



Survey on Eating Patterns of Children:
Findings report – primary school sample
August 2014

Goulburn Valley Primary Care Partnership
Integrated Health Promotion Working Group

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CONTENTS

ACKNOWLEDGEMENTS.....	2
INTRODUCTION.....	4
Background	4
Purpose	4
METHODS.....	5
Development of survey tool	5
Data collected	5
Recruitment methods.....	6
Data analysis	6
Thematic analysis of open-ended questions	6
RESULTS	8
Response rates.....	8
Participants	9
General demographics.....	9
Fruit and vegetable consumption.....	10
Child and family eating habits.....	10
Barriers to fruit and vegetable consumption and healthy eating.....	11
Information and messages about healthy eating	12
DISCUSSION.....	13
Comparison with regional statistics.....	13
Barriers to healthy eating	13
Limitations	15
CONCLUSIONS.....	16
Achievements.....	16
Lessons learned.....	16
Recommendations for practice.....	16
Dissemination and sustainability	17
APPENDICES	18
Appendix 1: Acronyms	18

INTRODUCTION

Background

In July 2011 the Regional Department of Health (Hume) released *Integrated Health Promotion Strategy: Developing a Hume Region approach to preventive health 2012-2015*. The Regional Health Promotion Strategy encourages agencies to work in partnership to plan, implement, and evaluate evidence informed catchment plans that address identified priority areas¹.

Healthy Eating was selected by agencies as the Hume Region priority, following a thorough review of evidence and data reflecting health and wellbeing status of local communities. A target group of Children 0-12 years was specifically identified, which also incorporates a broader focus on families. Objectives and strategies relating directly to Healthy Eating priority were developed and agreed upon by Goulburn Valley Primary Care Partnership (GVPCP) member agencies, and form part of GVPCP Integrated Health Promotion plan 2012-2017².

Purpose

This report outlines the process and key findings of *Survey on Eating Patterns of Children* distributed in November 2013 to participating primary schools in Greater Shepparton, Moira and Strathbogie Shires that make up GVPCP catchment. The survey was developed by a working group of health promotion agencies and informed by a literature review completed by staff in 2013³.

Identified as an initial activity under Healthy Eating priority, conducting a paper-based survey was understood to be the most appropriate method and within resource capacity of working group. The main aim of the survey was to establish baseline data of fruit and vegetable consumption in children 0-12 years. The survey also intended to provide insight into child and family habits formed in regards to eating and food that would be useful in planning local interventions.

The strategy of collecting baseline data via survey method directly links to Objective 1 of Healthy Eating priority in GVPCP Integrated Health Promotion plan:

By 2017, increase the number of serves of fruit and vegetables consumed by children 0-12 and their families in GVPCP catchment

Due to large target range, two separate groups were chosen for recruitment to survey: parent/carers attending 3.5 year maternal child health check, and parents/carers of students in Grades 1 and 3. This report only includes results from primary school sample as maternal and child health results have been reported separately.

Approval to conduct research project was granted by Goulburn Valley Health Ethics and Research Committee (EC00220) and Department of Education and Early Childhood Development (DEECD) (2013_002125).

¹ Integrated Health Promotion Strategy: Developing a Hume Region approach to preventive health 2012-2015, Department of Health Hume Region, 2011

² A copy of Integrated Health Promotion plan can be found on GVPCP website: www.gvpcp.org.au

³ Measurement of fruit and vegetable consumption: research informing practice, Health Care, 2014, http://manuscript.sciknow.org/uploads/hc/pub/hc_1397035134.pdf

METHODS

Development of survey tool

A literature review conducted in 2013 identified recommendations for accurate measurement of fruit and vegetable consumption⁴. Findings acknowledged the difficulties in using self-report methods of collecting dietary information, due to inaccuracies in estimating food intake. Paper-based surveys have limitations that often recruit participants that are more likely to be of higher education and income status. However, because there is bias in all methods and due to available resources and vast geographical coverage, the working group decided to develop a paper-based survey to gain baseline data.

Photographs of food serving sizes⁵ were included in the survey, as per recommendations from literature to improve accuracy of responses. Survey questions were developed and modified from a variety of existing tools. Questions on estimated food and beverage consumption of child were based on Eating and Physical Activity Questionnaire, a tool that has been previously shown to have good level of relative validity when compared to 24 hour dietary recall⁶. Statements on cost, child's food preferences, time for healthy food preparation, and use of treats as rewards were modified from Starting the Conversation Nutrition and Physical Activity tool⁷.

Two early versions of survey were tested in two primary schools (March and May 2013). After each pilot test, working group made changes to improve the usefulness of information collected. Questions that asked about fruit and vegetables together were separated in order to identify potential differences. Parent demographics such as age and cultural group identification were included. Breastfeeding questions were removed as they did not align with fruit and vegetable consumption that the tool was primarily designed to measure⁸.

Data collected

Survey was designed as a tool to identify baseline data for fruit and vegetable consumption. The survey tool included a section where child's initials and date of birth were recorded in order to match responses at follow up (2 years post) if required. Final version of the 12-item survey contained a mix of multiple choice and open responses, collecting data on:

- Child demographics: Age, gender, home post code
- Parent/carer demographics: Age, highest education level achieved, respondent relationship to child, identification of cultural group, health care card holder
- Typical daily food serves consumed by child: vegetables, packaged snacks, fruit, confectionary and/or chocolate, cake/doughnuts, sweet biscuits and muffins. Coloured food photographs were provided to aid accurate estimation of serving sizes.
- Typical daily beverage serves consumed by child: water, plain milk, flavoured milk, fruit juice, soft drink, and cordial.
- Child's eating habits: frequency of fast food consumption, frequency of breakfast

⁴ Measurement of fruit and vegetable consumption: research informing practice, Health Care, 2014, http://manuscript.sciknow.org/uploads/hc/pub/hc_1397035134.pdf

⁵ Pictures of serving sizes were sourced from WHO Collaborating Centre on Obesity Prevention and Related Research and Training Eating and Physical Activity Questionnaire (EPAQ) 2008

⁶ Assessing the intake of obesity-related foods and beverages in young children: comparison of a simple population survey with 24 hr-recall, *International Journal of Behavioural Nutrition and Physical Activity*, 6:71, 2009

⁷ Use of a tool to determine perceived barriers to children's healthy eating and physical activity and relationships to health behaviours, *Journal of Pediatric Nursing*, 26, 2011

⁸ A copy of the survey is available from author

- Family eating habits: frequency of meals being eaten together
- Shopping habits: frequency that family visits supermarkets, fruit and vegetable shops, farmers markets, roadside stalls, garden
- Barriers to healthy eating explored: access, cost of fruit and vegetables, knowledge about healthy food and snack preparation, child's food preferences, time to prepare healthy meals, and perceived importance for child to eat fruit and vegetables
- Information sources: where do parents/carers get their information about healthy eating from?
- Recall of healthy eating messages in community in general

Recruitment methods

Target group for the objective includes children aged 0-12 years. It was not feasible for agencies to collect information from all age groups due to resource constraints. Therefore, two separate target groups were chosen to participate in the survey: parent/carers attending 3.5 year maternal child health check, and parents/carers of students in Grades 1 and 3. There was no other inclusion or exclusion criteria, however the survey was only provided in English language.

Following approval from DEECD to conduct research in primary schools (and with ethical approval), principals were contacted directly via phone or email for consent to participate. A written letter, including a copy of plain language statement and survey, was first provided to principals, and follow up phone calls determined consent to participate. Survey distribution to parents commenced in November 2013 in consenting schools. Working group members delivered paper surveys to schools, and teachers distributed these to students in Grades 1 and 3. A collection box was left in school reception for participants to return completed surveys, which was collected by working group members after two week period.

Data analysis

Prior to distribution, the survey was coded by researchers. A codebook and Excel template was also developed by a researcher and agency staff. Each agency was responsible for collating surveys from allocated schools and entering results into separate Excel spreadsheets. A process document was developed to identify a consistent approach to entering and interpreting results.

A researcher delivered a training session in January 2014 where staff were guided through the process of cleaning and checking their own data for errors. The researcher developed a demographic data template for staff to input survey results. Staff collected and merged separate agency tables together into one Excel spreadsheet for whole catchment analysis. Separate spreadsheets were also developed for Greater Shepparton, Moira and Strathbogie for local area analysis. Quantitative data was further analysed using SPSS statistical software. Descriptive statistics and parametric testing was completed by a researcher to compare groups across local government areas and determine relationships between variables.

Thematic analysis of open-ended questions

Barriers to fruit and vegetable consumption and healthy eating in general were explored where respondents indicated whether they agreed or disagreed with a series of positive and negative statements. Respondents were then asked whether there were other things that affected what their family ate. Those that responded 'yes' were asked to provide further detail. The responses were thematically analysed by the whole group to determine common concepts which were then coded.

Identified concepts of themes included:

- | | |
|-------------------|--|
| 1. Fussy eaters | 5. Location |
| 2. Cost | 6. Environment and cultural influences |
| 3. Food allergies | 7. Other |
| 4. Time | |

An open-ended question asked respondents to identify healthy eating messages; *what* the message was, and *where* respondent had seen/heard it. Thematic analysis by the group was also conducted on these responses (Table 1).

Table 1: Identified themes from 'Have you seen or heard any messages about healthy eating?'

<p>Themes identified for <i>what</i> question:</p> <ol style="list-style-type: none"> 1. Broad health statements 2. Specific healthy messages 3. Food pyramid 4. Two fruit, five vegetables 5. General fruit and vegetable messages 6. Unhealthy messages 7. Water consumption 8. Other 	<p>Themes identified for <i>where</i> question:</p> <ol style="list-style-type: none"> 1. TV and radio 2. Print media 3. Health professionals 4. Internet 5. Educational settings 6. Other
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RESULTS

Response rates

In total, 60 primary schools were invited to participate in survey, with 41 schools (68.3%) consenting to being involved. Almost half (48.8%, n=20) of schools were located in Greater Shepparton, with a further 41.5% (n=17) located in Moira, and 9.8% (n=4) in Strathbogie. A total of 550 surveys were completed out of 1933 surveys distributed, providing an overall response rate of 28.5%.

Response rates across local government areas varied, with Strathbogie producing the highest response rate of 40.9% (56/137), Moira received 32.2% (233/724) surveys completed, and Greater Shepparton produced a response rate of 24.4% (261/1072). Tables 2, 3, and 4 outline individual response rates received from each school. The Index of Community Socio-Educational Advantage (ICSEA) is a scale that represents levels of educational advantage. ICSEA scores have been included in the tables to demonstrate level of difference in socio-educational indicators between schools. Every school has an ICSEA value on a scale which has a median of 1000 and a standard deviation of 100. ICSEA values below 1000 represent more educationally disadvantaged backgrounds, with values over 1000 representing more educationally advantaged backgrounds⁹.

Table 2: Response rates for individual schools in Greater Shepparton

School	Surveys completed	Surveys distributed	Response rate (%)	ICSEA score
Ardmona Primary School	6	16	37.5	822
Bourchier Street Primary School	37	188	19.7	961
Congupna Primary School	6	10	60.0	1012
Currawa Primary School	3	4	75.0	1118
Dhurringile Primary School	1	3	33.3	938
Lemnos Primary School	0	5	0	981
Mooroopna North Primary School	1	6	1.7	925
Mooroopna Primary School	13	62	21.0	892
Murchison Primary School	8	31	25.8	976
Orrvale Primary School	33	117	28.2	987
Sacred Heart Tatura	26	64	40.6	1033
Shepparton East Primary School	17	48	35.4	980
St Brendan's Primary School	18	112	16.1	1011
St George's Road Primary School	7	94	7.4	845
St Luke's Primary School	17	56	30.4	1048
St Mel's Primary School	25	87	28.7	1025
Tatura Primary School	20	62	32.3	960
Undera Primary School	2	7	28.6	1004
Verney Road Primary School	9	28	32.1	N/A
Gowrie Street Primary School	12	72	16.7	837
TOTAL:	261	1072	24.4	

⁹ Guide to understanding ICSEA, Australian Curriculum, Assessment and Reporting Authority, 2012

Table 3: Response rates for individual schools in Strathbogie

School	Surveys completed	Surveys distributed	Response rate (%)	ICSEA score
Avenel Primary School	10	30	33.3	1028
Nagambie Primary School	9	30	30.0	989
St John's Primary School	32	61	52.5	999
St Joseph's Nagambie	5	16	31.3	1029
TOTAL:	56	137	40.9	

Table 4: Response rates for individual schools in Moira

School	Surveys completed	Surveys distributed	Response rate (%)	ICSEA score
Christ the King Anglican College Cobram	11	36	30.6	1015
Cobram Primary School	17	51	33.3	924
Cobram Special Development School	4	9	44.4	N/A
Invergordon Primary School	0	6	0	935
Katamatite Primary School	6	17	35.3	975
Katunga Primary School	14	28	50.0	956
Katunga South Primary School	3	5	60.0	961
Nathalia Primary School	14	39	35.9	933
Numurkah Primary School	11	46	23.9	940
Sacred Heart Primary School Yarrawonga	38	113	33.6	1014
St Joseph's Primary School Cobram	47	117	40.2	996
St Joseph's Primary School Numurkah	18	80	22.5	957
Strathmerton Primary School	15	23	65.2	979
Tungamah Primary School	1	6	16.7	962
Waaia-Yalca South Primary School	3	6	50.0	930
Wunghnu Primary School	3	3	100.0	979
Yarrawonga P-12	28	139	20.1	962
TOTAL:	233	724	32.2	

Participants

Participants in the study were parents or carers of school children in Grades 1 and 3 of schools consenting to be surveyed.

General demographics

Gender of children reported showed even representation; males 49.1% (n=270), and females 50.6% (n=278). The ages of children ranged from 5-11 (interquartile range 7, 9), with a median age of 7 years.

Overwhelming majority of parent/carer respondents identified as mother of child (91.3%, n=502), with 30 fathers also completing the survey (5.5%). Of those who responded, the relationship to child of Parent/carer 1 were mothers (92.1%, n=313) and majority of Parent/carer 2 were fathers (89.9%, n=275). The majority of respondents had completed tertiary level education; 60.2% (n=331) for Parent/carer 1 and 46.6% (n=256) for Parent/carer 2. Average age of parents/carers was between 39-41 years, with an overall age range 20-73 years.

Almost a third of overall respondents held a Health Care Card (32.0%, n=176). Proportion of Health Care Card holders was slightly higher in Greater Shepparton (34.8%, n=89) and Moira (31.3%, n=73), in comparison with Strathbogie (25.0%, n=14).

Almost a fifth of respondents identified with a cultural group (16.2%, n=89). Of the respondents that specified a cultural group, 29.2% (n=26) identified as Italian, 15.7% (n=14) as Aboriginal and/or Torres Strait Islander, and 10.1% (n=9) as Middle Eastern. A higher proportion of respondents in Greater Shepparton identified with a cultural group (24.5%, n=64) than Moira (10.7%, n=25). In Greater Shepparton, a third of responses (n=10) who chose 'Other' category identified as Albanian. There were no respondents in Strathbogie who identified with a cultural group.

Fruit and vegetable consumption

Eleven percent (n=61) of the sample met both the recommended guidelines for fruit and vegetable intake, with 2.7% (n=14) of the sample meeting neither targets.

Children from the sample were reported as eating an average of 2.31 serves of fruit per day, which slightly exceeds the recommended intake level of 1.5-2 serves for children aged 4-11¹⁰. A small proportion of children (3.1%, n=17) were not meeting the recommended guidelines for fruit intake.

Children from the sample were reported as eating an average of 2.09 serves of vegetables per day, well below the recommended guidelines of 4.5-5 serves for children aged 4-11⁸. Twelve percent (n=67) of sample were within the recommended range of 4-5 serves, with majority (86.6%, n=476) not meeting the recommended guidelines for vegetable intake.

There were equivalent numbers from both genders who did not meet the recommended guidelines for fruit and vegetable intake (males 42.4%, n=227; females 45.1%, n=242). There were no significant differences between local government areas (Greater Shepparton 92.0%, n=230; Strathbogie 86.4%, n=51; Moira 83.0%, n=190).

Child and family eating habits

Sixty one percent (n=335) of the sample reported eating takeaway food on average once per week, with another 35.5% (n=195) reporting consumption of takeaway food once a fortnight on average. Slightly more than two percent (n=13) were eating takeaway food daily. Takeaway food consumption was compared with respondents' postcodes. Eleven towns were identified and are arranged in Table 5 beginning with largest to smallest proportion of responses for takeaway food consumption. No significant differences in takeaway food consumption frequency were found between local government areas.

Table 5: Frequency of takeaway consumption and major towns

Town	At least 1 per week		At least 1 per month		Total	
	n	%	n	%	n	%*
Shepparton	72	69.3	25	24.0	104	18.9
Cobram	42	56.8	24	32.5	74	13.5
Yarrawonga	39	64.0	21	34.4	61	11.1
Kialla	29	60.5	19	39.6	48	8.7
Tatura	19	47.5	19	47.5	40	7.3
Numurkah	18	56.3	13	40.7	32	5.8
Euroa	19	63.3	10	33.3	30	5.5
Mooroopna	17	65.3	6	23.1	26	4.7
Strathmerton	12	63.2	5	26.3	19	3.5
Nathalia	8	57.2	6	42.8	14	2.5
Nagambie	6	36.2	7	43.9	13	2.4

*= proportion of total sample

¹⁰ Healthy Eating for Children – Brochure, National Health and Medical Research Council, 2013

The majority of children in the sample (88.9%, n=489) were reported to eat breakfast daily. Survey respondents were asked to estimate in a typical week the number of times the family would eat a meal together at a table. Responses were recorded separately for breakfast, lunch and dinner. Families in the sample ate breakfast together on average four times per week; lunch two times per week; and dinner six times per week.

The majority of survey respondents reported shopping at a supermarket two times a week on average (56.6%, n=309). Respondents in Greater Shepparton (64.6%, n=133) and Strathbogie (51.8%, n=29) were more likely to report never shopping at a roadside stall in comparison to Moira sample (37.0%, n=86).

Barriers to fruit and vegetable consumption and healthy eating

Respondents were asked whether they agreed or disagreed with a series of statements relating to barriers to healthy eating. The statement and response rates are shown in Table 6.

Knowledge indicators produced high level of agreement overall, whereby 95.8% (n=527) of respondents agreed to the statement *'I know how to make healthy meals for my child'*. Access did not appear to be a barrier for majority of sample; 94.5% (n=520) agreed to the statement *'It is easy to get fresh fruit and vegetables'*.

Whilst majority of respondents indicated that they did not believe fruit and vegetables cost too much, in comparison 40% (n=220) agreed to the statement *'Fruit costs too much'* and 36.7% (n=202) agreed to the statement *'Vegetables cost too much'*.

Child's food preferences were also explored as potential barriers to healthy food consumption, with particular focus on fruit and vegetables. Almost a fifth (n=99) of respondents agreed to the statement *'My child doesn't like vegetables'*. When this particular variable was analysed alongside vegetable consumption a relationship was identified, whereby children that did not like vegetables were more likely not to meet vegetable guidelines. A much smaller proportion of respondents (6.7%, n=37) agreed to the statement *'My child doesn't like fruit'*, which further supports major findings that children's fruit consumption is at satisfactory levels.

Table 6: Primary school responses to statements on barriers to healthy eating

Positive statements	Disagree		Agree	
	n	%	n	%
It is easy to get fresh fruit and vegetables	20	3.6	520	94.5
I know how to make healthy meals for my child	18	3.3	527	95.8
I know how to make healthy snacks for my child	23	4.2	512	93.1
It is important for my child to eat fruit and vegetables	4	0.7	545	99.1
Negative statements	Disagree		Agree	
	n	%	n	%
Fruit costs too much	304	55.3	220	40.0
Vegetables cost too much	327	59.5	202	36.7
I'm not sure what healthy foods are	538	97.8	9	1.6
My child doesn't like fruit	507	92.2	37	6.7
My child doesn't like vegetables	443	80.5	99	18.0
Healthy meals take too long to prepare	497	90.4	34	6.2
Sometimes it seems like the only way to get my child to behave is to promise lollies or other treats	487	88.5	52	9.5

Thirty nine percent (n=216) of participants reported that there were other factors which affected what their family ate. These open ended questions were thematically analysed by the group, with Time (44.5%, n=109), Food allergies (14.7%, n=36), Fussy eaters (12.7%, n=31), and Cost (12.2%, n=30) being the major influences.

Time was identified as the main factor affecting what families eat. This was in contrast to majority (90.4%, n=497) who disagreed to the statement '*Healthy meals take too long to prepare*'.

Information and messages about healthy eating

The survey included a question about healthy eating messages: *Have you seen or heard any messages about healthy eating?* Those who responded positively (63.1%, n=347) were further prompted to report *what* the message was and *where* they had seen/heard it.

Major themes identified by group analysis were; Broad statements (28.9%, n=96); General fruit and vegetable messages (17.5%, n=58); Two fruit, five vegetables (13.6%, n=46); and Food pyramid (9.3%, n=31). Respondents reported seeing or hearing messages about healthy eating on TV or radio (41.6%, n=185). The remainder of responses were mostly reported to be from Print media (21.1%, n=94), Educational settings such as schools and kindergartens (11.0%, n=49) and from Health professionals (9.4%, n=42).

Survey participants were asked to report their main sources of information for healthy eating, using predetermined categories. Respondents were invited to select as many applicable categories as they liked. The major sources of information identified were; Own knowledge (68.4%, n= 376); Family (57.8%, n=318); Friends (50.9%, n=280); Newspapers/magazines (49.8%, n=274); Internet (46.2%, n=254); and Book/brochures (39.8%, n=219).

DISCUSSION

Fruit and vegetable consumption

Primary aim of the survey on eating patterns in children was to gather local data on fruit and vegetable consumption as a baseline to measure potential impact of future intervention regarding healthy eating activities. Results from survey found that:

- 3.1% (n=17) of children were not meeting the recommended intake of 1.5-2 serves of fruit per day
- 86.6% (n=476) of children were not meeting the recommended intake of 4.5-5 serves of vegetables per day

DEECD as part of Victorian Child Health and Wellbeing Survey (VCHWS) gathered data in 2009 on fruit and vegetable consumption rates of children aged 4-12 years across Victoria, including the Hume Region. Thirty three percent of Hume Region sample met both fruit and vegetable targets, three times higher than the sample in this study (11.1%). However, a higher proportion of children (7.3%) in VCHWS did not meet either fruit or vegetable targets, compared to this local sample (2.7%).

In regards to fruit intake alone, the proportion of children in VCHWS sample reported to not meet the fruit target was 11%, higher than this local sample, reporting 3.1%. For vegetable consumption, the reported proportions not meeting vegetable targets were higher in this local sample (86.8%) compared to the Hume Region sample (63.1%)¹¹.

It should be noted that since the VCHWS was conducted in 2009, dietary guidelines have been modified. Caution needs to be taken when comparing the two datasets, as data may have been analysed in different ways to identify what constitutes 'meeting' dietary guidelines.

Child and family eating habits

Survey results identified that on average the sample had good eating habits, with majority of children eating breakfast daily and typically consuming takeaway foods once a week. Broader literature has found that frequency of consuming takeaway food increases with age, whilst daily breakfast consumption decreases with age¹². Establishing and maintaining good eating habits early in life are important protective factors that build strong foundations for healthy eating into adulthood. Survey results revealed family meal patterns were favorable; on average families were eating breakfast and dinner together four and six times a week respectively. Family meal patterns are understood to predict diet quality into adolescence¹².

Changes in food environment have led to increased availability and marketing of processed foods high in fat and sugar¹². Survey results suggest that frequency of takeaway food consumption for children in the sample was not high, and no significant differences were identified in comparing results across local government areas. Frequency of fast food consumption was compared by postcodes. Four towns with highest proportion of responses for '*once per month*' do not have major fast food chains located in their area. Investigation via mapping of takeaway food outlets is necessary in order to provide further evidence to support or challenge these preliminary findings. It is acknowledged that takeaway food can be accessed via other outlets, not just major fast food chains.

¹¹ Hume Region Population Health Profile 2012, compiled by Hume Region Primary Care Partnerships, 2012

¹² Eat for Health – Australian Dietary Guidelines, National Health and Medical Research Council, 2013

Barriers to fruit and vegetable consumption and healthy eating

Parental knowledge did not appear to be a barrier influencing children’s fruit and vegetable consumption, with high proportions of agreement to positive statement on preparing healthy meals and snacks. Majority of respondents believed it was easy to get fruit and vegetables, which suggests access is not an issue for the sample. Other locally available data exploring reasons why some people don’t always get the right quality or quantity of food they want identify that access may be an issue for other members in communities, despite not being a particular issue for the sample (Table 7).

Table 7: Reasons why people don’t always get right quality or quantity of food¹³

	Greater Shepparton	Strathbogie	Moira	Victoria
Some food are too expensive	33.7%	34.4%	35.2%	29.3%
Can’t always get right quality	29.8%	29.8%	29.6%	25.5%
Can’t always get right variety	11.2%	16.9%	14.5%	10.9%
Can’t always get culturally appropriate food	7.5%	5.5%	7.6%	6.8%
Inadequate/ unreliable public transport	9.3%	12.4%	8.8%	8.0%

Results from our sample show that beliefs about cost of fruit and vegetables vary, whereby 40% of respondents agree fruit costs too much and 36.7% agree vegetables cost too much. Broader statement in Table 7, ‘*some foods are too expensive*’ support our survey findings and identify that proportions in all local government areas are higher than the state average. Cost of food, in particular fruit and vegetables, does play a factor in some instances and should be taken into consideration in future planning of healthy eating interventions.

Children’s food preferences are an important influence in determining food consumption. An important correlation was identified in survey results, whereby children in the sample that were reported to dislike vegetables were more likely not to meet recommended guidelines for vegetable consumption. This is consistent with findings from an original study that explored barriers to healthy eating¹⁴. In order to establish food preferences that are consistent with healthy eating guidelines, it is recommended that vegetables of different colours and textures are frequently offered to toddlers and pre-schoolers, so that they develop tastes and preferences for a wide variety of vegetables¹⁵.

Time was identified by respondents, unprompted, as the main factor affecting what their family ate. This finding was in contrast to the majority of respondents who did not believe that ‘*healthy meals take too long to prepare*’. This contradiction suggests that it is not necessarily healthy meals that take time but that the current culture of being time poor affects what food families are able to prepare in general. Time factors associated with any healthy eating interventions must be carefully planned so as to maximise participation of target group.

¹³ Hume Region Population Health Profile 2012, compiled by Hume Region Primary Care Partnerships, 2012

¹⁴ Use of a tool to determine perceived barriers to children’s healthy eating and physical activity and relationships to health behaviours, *Journal of Pediatric Nursing*, 26, 2011

¹⁵ Eat for Health – Australian Dietary Guidelines, National Health and Medical Research Council, 2013

Information and messages about healthy eating

Television or radio were the main channels through which respondents reported hearing or seeing healthy eating messages. This finding is useful when considering future marketing and promotion of health messages. Respondents identified family and friends as major sources of information regarding healthy eating for their children. The influence of informal networks is important for considering approaches to targeting and engaging parents or carers in future healthy eating interventions.

Limitations

There were a number of limitations associated with survey tool itself and process of distribution and analysis that must be acknowledged.

Survey methodology

Identified by earlier literature review, working group were mindful of limitations associated with paper-based surveys dependent on voluntary participation and self-report. The survey was only available in English, which restricted participation to those with adequate English literacy skills. The sample contained a higher proportion of tertiary educated respondents which is a known bias of paper surveys.

Survey question

Respondents were required to estimate their child's typical daily intake for a number of food and beverages by recording how many serves are normally consumed. Photographs of various food serves were provided to assist respondents in accuracy of estimations and therefore reduce bias by over or under estimation. Actual parental knowledge of the recommended serves of fruit and vegetables for children was not asked. Therefore, it is unable to be determined whether parent/carer knowledge of fruit and vegetable recommendations was adequate.

Response bias

It could be assumed that respondents who chose to participate would be more likely to perceive that they have healthy eating habits and patterns, and those who do not, did not respond at all. Therefore, although poor, the results are biased to reflect more positive patterns than the reality. It should also be considered that self-reporting notoriously over estimates positive aspects, and that the results are likely to be less positive than reported.

CONCLUSIONS

Achievements

Level of coordination required to successfully conduct surveys across three local government areas was considerable and a major achievement was that partnerships between agencies were strengthened. As the survey was one of the first activities under the Regional Health Promotion Strategy, it set a new standard for sharing resources across local government boundaries.

The survey activity offered an opportunity for agencies to, in some cases establish, or build upon previous relationships developed with schools, which contributed to a satisfactory response rate of 28.5%. This was a particularly important achievement given the large geographical area in which the survey was conducted. Furthermore, agencies have been able to continue their engagement with schools by providing individual findings reports to each school detailing specific results. Feedback has been encouraged from principals and parents on ideas they may have to increase vegetable consumption in children, allowing for community input.

Initially the working group identified this research project as a necessary step in collecting baseline data, as previously the only local data available on fruit and vegetable consumption in children 0-12 years was at Hume Region level. To collect data that is specific to Greater Shepparton, Moira and Strathbogie Shires is a major achievement and will further facilitate partnerships with other stakeholders who wish to improve healthy eating outcomes for local communities, and identify areas requiring further research and interventions.

As well as strengthening the existing partnerships between health agencies, a new partnership with an academic institution was established. Agency staff extended their research skills with mentoring from the University of Melbourne, who provided on-site support when required. This is an important partnership for future research projects, and to cement learnings from this project, including the ethical conduct of human research.

Lessons learned

Some agencies encountered difficulties in engaging with schools that they had not previously worked with, or did not have an already established relationship. Research was required to be approved by each school principal, however making contact with principal in first instance was difficult despite utilising multiple methods of phone, postal letter, and email. Working group agreed that in the future, it would be beneficial to include a local representative from DEECD to be involved in the planning phase, so that the working group could receive advice and support about how best to approach school principals. Allowing extra time to build these relationships should also be factored into any future research projects with schools.

Recommendations for practice

An objective in GVPCP Integrated Health Promotion plan is to increase number of serves of fruit and vegetables consumed by children. However, survey results suggest that an intervention focused on increasing fruit consumption would have little impact at population level, given only 17 children in the sample were not meeting guidelines. Rather, a more targeted approach to increasing vegetable consumption in children is warranted, given the large proportion of children in the sample not meeting vegetable guidelines.

The major finding from the survey indicates that increasing vegetable consumption needs to be a primary focus in any future healthy eating initiatives delivered by agencies. This necessitates that working group conducts a review of objective, including consideration of evaluation indicators, and make updates to GVPCP Integrated Health Promotion plan to better align with local data.

Working group are also required to consider how such an intervention on increasing vegetable consumption might be delivered, given that time and food preferences were raised as barriers for some respondents in the sample. Knowledge on healthy eating was mainly identified by respondents as informal networks such as family and friends. This is an important finding in regard to communication channels the working group may choose to utilise in promoting healthy eating messages.

Concerns have been raised regarding low response rate from Greater Shepparton schools, with recommendations that further data be gathered from this particular area prior to implementing an intervention. Engagement with schools and service providers that already deliver programs to target group is planned, so as to increase opportunities for participation.

Dissemination and sustainability

Approaching the research project as an activity conducted by all agencies across three local government areas has increased the likelihood that findings from the survey will be widely disseminated and utilised in future interventions. The working group has already experienced some staff turnover in the past year. However due to integrated approach used for this project, a supportive environment has been created, whereby knowledge and history is maintained and passed onto new staff through the structure of working group. In addition, processes have been implemented and clearly documented in order to maintain consistent communication within and across agencies. Process documents contribute to sustainable outcomes; in the event that the process has to be repeated in future, the information has already been captured and is available for immediate use by any staff or agency.

APPENDICES

Appendix 1: Acronyms

DEECD	Department of Education and Early Childhood Development
GVPCP	Goulburn Valley Primary Care Partnership
ICSEA	Index of Community Socio-Educational Advantage
VCHWS	Victorian Child Health and Wellbeing Survey