthy weight as key indicators within annual reporting requirements for local and state government (currently reporting only includes attendance rates and rates of breastfeeding)

- Increased and enhanced knowledge translation and exchange between government, service providers and the community to 'close the data loop' by providing evidence to support ongoing best practice and inform policy and decision making related to childhood overweight and obesity at a population level.

Digest of Services and Projects

Kindergartens	Sometimes referred to as 'preschool', those that meet the following criteria were termed 'kindergartens' for the context of this report:
	Settings for 3 & 4 year olds providing early educational experiences. Individual sessions can be from 2 to 5½ hours. 3 and 4 year old groups function separately to cater for the educational needs of children at these ages.
	No kindergartens in this region provide food for the children. All families are responsible for providing for the nutritional needs of their children, but are bound by the policies of each centre as to what is appropriate to provide for the child within the setting.
	Many kindergartens in this region are managed by a central agency: The Geelong Kindergarten Association **(G.K.A.).** This agency organises training, employment and some administrative support functions.
	Those not within GKA are run independently by local community – based committees with the support of kindergarten staff.
Long Day Care	Services providing care, meals, rest/sleep accommodation to children. 7 Long Day Care services are provided and managed by the City of Greater Geelong. These are known as City Early Learning & Care centres. CoGG was a partner agency and all 7 centres participated in this project.
	CAVEAT: It should be noted that, when referring to long day care services, it applies **only** to centres managed by the City of Greater Geelong. Non-government day care service providers were invited to participate in the project, but declined.
Family Day Care	This program is funded through federal funds but managed regionally through the City of Greater Geelong. This service provides care within family homes. The carers receive support and training through the CoGG, and are accountable to a number of standards and requirements.
Committee of Management	All partner agencies, representing all settings and like-projects (*S4M, KGFYL*) were represented on this committee. Monthly meetings occurred and this committee made decisions that impacted directly on the project.
Steering Committee	C.E.O' s or those nominated by CEO's of agencies providing funding or staff support, met on several occasions in order to inform the project of agency capabilities
Smiles 4 Miles (S4M)	Dental Health Services, Victoria, Health Promotion Unit project promoting water consumption, healthy diet, and care for teeth (hygiene and protection). 2004 – Ongoing with a 0.4 EFT project co-ordinator employed through Barwon Health Dental Services
Kids 'Go for your life' (KGFYL)	Statewide project promoting water, fruit & veg, limit sometimes food, be active, less screen time, walk/ride to services/settings. Pilot project, 2007 extended into 2008/9. Co-ordinator employed through CoGG.

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Appendices

Appendix A Poster presented at ASSO Annual Scientific Meeting 2005

Prevalence of Overweight and Obesity in 2 year old and 3-5 year old Children in the Greater Geelong Region

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Background and aim: Children aged under five are among the most measured group of the population with height and weight taken regularly at routine visits to Maternal and Child Health Centres. Surprisingly, these data have not previously been used to monitor secular trends in prevalence of overweight and obesity. The aim of this study was to investigate the prevalence of overweight and obesity in children aged under five in the Greater Geelong region, to explore the potential for measurements routinely collected by Maternal and Child Health nurses to be used for population monitoring and to evaluate the relationship between two methods of defining overweight and obesity in young children.

Methods and participants: 15,567 de-identified records of height, weight, date of birth, sex and postcode data were extracted from the City of Greater Geelong database for children who had attended the 2 year or 3.5 year "Key Age and Stage" visit at a Maternal and Child Health centre in the region between 1998 and 2004. Data were cleaned and age and BMI score (kg/m²) were calculated and overweight and obesity were determined using the cut-points recommended by Cole et al (1) and also using the CDC classifications (2). Average age of children attending the 2 year visit was 2.1 years and the 3.5 year visit was 3.7 years. 51.2% of cases were male children. The average response rates to 2 year old and 3.5 year old visits are 65% and 50% respectively.

Results: *Prevalence* Of the cases extracted,12,935 (83%), had useable records for all of height, weight, age and sex. Overall the average prevalence of overweight and obesity, by Cole et al's criteria, over the seven years was 15.9% (12.6% overweight and 3.2% obese). The prevalence was 15% for 2 year olds and 17% for 3 to 5 year olds, and was higher in girls (17.3%) than in boys (14.5%). Mean BMI was positively correlated with year of consultation in 2 year old girls between 1998 and 2004 (Spearman's r = 0.76 p = 0.004) but not in the other groups examined (Figures 1 & 2).
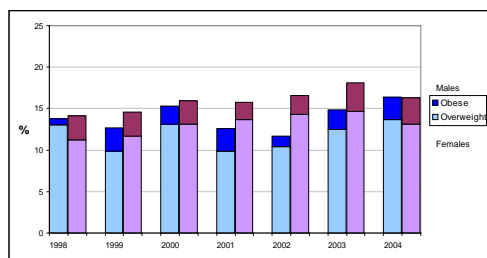

Figure 1: Prevalence of overweight and obesity in 2 year old children by gender and year of consultation (n = 7404)
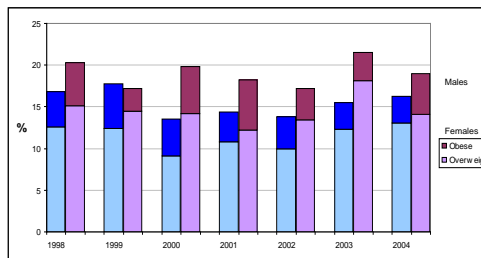

Figure 2: Prevalence of overweight and obesity in 3-5 year old children by gender and year of consultation (n = 5531)

		Cole et al, 2000			CDC		
		O/W	Obese	Total	O/W	Obese	Total
2 year olds	Boys	11.7	2.2	12.9	13.6	6.1	19.7
	Girls	13.3	2.8	16.2	11.5	6.5	18.0
3-5 year olds	Boys	11.3	3.9	15.2	14.0	12.1	26.1
	Girls	14.4	4.5	18.9	16.0	11.8	27.8

Table 1: Prevalence of overweight and obesity comparing CDC and Cole et al classification criteria

Comparison of Classification Criteria Use of the CDC criteria for classification of overweight and obesity gave overall higher estimates of the prevalence of children above a healthy weight in all groups, and much higher estimates of obesity rates. Among children classified as healthy weight by Cole et al, 7% were in the overweight category according to CDC criteria. Of the children classified as overweight by Cole et al criteria, 43% were obese according to CDC criteria (see Table 1).

Conclusions: Overall, the prevalence of overweight and obesity is not as high in preschool children as that documented for primary school aged children. In 2 year old children a trend of increasing mean BMI over time was identified in girls but not in boys. No change was identified in the prevalence of excess weight in 3-5 year old children. There are important issues about the criteria used to define overweight and obesity in 2 to 5 year olds due to the highly non-linear pattern of BMI-for-age curves in this age group and discrepancies between classification methods. Nevertheless, there is significant potential for routinely collected Maternal and Child Health data to be used for monitoring secular trends in obesity prevalence in young children.

References:

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