

THE  
EVALUATION  
REPORT  
OF  
*Jamie's*  
Ministry  
of Food  
IPSWWICH  
QUEENSLAND  
JULY 2014





THE  
EVALUATION  
REPORT  
OF  
*Jamie's*  
Ministry  
of Food  
IPSWICH  
QUEENSLAND  
JULY 2014

**Prepared by the Jamie's Ministry of Food, Ipswich Evaluation Team from:**

Deakin Health Economics, Deakin University

Jack Brockhoff Child Health & Wellbeing Program, Melbourne School of Population Health, The University of Melbourne

WHO Collaborating Centre for Obesity Prevention, Deakin University

**Suggested Citation:**

Flego A, Herbert J, Gibbs L, Waters E, Swinburn B and Moodie M.

The evaluation of Jamie's Ministry of Food, Ipswich: Final evaluation report, Melbourne: Deakin University, July 2014.

**Evaluation Team Contact:**

Anna Flego

Research Fellow, Deakin Health Economics, Faculty of Health, Deakin University

Tel: +61 3 9251 7138 Email: [anna.flego@deakin.edu.au](mailto:anna.flego@deakin.edu.au)

**Jamie's Ministry of Food Contact:**

Alicia Peardon

CEO, The Good Foundation & Jamie's Ministry of Food

Tel: +61 3 9933 3390 Email: [aliciapeardon@thegoodfoundation.com.au](mailto:aliciapeardon@thegoodfoundation.com.au)

**Commissioned by The Good Foundation and the Queensland Government**

# Contents

<b>Key Findings</b>	<b>4</b>
<b>Introduction and structure of this report</b>	<b>6</b>
<b>Background</b>	
<b>Cooking skills and Health</b>	<b>8</b>
<b>The evidence for cooking skills programs for adults</b>	<b>9</b>
<b>Jamie's Ministry of Food Ipswich, Australia</b>	<b>9</b>
<b>Research Aims and Objectives</b>	<b>12</b>
<b>Research Rationale</b>	<b>13</b>
<b>Research Questions</b>	<b>14</b>
<b>Mixed Methods Research design</b>	<b>15</b>
<b>Quantitative study</b>	<b>16</b>
<b>Study design / Methods</b>	<b>16</b>
<b>Outcome measures</b>	<b>17</b>
<b>Recruitment to the study</b>	<b>17</b>
<b>Sample size</b>	<b>18</b>
<b>Statistical Analysis</b>	<b>18</b>
<b>Quantitative Study Results</b>	<b>19</b>
<b>Response rates</b>	<b>19</b>
<b>Characteristics of evaluation participants</b>	<b>21</b>
<b>Primary Outcomes</b>	<b>23</b>
<b>Secondary Outcomes</b>	<b>31</b>
<b>Qualitative Study</b>	<b>60</b>
<b>Study design/Methods</b>	<b>60</b>
<b>Sample and Recruitment</b>	<b>61</b>
<b>Data collection</b>	<b>61</b>
<b>Analysis</b>	<b>61</b>
<b>Qualitative Results</b>	<b>62</b>
<b>Program experiences and expectations</b>	<b>62</b>
<b>Barriers and facilitators to cooking</b>	<b>64</b>
<b>Unexpected outcomes</b>	<b>67</b>
<b>Quantitative Summary</b>	<b>68</b>
<b>Discussion</b>	<b>69</b>
<b>Impacts and Outcomes</b>	<b>69</b>
<b>Strengths and limitations of the study</b>	<b>75</b>
<b>Conclusion</b>	<b>76</b>
<b>Acknowledgements</b>	<b>76</b>
<b>References</b>	<b>77</b>

# Key FINDINGS

---

**The evaluation of Jamie's Ministry of Food Ipswich, Queensland,** has shown that the 10 week program not only increased participants' cooking confidence, knowledge, attitudes and beliefs towards cooking and healthy eating but shifted behaviour change towards healthier cooking and eating activities in the home. The program was well accepted by participants who viewed the program as a positive experience to develop the skills and confidence to execute simple, healthy meals for themselves and their families and to embrace the many flow-on benefits that home cooking can have.

A longitudinal mixed methods evaluation methodology was utilised. Quantitative questionnaire data provided evidence of whether there was change and the extent of this change, on a variety of measures in participants as a result of participation in the program. Qualitative interviews over time explored selected participants' own journey through the program and provided a deeper understanding of how the program impacted personally on them.

**The key findings of the evaluation are as follows:**

- There was strong evidence that the program increased cooking confidence (self-efficacy) in key skill areas required for daily food preparation and cooking. Differences found on all cooking confidence measures were statistically significant between control participants and program participants. Qualitative findings reinforced this evidence with participants reporting that their increased confidence enabled them to cook more at home and with greater efficiency.
- Daily vegetable consumption increased in the intervention group by just over one half serve (0.52 serves) from baseline (program start) to program end and this increase was sustained 6 months later. These findings were statistically significant. When comparing the average vegetable intake in intervention participants 6 months after completing the program with average adult vegetable intake for Queensland, there was a mean difference of 0.74 serves per day. This is an important finding in light of population health trends for declining vegetable intake and the growing

---

---

evidence of the protective benefit of increased vegetable intake for the prevention of certain diseases (such as a 7% risk reduction of coronary heart disease and a 3% risk reduction of stroke for every one serve increase in vegetable intake).

- There was strong evidence of behaviour change in intervention participants in relation to the frequency of cooking the main meal from scratch, including vegetables with the main meal and reducing weekly takeaway consumption. These findings were not found in the control group and the difference between groups was statistically significant.
- There was a positive shift in elements of participants' knowledge, attitudes, beliefs, satisfaction and enjoyment of cooking and healthy eating, as well as social connectedness. Qualitative findings suggest that breaking down barriers to cooking such as a lack of enjoyment are important and the Jamie's Ministry of Food program had a positive impact in building enjoyment into the cooking process. The program appeared to also have some flow-on benefits in bringing families together to share the process of cooking and eating together but also to impart knowledge and skills in a way that is reminiscent of how previous generations had traditionally passed on cooking skills.
- A change in food purchasing towards a healthier diet was found in intervention participants, with an increase in vegetable purchasing and a decrease in take-away food purchasing without any increase in the overall household weekly food bill. These findings appear to be in agreement with behaviour change such as increased daily vegetable intake, increased consumption of vegetables with the main meal and decreased weekly take-away food consumption found in the intervention group.
- The program had some additional benefits in relation to increased self-esteem and increased perceived general health in intervention participants after completion of the program.
- This extensive mixed methods evaluation of Jamie's Ministry of Food Ipswich, contributes to the emerging international evidence base of whether cooking skills programs work to improve health and wellbeing as well as provides insights into the underlying mechanisms at play which lead to positive behaviour change.

# Introduction STRUCTURE OF THIS REPORT

---

---

**This is the Final Report of the Evaluation of Jamie's Ministry of Food Ipswich conducted by Deakin University and The University of Melbourne.** In 2011, Deakin University and The University of Melbourne were commissioned by The Good Foundation (TGF) to undertake an evaluation of the program over a 3.5 year timeframe from 2011 until July 2014. The aim of the evaluation was to determine the immediate impacts and outcomes of the 10 week program on participants as well as any sustained outcomes that may result over a longer time period.

The evaluation results reported herein are intended to inform public health policy in the following ways:

- Add to the evidence base about the effectiveness of practical cooking skills programs to impart knowledge, skills and behaviour change towards healthier diets and other social and health benefits;
- Inform the practice of program developers, implementers and evaluators within the wider international research community who are interested in cooking skills interventions as a component of nutrition education and health promotion;
- Inform past, present and future program participants, and especially those who participated in the evaluation, of the results of the evaluation;
- Provide evidence to inform policy making decisions and public or private investment in Jamie's Ministry of Food in Queensland or in other parts of Australia.

The report is divided up into 6 main sections:

- **Background** – provides an overview of the evidence base around cooking skills programs and details about Jamie's Ministry of Food
- **Research Aims and Objectives** – describes the evaluation aims, objectives and overarching research questions

- 
- **Quantitative study** – provides information about the quantitative study design, data collection and results
  - **Qualitative Study** – provides information about the qualitative study design, data collection and results
  - **Discussion** – provides an overview of major findings drawn collectively from the quantitative and qualitative studies.

Further information on methodology can be found in Flego A, Herbert J, Gibbs L, Swinburn B, Keating C, Waters E and Moodie M. Methods for the evaluation of the Jamie Oliver Ministry of Food program, Australia. BMC Public Health 2013, 13:411 doi:10.1186/1471-2458-13-411



# Background

## COOKING SKILLS AND HEALTH

---

The benefits of home cooked meals prepared from basic ingredients are well documented (1), having been described as being lower in fat and salt, and higher in vegetable content (2) and leading to overall better nutritional quality (3) when compared to meals made outside of the home (4-6). These nutritional benefits coupled with positive sociocultural elements such as social connectedness from cooking and eating together (1) suggest that there is much to gain from the home cooking experience for individuals and their families. Unfortunately, it appears that over the past few decades there has been a drastic shift in the way we purchase, prepare and cook food in westernized countries including Australia, with a growing reliance on pre-packaged food and food prepared outside of the home (7). Increased consumption of energy dense but nutrient poor foods has been linked with adverse health outcomes including obesity (8) and many chronic diseases (9) with poor nutrition contributing significantly to the global burden of disease (10).

There are a multitude of reasons for changes in cooking practices and the food choices we make including the loss of cooking skills (11). Cooking skills have been reported to be in decline in westernized societies (12) despite a growing evidence base that cooking skills are associated with better food choices (13). This de-skilling of populations may be the result of a number of factors - a reduction in the traditional pathways of learning to cook, technological advances in the production and availability of processed ready-made meals, changes to social norms and shifting priorities for cooking and eating within family units including time constraints and greater participation of women in the workforce amongst others (14).

With the growing burden of chronic disease and obesity in Australia, supporting pathways to promote healthy eating and good nutrition is high on the agenda of policy makers. One such strategy that is growing in prominence is community cooking skills programs, designed to provide a hands-on opportunity to improve individuals' cooking skills and confidence, and to support home cooking and healthy eating as a vehicle towards positive health benefits.



# THE *Evidence* FOR COOKING SKILLS PROGRAMS FOR ADULTS

---

---

There is growing evidence of the positive benefits of community cooking skills programs to improve individuals' cooking confidence (15, 16) and healthy cooking and eating practices (15-17). One recent study in the United Kingdom reported sustained benefit up to one year after the program finished (16). A contemporary systematic review determined that programs involving home food preparation and cooking may result in beneficial cooking and eating behaviours and positive health outcomes for participants (18), however the authors expressed caution due to the limited evidence base and in particular, the lack of studies robust enough to permit firm conclusions about the effectiveness of these programs (18).

## *Jamie's* MINISTRY OF FOOD IPSWICH, AUSTRALIA

---

---

### **THE PROGRAM**

Jamie's Ministry of Food is a community cooking skills program originally developed by Jamie Oliver, a UK based celebrity chef with a passionate interest in promoting cooking skills in the community. Jamie's Ministry of Food programs have been running since 2008 in the United Kingdom in a variety of locations including Rotherham, Bradford, Leeds, Newcastle, Alnwick and East London, areas that include higher prevalence of socioeconomically disadvantaged persons.

The first Australian Jamie's Ministry of Food Centre opened in Ipswich, Queensland in April 2011. The Ipswich centre was developed and implemented by The Good Foundation (TGF), a philanthropic organisation established to rollout Jamie's Ministry of Food in Australia. The Ipswich centre

---

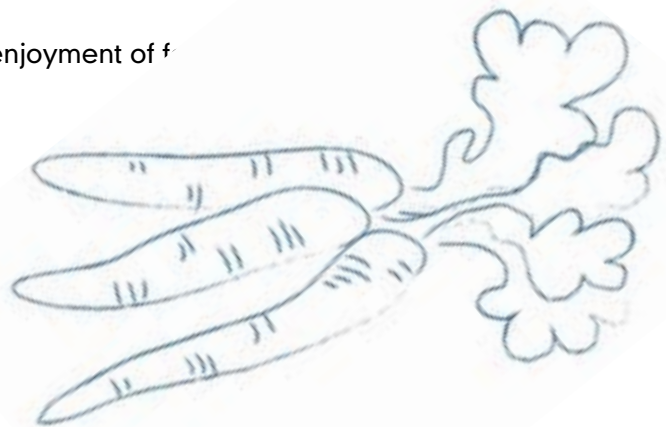
---

was co-funded by philanthropist Andrew Muir, Chairman, The Good Guys, a major Australian white goods retailer and Queensland Department of Health from 2011-2014.

Jamie's Ministry of Food Ipswich operates from a permanent site in the commercial heart of Ipswich. It offers a 10 week course of ninety minute classes, held weekly. Participants are taught Jamie Oliver recipes which have been adapted to the Australian context from the UK program. Over the 10 week course, participants learn to prepare and cook a variety of dishes whilst learning specific cooking techniques. During each class, each participant prepares a meal to serve four that they can enjoy after the class and also take home. Messages about good nutrition, healthy cooking and eating behaviours, meal planning and budgeting are embedded in the program and are discussed in an informal manner during the classes. Participants pay \$10 per class, or \$5 for concession card holders. If financial constraints prevent entry to the program, a subsidized rate is made available.

In 2011, at the time that the Ipswich centre opened, the mission statement of Jamie's Ministry of Food, Australia was to "provide an engaging community focused program that teaches basic cooking skills and good nutrition to non-cooks all over Australia, regardless of age, demographic or ethnicity, to improve their quality of life and health". Program objectives were determined in consultation with TGF, Queensland Health and the evaluation team and presented in a manner suitable for testing were as follows:

- 1.** To provide opportunities, to people of different age and demographic background, to experience and learn how to cook healthy meals quickly and cheaply.
- 2.** To increase program participants' cooking skills, knowledge self-efficacy.
- 3.** To increase program participants' enjoyment of food and social connectedness.



---

---

## **THE SETTING**

Ipswich is located 40 km from Brisbane in the south east of Queensland. According to Queensland government statistics, the estimated resident population of the Ipswich City Local Government Area as of June 2013, was approximately 183,000 with an annual growth rate between 2012 and 2013 of 3% (19).

Ipswich has higher than Queensland state average proportions of low income earners, blue collar workers, unemployed persons, persons of limited educational qualifications and persons of high socio economic disadvantage (20, 21). Ipswich also has higher rates of overweight and obesity compared to Queensland state averages (with more than 59% reported as overweight or obese in 2011-2012) and lower mean fruit and vegetable intake (22, 23) with evidence of socio economic patterning of these risk factors for chronic illness (23, 24) .

## **THE PARTICIPANTS**

Jamie's Ministry of Food Ipswich is an all-inclusive program. It does not discriminate on the basis of socio-economic or other demographic factors. However given the program does provide financial concessions for low income participants and is promoted to community groups that may include higher proportions of people at risk of nutrition related chronic disease and obesity (25), it is likely to reach such groups within the greater Ipswich



# Research AIMS AND OBJECTIVES

---

## RESEARCH RATIONALE

Notwithstanding growing evidence of the effectiveness of community based cooking skills programs to improve individuals' cooking skills, confidence to cook and healthy eating behaviours (18), there has been no formal evaluation to date of Jamie's Ministry of Food despite its operation in multiple sites, and being arguably the most well-known community cooking skills program in the United Kingdom. The results of this evaluation will therefore not only provide evidence of the effectiveness of the program within an Australian context but also potentially inform policy and practice within the UK context.

A program logic model was developed at the start of the evaluation process to establish the research questions to be asked in the evaluation (Figure 1). The main aim was to confirm, using mixed methods, whether or not the program improved individuals' cooking confidence and cooking and eating behaviours and to explore other additional positive impacts in terms of personal development and social connectedness as well as barriers to change. Also, the intent of the longitudinal nature of the research was to determine whether there were any sustained effects of the program on participating individuals.



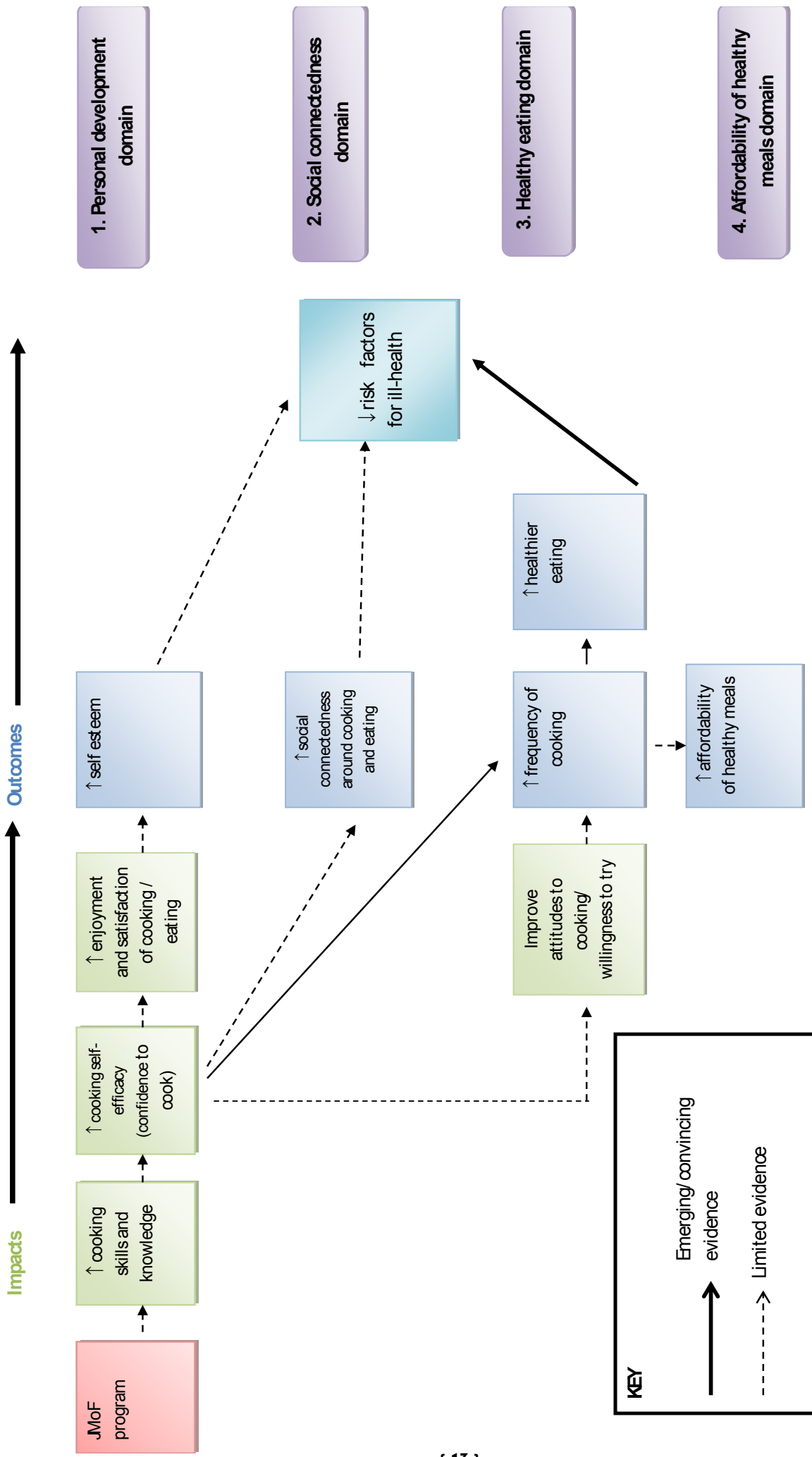


Figure 1: Jamie's Ministry of Food Program Logic Model

# Research QUESTIONS

---

The evaluation aimed to establish the relationship between Jamie's Ministry of Food and immediate personal impacts as well as longer term broader health and social outcomes for participants. In keeping with the program objectives and the program logic model (Figure 1), the evaluation aimed to answer the following research questions:

**Does Jamie's Ministry of Food increase participants' skills, knowledge, attitudes, enjoyment, and satisfaction of cooking and cooking self-efficacy (confidence to cook)?**

**Does Jamie's Ministry of Food result in broader positive outcomes for participants in terms of behaviour change to a healthier diet, more affordable healthy meals, improved self-esteem and social connectedness?**

From these, the following four areas or domains were identified and sub-questions developed.

## **1. Personal development**

- Does the program improve participants' basic cooking skills, cooking self-efficacy (confidence to cook), knowledge of cooking, attitudes towards cooking, willingness to try new foods, enjoyment and satisfaction of cooking, and improve participants' global self-esteem?

## **2. Social connectedness**

- Does the program increase participants' social connectedness such as shared enjoyment of cooking and eating together with other persons and does this program affect participants' social connectedness in other ways?

## **3. Healthy eating**

- Does the program increase participants' frequency of cooking meals from basic ingredients, increase participants' consumption of fruit or vegetables and does it reduce participants' consumption of take-away meals?

---

---

#### 4. Affordability of healthy meals

- Does the program affect participants' total expenditure on food and on specific categories of food?

The evaluation also aimed to answer the following additional questions in a qualitative manner:

- **What were the expectations and experiences of participants?**
- **What were the moderators, facilitators and barriers to behaviour change?**
- **Were there any other unanticipated outcomes?**

# Mixed Methods RESEARCH DESIGN

---

---

The evaluation was a mixed methods longitudinal study incorporating both quantitative and qualitative study components. Each component was analysed independently and then combined to provide a comprehensive report of findings.

The following chapters provide a brief overview of the methods employed and all results for each study component. For further detail regarding study design, refer to the published evaluation protocol (26). The evaluation was approved by the Deakin University Human Research Ethics Committee (HEAG-H 117\_11) in October 2011.



# Quantitative STUDY

---

## **STUDY DESIGN/METHODS**

The quantitative study employed a quasi-experimental design with a waitlist control group. Allocation to intervention and control groups was not randomised but rather determined by the time when participants signed up to their prospective Ministry of Food cooking course. Participants who signed up to the program more than 10 weeks before their course start date were allocated to the control group and participants who signed up to the program less than 10 weeks before their course start date were allocated to the intervention group.

Intervention participants were surveyed at three time points; before program commencement (T1), immediately post program completion (T2) and six months after program completion (T3) while control participants were surveyed 10 weeks before their program start date (T1) and just prior to beginning their first class (T2). A time-three (T3) measurement was not obtained for control participants as this would have required them to wait a further six months before entering the program (equivalent to the intervention follow-up period); this potentially would have led to a high drop-out rate both from the evaluation and the program itself. This was not considered feasible or acceptable. However, for one of the primary outcome measures (see outcome measures section), increase in daily vegetable intake, Queensland state-wide monitoring data (24) was used as a proxy T3 measure for the control group.

A questionnaire was developed and piloted to answer the specific research questions for the quantitative study. For more information about the development and piloting of the questionnaire, refer to the published protocol paper (26). The main mode of data collection was electronic using the Qualtrics™ online survey system followed up by postal surveys and in class collection where applicable for non-responders. Data collection ran from November 2011 to December 2013.



---

---

## **OUTCOME MEASURES**

The primary outcome measures (those which were considered the most important outcomes from the program and essential for decision making about program effectiveness) were a change in self-reported cooking confidence (cooking self-efficacy) and a change in self-reported mean vegetable intake (serves per day). Cooking confidence was measured using 5 questions (based on a 5 point Likert scale from not at all confident =1 to extremely confident =5) to assess confidence in a range of cooking skills needed for every day cooking and preparation. These questions have, for the most, been used previously in evaluation of cooking skills programs (15). Self-reported vegetable intake was measured using the same question used in the Queensland self-reported health status survey to enable direct comparison of results.

Secondary outcomes included changes over time in self-reported measures of (i) mean daily fruit intake, (ii) mean weekly take-away/fast food intake, (iii) frequency of cooking the main meal from basic ingredients, (iv) nutrition knowledge, (v) attitudes towards cooking, (vi) willingness to try new foods and (vii) enjoyment and satisfaction of cooking. Changes in psycho-social measures such as (viii) global self-esteem and (ix) social connectedness in relation to cooking and eating as well as (x) a change in participants' total expenditure on food were measured.

## **RECRUITMENT TO THE STUDY**

All participants aged 18 years or over who were registered on the Jamie's Ministry of Food Australia database with a confirmed start date for their Ipswich program, were eligible to participate in the evaluation. All participants were required to consent prior to participation in the evaluation. Recruitment to both groups was based on confirmed program start dates. To show appreciation for participation, intervention participants who completed the third and final questionnaire (T3) at six months post program completion were sent a \$20 "Good Guys" store charge card redeemable at any Good Guys store (white goods retailer) across Australia.

---

---

## **SAMPLE SIZE**

Sample size calculations were based on the co-primary outcome of self-reported vegetable intake. The study was powered to detect a mean change in self-reported vegetable intake of 0.5 serves per day, at 80% power (0.05 significance) starting from a baseline measure of 2.5 serves a day which was the mean vegetable intake in Queensland at the time that the evaluation commenced (22). Additional sample size calculations suggested at least 140 participants would be required in each group to detect a mean difference of 0.5-0.7 serves per day. For further details of sample size calculations, see Flego et al, 2013 (26) .

## **STATISTICAL ANALYSIS**

All continuous outcomes were analysed using a linear mixed model for repeated measures to determine the average (mean) differences, between the intervention group undergoing the program and the waitlist control group over time. This type of analyses is appropriate where there are randomly missing follow up data and enables all available data to be utilised. Predicted means are reported in the graphs in the results section. Each analysis for the primary outcome measures was also run with adjustments for gender, age and employment status, then with all three covariates together, to account for baseline differences in the two groups.

To explore the sustainability of the intervention group effect over time, a repeated measures analysis was performed using the intervention group data collected at all three time points. For the primary outcome measure of self-reported vegetable intake, a two-sample t-test comparison between the 6-month post-program (T3) intervention group mean and the reported State-wide mean (from the 2012 self-reported health status survey (24) which was closest in time to the average T3 measurement) was performed. All analyses were performed using STATA™ software (version 12.0). Results were deemed significant at the  $p < 0.05$  level.

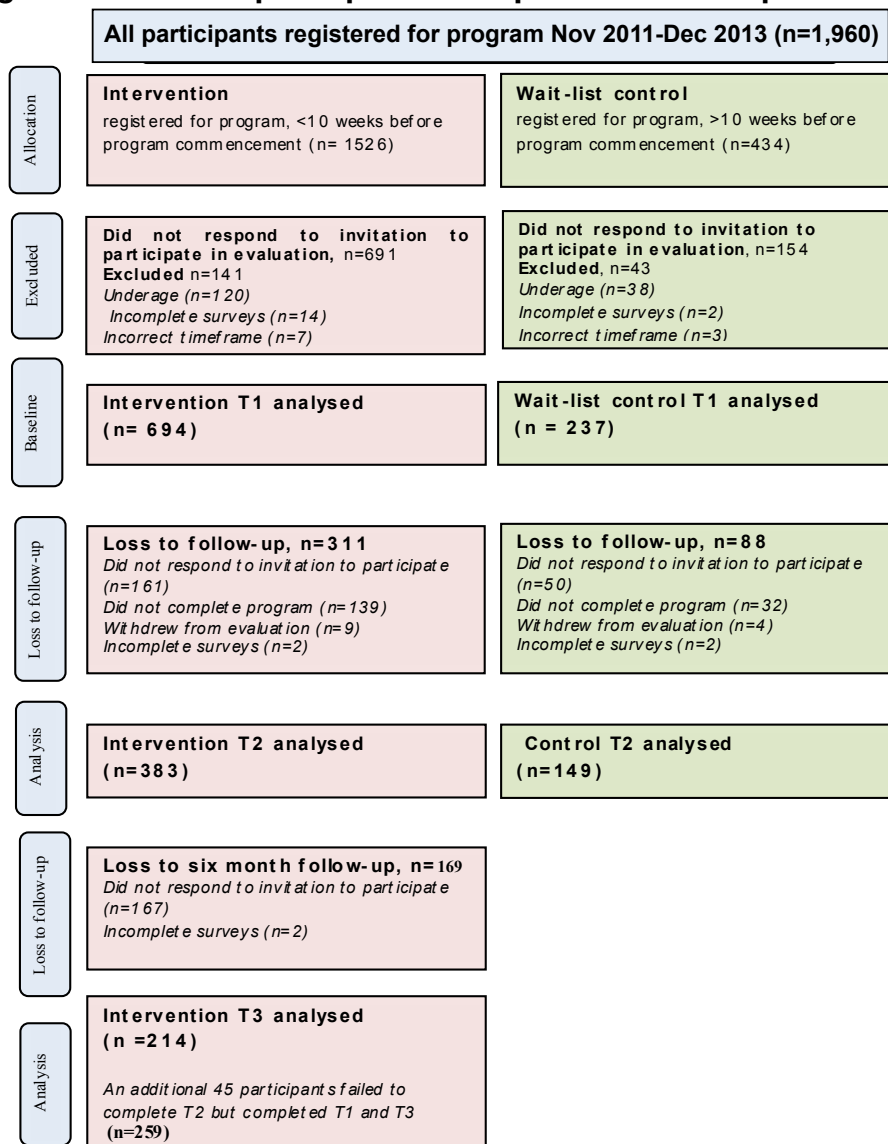


# Quantitative STUDY RESULTS

## RESPONSE RATES

Allocation to groups and response numbers at each time point are summarised in Figure 2. Over the 26 month data collection period, 1,960 participants registered for the program and were invited to participate in the evaluation; 1,526 were allocated to the intervention group and 434 to the control group. This equates to less than one quarter being allocated to the control group. This was because most participants signed up within 10 weeks of doing their course.

**Figure 2: Evaluation participation and questionnaire completion numbers**

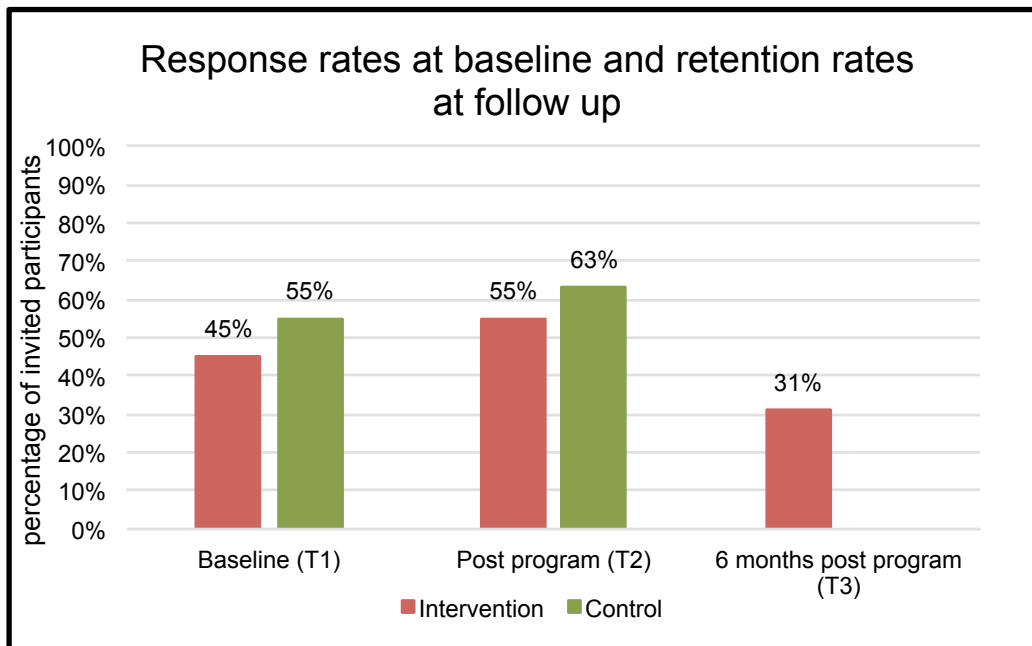


---

---

Response rates at each time point varied both within and between groups (Figure 3), with proportionately higher response rates for controls over the intervention group at T1 and T2. After exclusions and loss to follow up, the number of intervention surveys available for analysis was 694 at T1, 383 at T2 and 254 at T3 six months post completion, with 214 participants completing all three surveys. For the control group, 237 completed T1 and 149 completed T1 and T2.

**Figure 3: Response rates at baseline and retention rates based on persons who participated at baseline**



---

---

## CHARACTERISTICS OF EVALUATION PARTICIPANTS

Table 1 demonstrates the characteristics of evaluation participants in the intervention and control groups at each time point. At baseline, the majority of participants were female (~80%), with proportionately more females in the control group (87.2%) than the intervention group (77.4%). Both groups at baseline had more participants under age 50 than over 50 with the intervention group reporting a higher average age (48 years) than the control group (46 years). Only 7% of evaluation participants reported that they spoke a language other than English at home which is similar to proportions for the entire Ipswich population (21). The majority of participants were from the Greater Ipswich area and education levels were similar in each group with slightly less than half of all participants having completed year 12 or less (47%). The intervention group participants were less likely to be in full time employment (26%) and more likely to be retired (24%) compared to the control group (35% and 21% respectively).

There was a spread of participants in terms of income (Table 1) which reflects the all-inclusive philosophy of Jamie's Ministry of Food. However, just over 47% of all evaluation participants reported a yearly household income of \$50,000 or less. Household size was similar between groups but household composition varied with the control group having a higher proportion of families with younger children (32% compared to the intervention group 25%). A small number of participants reported living in a one parent household (7% intervention and 9% control).

Table 2 highlights that the majority of evaluation participants shared the experience of the Jamie's Ministry of Food with friends and family members or as part of a community group.

**Table 1. Demographic characteristics of participants included in analysis a at each at time point in Jamie's Ministry of Food Australia, Ipswich Evaluation**

Group, Time-point	Intervention T1 N=694	Intervention T2 N=383	Intervention T3 N=259	Control T1 N= 237	Control T2 N= 149
<b>Gender <sup>b</sup></b>					
Female	77.4 (525)	79.1(299)	80.5(207)	87.2 (198)	87.7(128)
Male	22.6 (153)	20.9(79)	19.5(50)	12.8 (29)	12.3(18)
<b>Age (years)</b>					
Under 50 <sup>b</sup>	55.6 (375)	44.1(165)	43.5(110)	64.3 (144)	60.3(85)
50 and over <sup>b</sup>	44.4 (300)	55.9 (209)	56.5(143)	35.7 (80)	39.7(56)
18-24	7.4 (50)	2.7(10)	3.2(8)	5.8 (13)	4.3(6)
25-34	17.5 (118)	14.2(53)	14.6(37)	22.8 (51)	20.6(29)
35-44	23.0 (155)	19.8(74)	19.0(48)	26.3 (59)	24.1(34)
45-54	16.0 (108)	15.5(58)	15.8(40)	16.5 (37)	18.4(26)
55-64	15.0 (101)	18.45(69)	18.6(47)	12.5 (28)	13.5(19)
65-74	17.5 (118)	24.6(92)	24.1(61)	13.4 (30)	15.6(22)
75+	3.70 (25)	4.8(18)	4.7(12)	2.70 (6)	3.5(5)
Mean age years (SD)	48(16.1)	52(15.7)	52(15.9)	46(15.1)	47(15.2)
Aboriginal and/or Torre Strait Islander	1.8 (12)	1.8(7)	2.7(7)	0.9 (2)	1.4(2)
Speaks a language other than English at home	7.8 (53)	6.9(26)	7.4(19)	5.3 (12)	3.4(5)
<b>Locality</b>					
Ipswich	82.0 (555)	84.7(320)	83.3(214)	78.8 (178)	79.4(116)
Other Queensland localities	17.7 (120)	15.3 (58)	16.3(42)	21.2 (48)	20.5 (30)
NSW	0.3 (2)	0.0(0)	.4(1)	0.0 (0)	0.0
Highest Level of education attained					
High school, year 12 or less	47.8 (321)	49.3(185)	49.4(126)	45.8 (104)	47.3(69)
TAFE, apprenticeship, diploma or certificate	22.2 (149)	20.8(78)	21.6(55)	22.9 (52)	19.9(29)
Tertiary, bachelor degree or higher	28.0 (188)	28.5(107)	27.4(70)	29.1 (66)	30.1(44)
Other	2.0 (13)	1.3(5)	1.6(4)	2.2 (5)	2.7(4)
<b>Employment <sup>b</sup></b>					
Full-time	26.4 (176)	23.6(88)	26.2(67)	34.7 (79)	31.3(46)
Part-time/casual	18.6 (124)	16.6(62)	18.4(47)	14.5 (33)	17.0(25)
Retired	23.8 (159)	31.6(118)	30.5(78)	21.5 (49)	23.8(35)
Home duties/ carer	14.4 (96)	15.3(57)	13.3(34)	18.4 (42)	17.7(26)
Not working (Permanently ill/unable to work, unemployed)	9.9 (66)	7.0(26)	4.3(11)	8.8 (20)	7.5(11)
Student (full-time and part-time)	3.1 (21)	1.9(7)	1.9(5)	1.3 (3)	2.0(3)
Other	3.9 (26)	4.0(15)	5.47(14)	0.9 (2)	.70(1)
<b>Household yearly income</b>					
\$1-\$6,000	2.5(15)	1.8(6)	2.6(6)	2.0(4)	1.5(2)
\$6,001-\$13,000	5.7(34)	5.7(19)	5.3(12)	5.0(10)	5.3(7)
\$13,001-\$20,000	11.9(71)	12.9(43)	14.1(32)	9.5(19)	9.9(13)
\$20,001-\$30,000	14.8(88)	17.7(59)	17.2(39)	9.5(19)	9.9(13)
\$30,001-\$50,000	15.4(92)	14.7(49)	14.5(33)	12.5(25)	12.2(16)
\$50,001-\$100,000	30.0(179)	29.7(99)	26.9(61)	35.5(71)	36.6(48)
\$100,001-\$150,000	13.6(81)	11.1(37)	12.3(28)	18.5(37)	16.8(22)
>\$150,000	6.0(36)	6.3(21)	7.0(16)	7.5(15)	7.6(10)
<b>Household Characteristics</b>					
Couple, with young children (0-17 years old) living at home	24.7 (169)	23.2(88)	20.0(51)	32.1 (76)	30.2(45)
Couple, with adult children (18 years and over) living at home	12.5 (86)	10.8(41)	11.0(28)	10.1 (24)	10.7(16)
Couple, without children living at home	32.9 (226)	35.3(134)	36.0(92)	24.5 (58)	27.5(41)
One parent family with children living at home	7.0 (48)	3.7(14)	4.3(11)	8.9 (21)	6.7(10)
Live Alone	16.0 (110)	21.6(82)	22.7(58)	17.7 (42)	20.1(30)
Other	6.9 (47)	5.5(21)	6.2(16)	6.8 (16)	4.7(7)
Mean household size (SD) <sup>c</sup>	2.8 (1.5)	2.6(1.3)	2.5(1.3)	3.0(1.6)	2.9(1.6)
Median household size <sup>c</sup> (50%centile)	2	2	2	3	2

<sup>a</sup> Sample size for different variables might vary from total sample size because of missing responses and rounding of weighted frequencies

<sup>b</sup> significant difference between groups (  $p < 0.05$ ) at baseline as tested with chi squared analysis.

<sup>c</sup> excludes 2 participants living in institutional facilities

SD = standard deviation

**Table 2. Shared Experiences: Evaluation participants' program attendance with others**

Characteristic	Intervention T1	Intervention T2	Intervention T3	Control T1	Control T2
Attending with a others/ group (Yes)	%(n) 58 (393)	% (n) 56.2(212)	% (n) 53.5(137)	%(n) 67 (152)	% (n) 66.7(98)
Attending with....					
Friends	32.2 (123)	31.0(64)	25.0(33)	45.7 (69)	49.5(48)
Family	40.3 (154)	36.9(76)	40.1(53)	39.1 (59)	34.0(33)
With a carer	1.6 (6)	1.0(2)	1.5(2)	3.3 (5)	3.1(3)
With a community group	24.4 (93)	28.7(59)	33.3(44)	7.3 (11)	8.3(8)
Other	1.6 (6)	2.4(5)	0.0(0)	4.6 (7)	5.2(5)

### PRIMARY OUTCOMES

For the primary outcomes of cooking confidence and self-reported vegetable intake, the following results are presented:

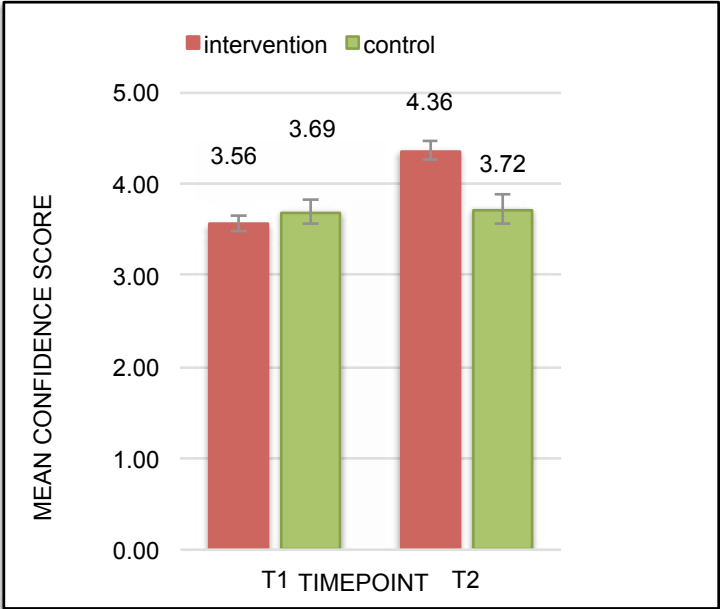
- (i) change over time from baseline (T1) to immediately post program (T2) between groups (presented as Figures a)
- (ii) the sustained effects (T1, T2 and 6 months post program completion as T3) for the intervention group only (presented as Figures b).

The reported means for each group over time are presented in histograms with confidence intervals represented as a bar on each column.

The secondary outcomes results are presented in the same manner (starting page 31).

# COOKING CONFIDENCE (SELF-EFFICACY)

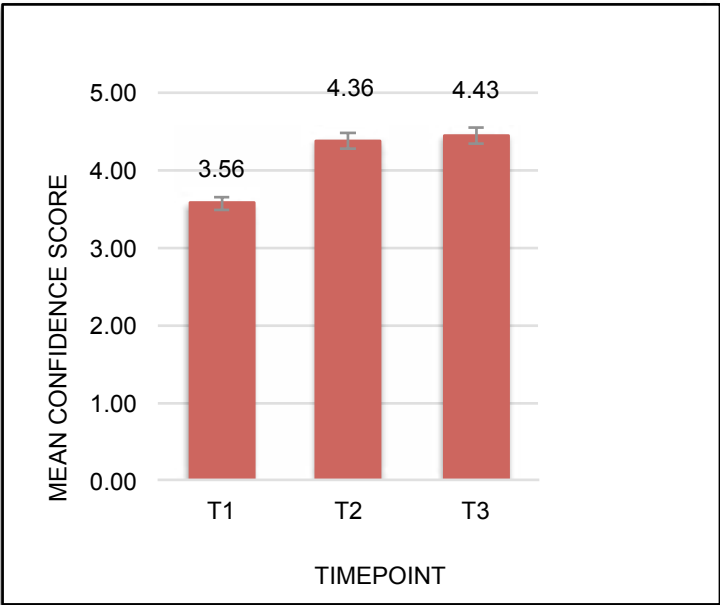
**Figure 4a: Confidence to cook from basic ingredients – T1-T2 group comparison**



Interaction effect: Significant ( $p < 0.001$ )

There was a significant difference between groups over time. Mean confidence to cook from basic ingredients significantly increased in the intervention group from T1 T2 but the control group did not change.

**Figure 4b: Confidence to cook from basic ingredients – sustained effect in intervention group**



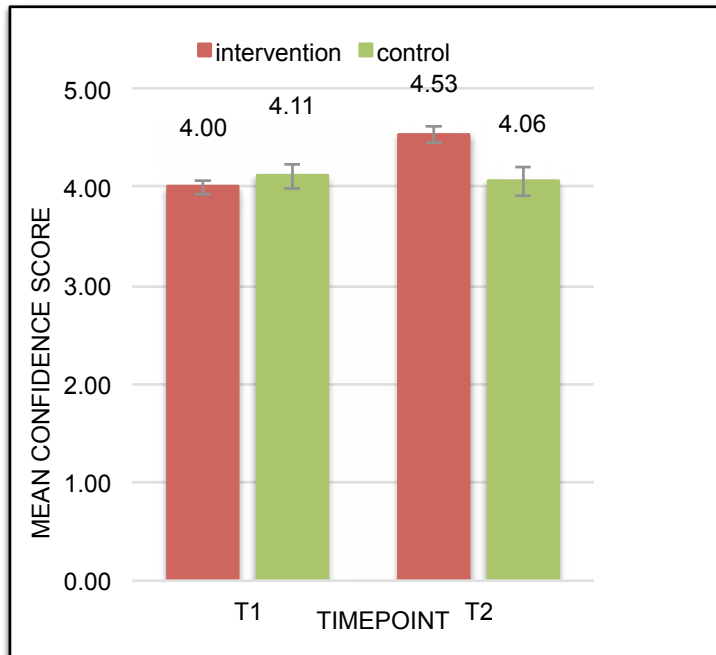
Overall effect of change over time: ( $p < 0.001$ )

Pairwise comparisons:  
2 versus 1: difference: 0.81  $p < 0.001$   
3 versus 1: difference: 0.87  $p < 0.001$   
3 versus 2: difference: 0.07  $p = 0.280$

The significant increase in confidence to cook from basic ingredients from T1 to T2 was sustained at six months follow up (T3).



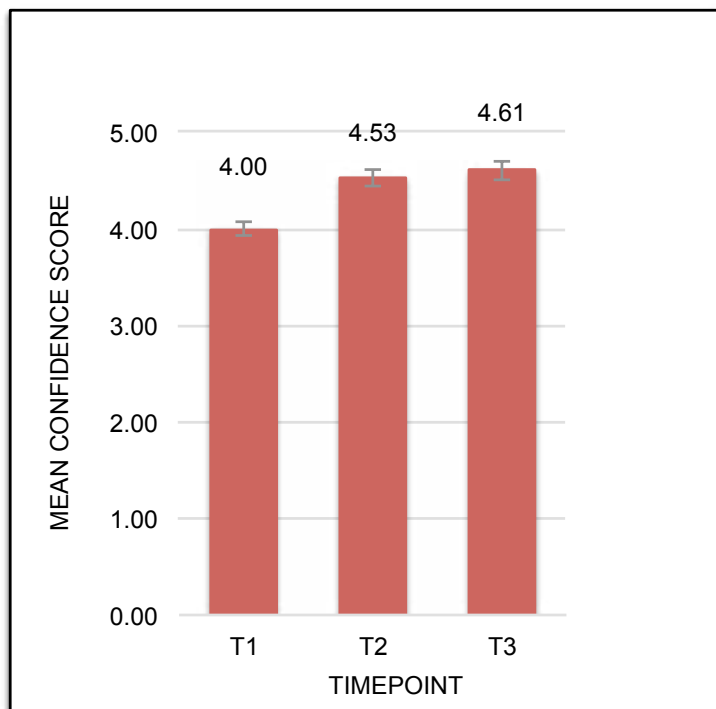
**Figure 5a: Confidence to follow a simple recipe - T1-T2 group comparison**



Interaction effect: Significant ( $p < 0.001$ )

There was a significant difference between groups over time. The confidence of the intervention group, to follow a simple recipe, significantly increased between T1 and T2, whereas there was no increase in the control group.

**Figure 5b: Confidence to follow a simple recipe - sustained effect in intervention group**



Overall effect of change over time: Significant ( $p < 0.001$ )

Pairwise comparisons:

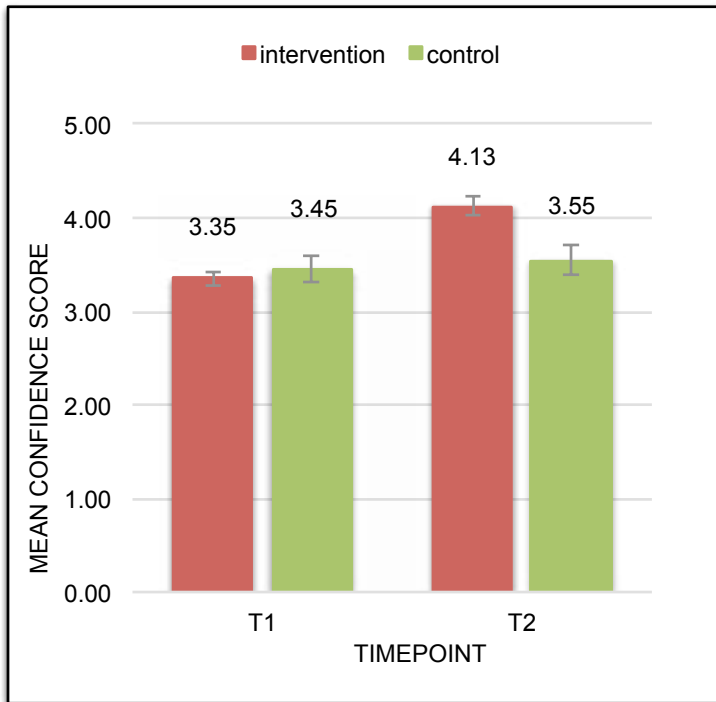
2 versus 1: difference: 0.53  $p < 0.001$

3 versus 1: difference: 0.61  $p < 0.001$

3 versus 2: difference: 0.08  $p = 0.13$

The significant increase in the confidence of the intervention group to follow a simple recipe was sustained and continued to grow at six months follow up (T3).

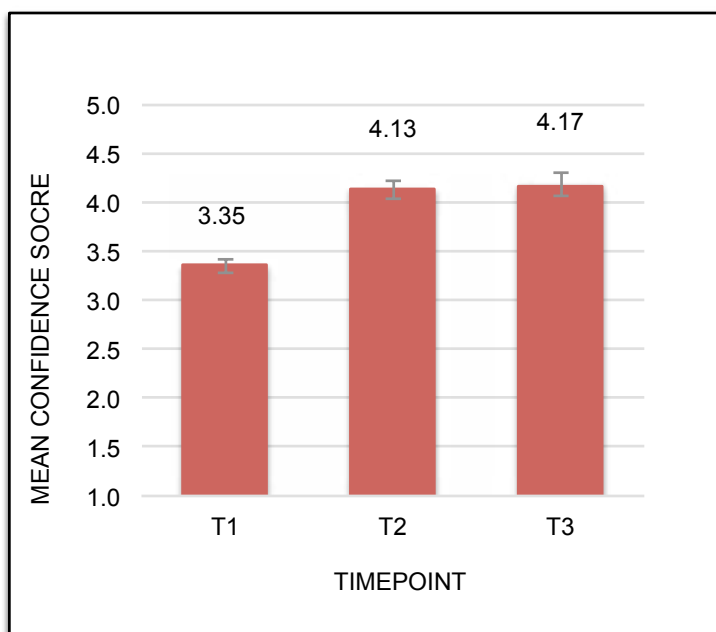
**Figure 6a: Confidence about preparing new foods and recipes – T1-T2 group comparison**



Interaction effect: Significant ( $p < 0.001$ )

There was a significant difference between groups over time. Between T1 and T2, the intervention group significantly increased in mean confidence to prepare new foods and recipes whereas the control group did not.

**Figure 6b: confidence about preparing new foods and recipes - sustained effect in intervention group**

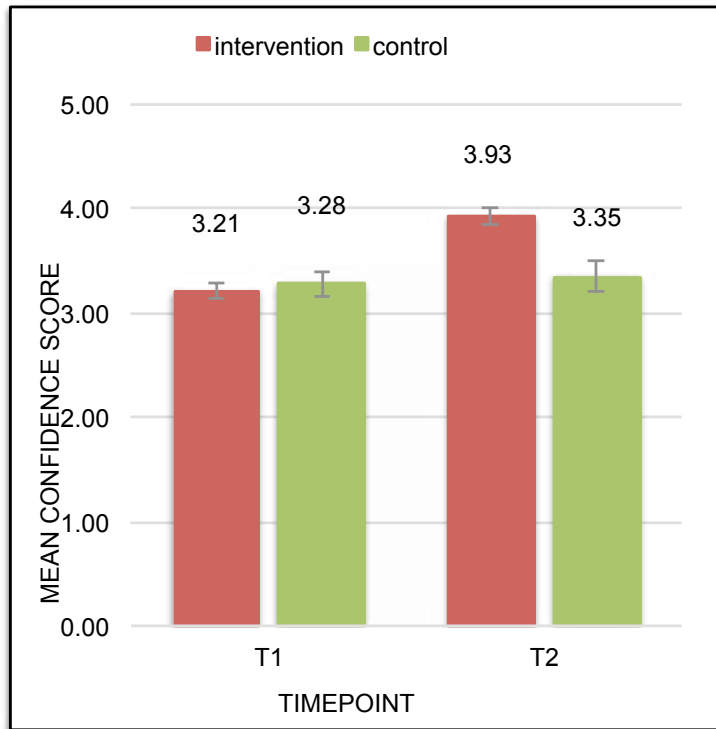


Overall effect of change over time: Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.78  $p < 0.001$   
 3 versus 1: difference: 0.82  $p < 0.001$   
 3 versus 2: difference: 0.05  $p = 0.439$

The significant increase in the confidence of the intervention group to prepare new foods and recipes was sustained at six months follow up (T3).

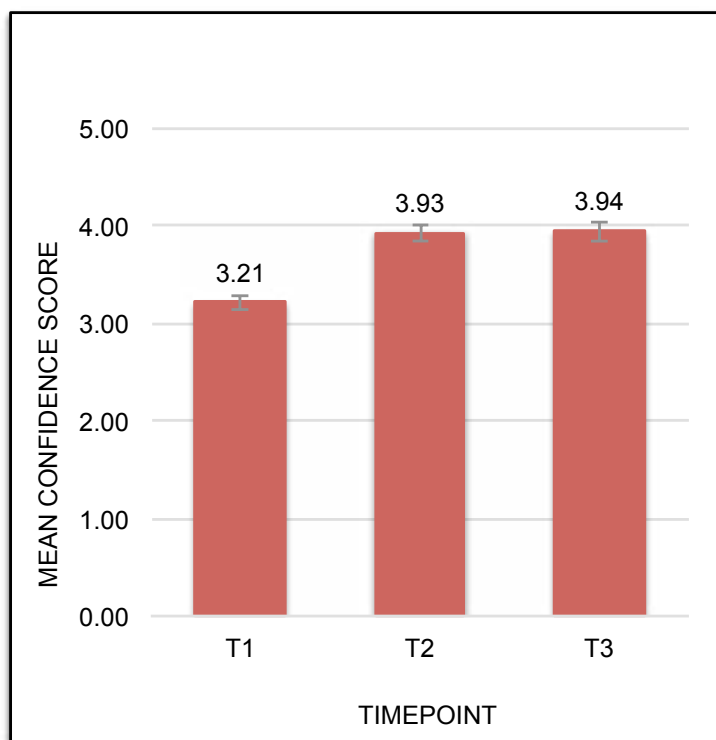
**Figure 7a: Confidence that what you cook will turn out well – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. Between T1 and T2, The intervention group significantly increased in confidence that what they cooked would turn out well, but the control group did not.

**Figure 7b: Confidence that what you cook will turn out well - sustained effect in intervention group**

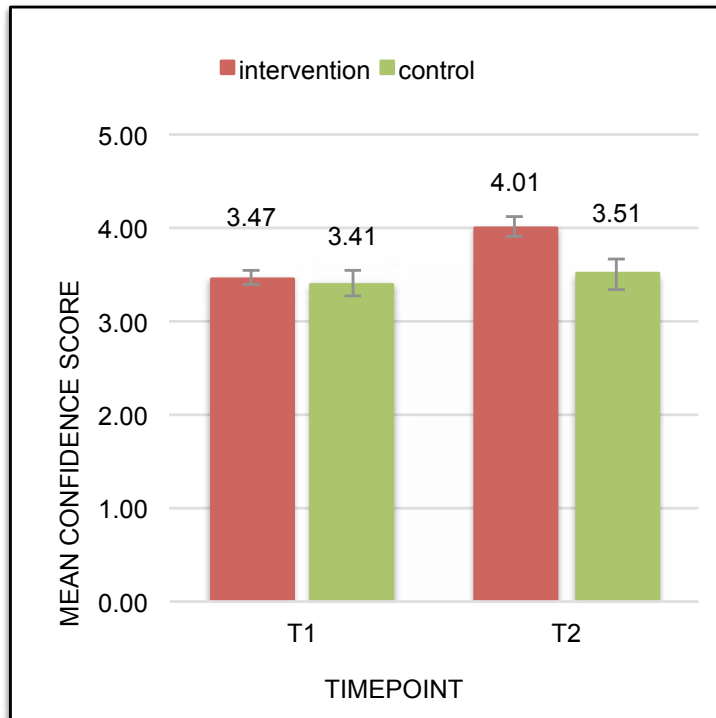


Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.72  $p < 0.001$   
3 versus 1: difference: 0.73  $p < 0.001$   
3 versus 2: difference: 0.01  $p = 0.803$

The significant increase in confidence in the intervention group that what they cooked would turn out well, was sustained at 6 months post program

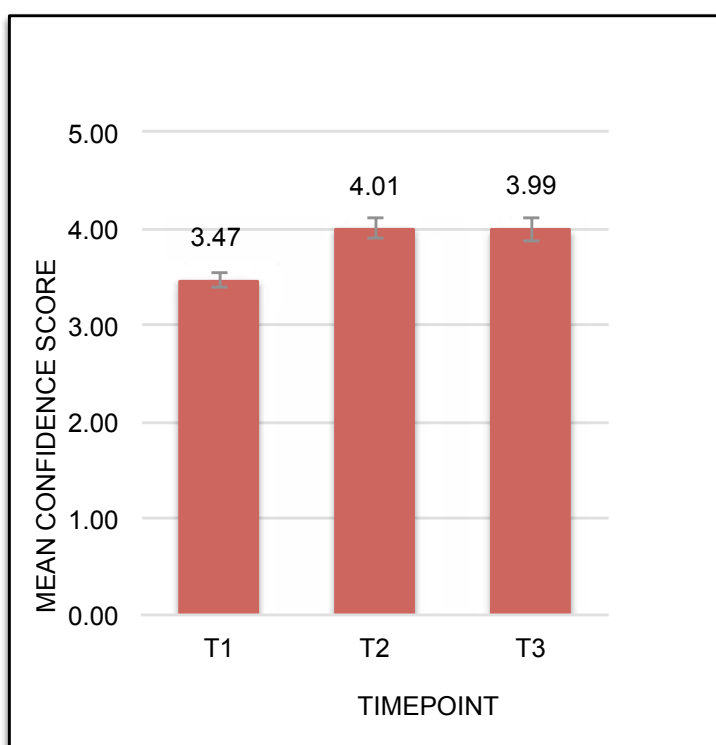
**Figure 8a: Confidence about tasting foods you have never eaten before – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. Between T1 and T2, the intervention group significantly increased in confidence to taste foods they had never eaten before, but the control group did not.

**Figure 8b: Confidence about tasting foods you have never eaten before - sustained effect in intervention group**

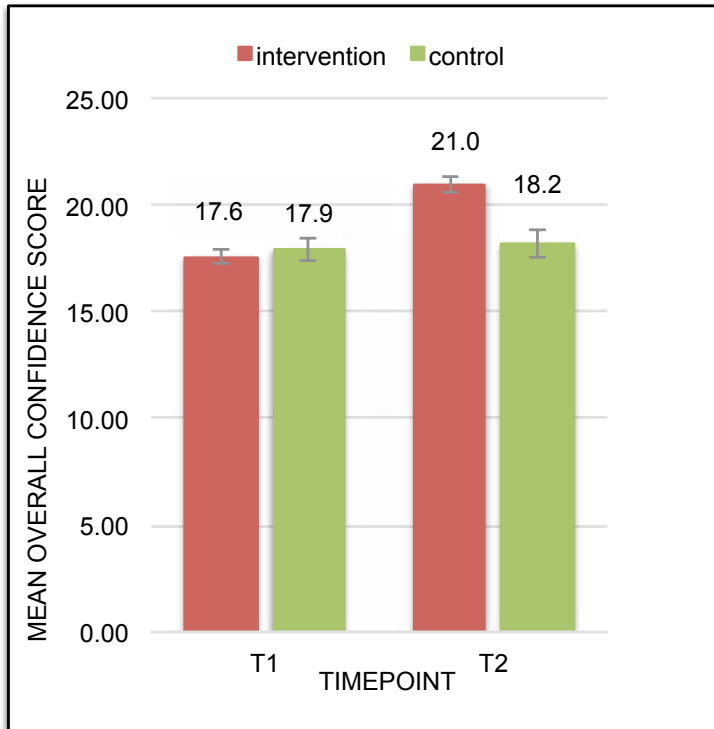


Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.53  $p < 0.001$   
3 versus 1: difference: 0.52  $p < 0.001$   
3 versus 2: difference: 0.02  $p = 0.746$

The significant increase in confidence of the intervention group to taste foods never eaten before was sustained at 6 months post program (T3).

**Figure 9a: Combined confidence score – T1-T2 group comparison**

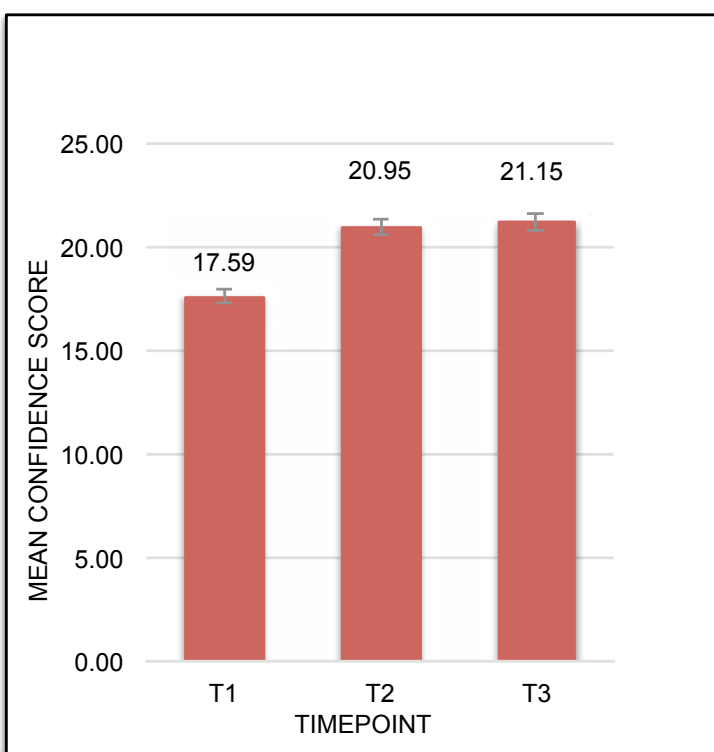


Interaction effect: Significant

$p < 0.001$

There was a significant difference between groups over time. The intervention group significantly increased in mean confidence from baseline (T1) to post program (T2) but the control group did not.

**Figure 9b: Combined confidence score- sustained effect in intervention group**



Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:

2 versus 1: difference: 3.36  $p < 0.001$

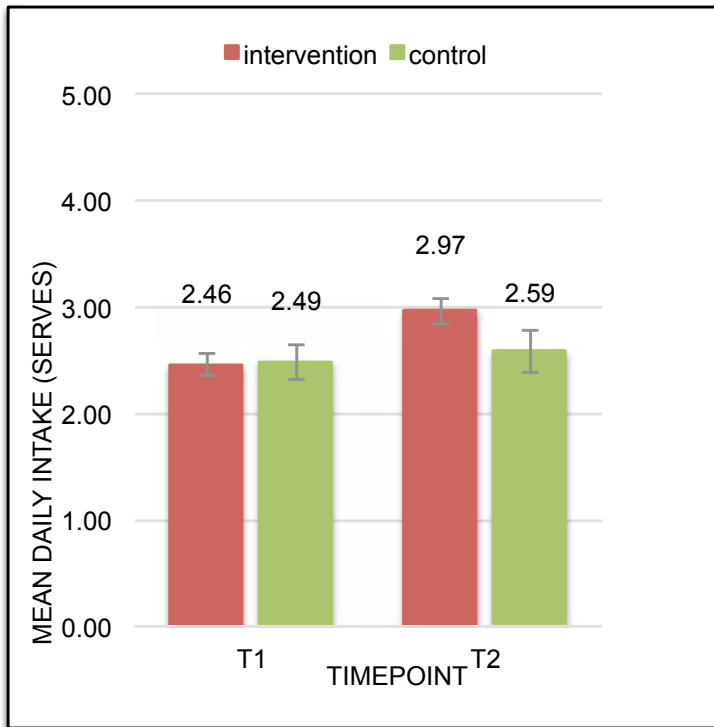
3 versus 1: difference: 3.56  $p < 0.001$

3 versus 2: difference: 0.20  $p = 0.363$

There was a significant increase in overall cooking confidence from T1 to T3 demonstrating a sustained program effect.

# DAILY VEGETABLE INTAKE

**Figure 10a: Daily vegetable intake - T1-T2 group comparison**

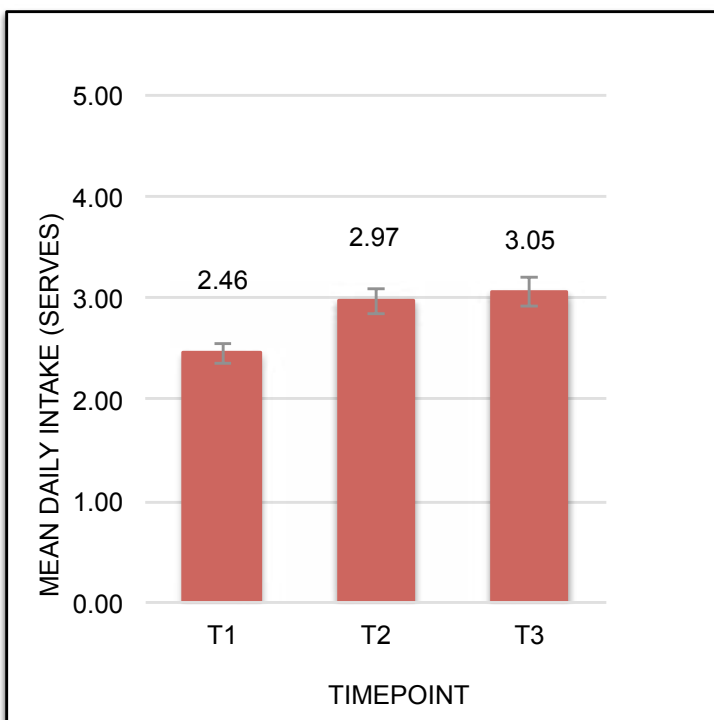


Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time.

The intervention group significantly increased its mean daily vegetable intake by 0.52 serves per day from baseline (T1) to post program (T2). The control group did not show a significant increase.

**Figure 10b: Daily vegetable intake - sustained effect in intervention group**



Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:

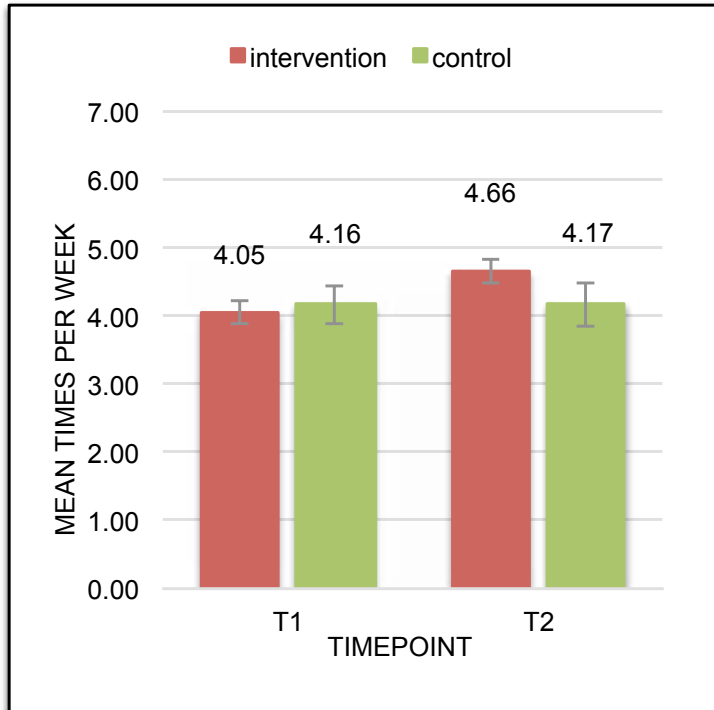
- 2 versus 1: difference: 0.51  $p < 0.001$
- 3 versus 1: difference: 0.60  $p < 0.001$
- 3 versus 2: difference: 0.08  $p = 0.273$

There was a significant increase of 0.60 serves of daily vegetable intake from baseline (T1) to 6 months post program (T3) demonstrating that the program effect was sustained.

## SECONDARY OUTCOMES

# HEALTHY COOKING AND EATING MEASURES

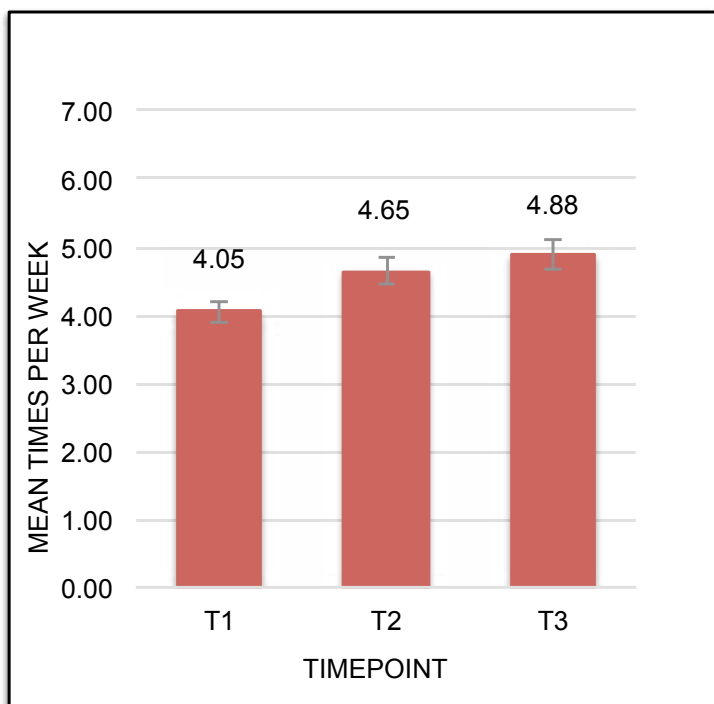
**Figure 11a: Frequency of preparing and cooking the main meal at home from basic ingredients – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. Between T1 and T2, the intervention group significantly increased mean weekly cooking of the main meal from basic ingredients by 0.61 times. The control group did not show a significant increase.

**Figure 11b: Frequency of preparing and cooking the main meal at home from basic ingredients - sustained effect in intervention group**

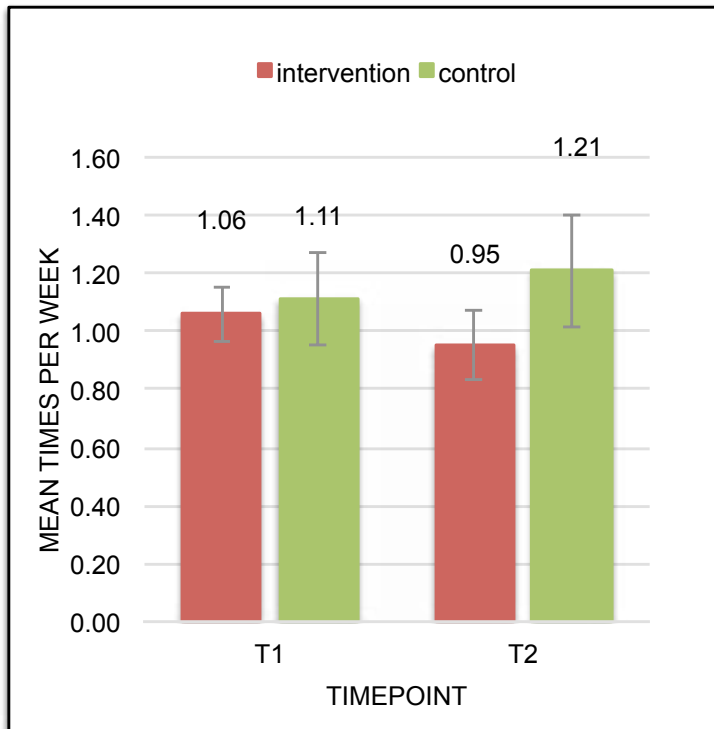


Overall effect of change over time:  
Significant.  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.60  $p < 0.001$   
3 versus 1: difference: 0.84  $p < 0.001$   
3 versus 2: difference: 0.24  $p = 0.033$

There was a significant increase of 0.83 times per week in the frequency of preparing and cooking the main meal from basic ingredients between T1 to T3 and demonstration of a small but significant increase in effect between program completion (T2) and 6 months post program (T3).

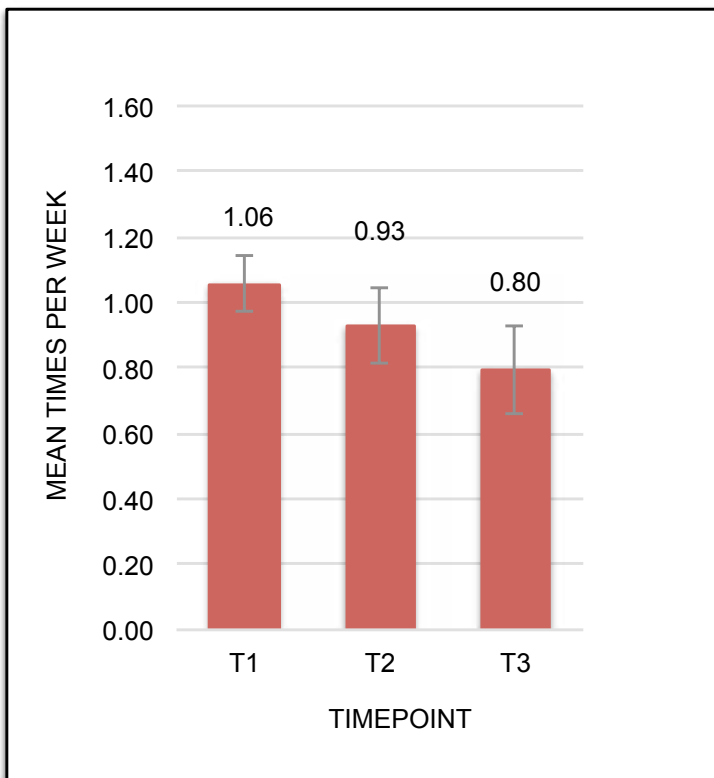
**Figure 12a: Frequency of eating ready-made meals at home – T1-T2 group comparison**



Interaction effect: Not significant  
 $p=0.06$

Whilst consumption of ready-made meals decreased slightly in the intervention group from baseline (T1) to program completion (T2), there was no significant difference between groups over time.

**Figure 12b: Frequency of eating ready-made meals at home - sustained effect in intervention group**



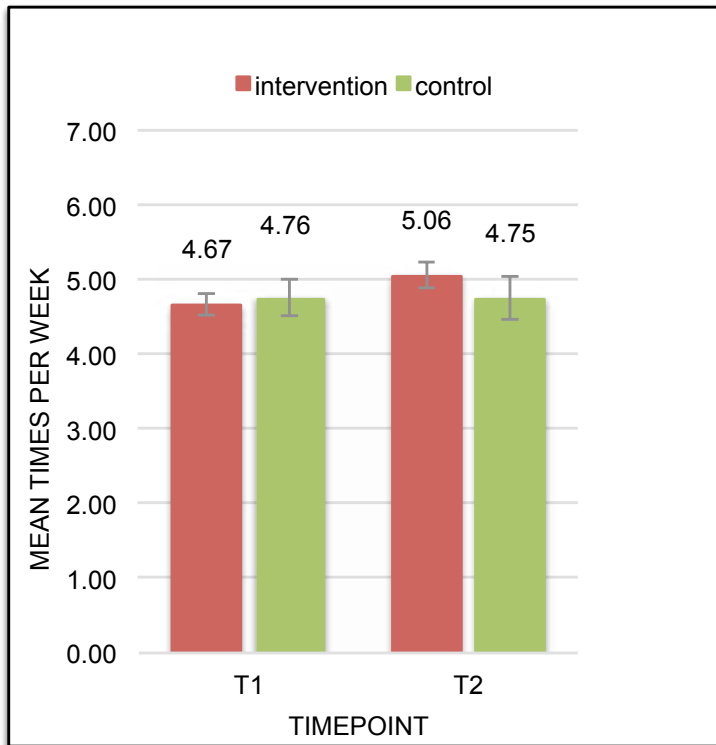
Overall effect of change over time:  
 Significant  $p<0.001$

Pairwise comparisons:  
 2 versus 1: difference:  $-0.13$   $p=0.036$   
 3 versus 1: difference:  $-0.26$   $p<0.001$   
 3 versus 2: difference:  $-0.13$   $p=0.089$

Despite no statistical significant difference between groups, there was a significant decrease in consumption in the intervention group between T1 and T3.



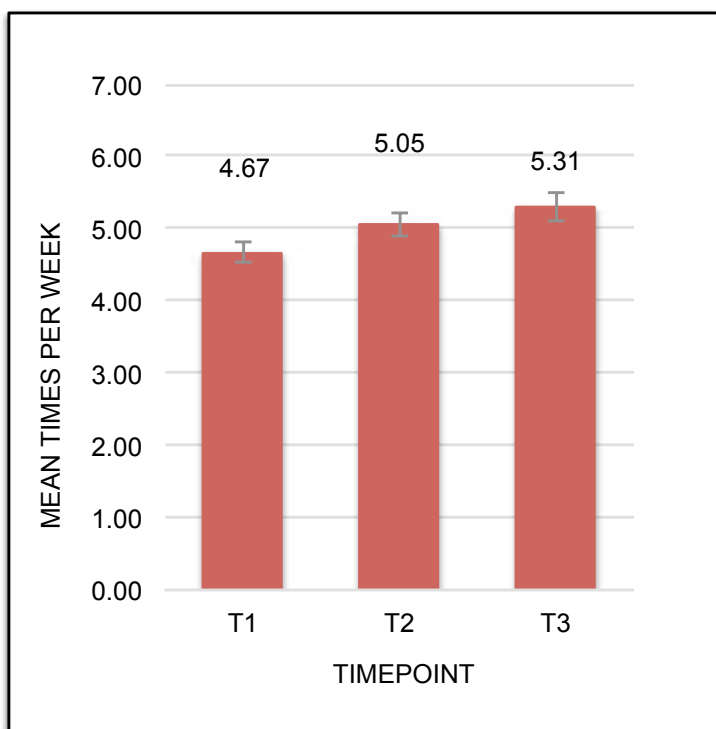
**Figure 13a: Frequency of including salad or vegetables with the main meal – T1-T2 group comparison**



Interaction effect: Significant  
 $p=0.014$

There was a significant difference between groups over time. Between T1 and T2, the intervention group significantly increased mean weekly frequency of including salad or vegetables with the main meal. The control group did not show a significant increase.

**Figure 13a: Frequency of including salad or vegetables with the main meal - sustained effect in intervention group**

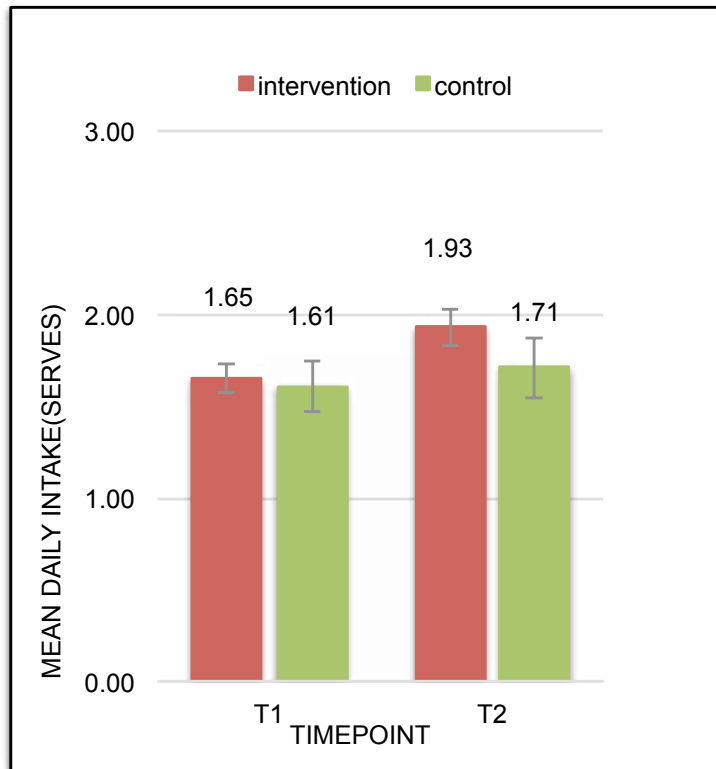


Overall effect of change over time:  
 Significant  $P<0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.38  $p<0.001$   
 3 versus 1: difference: 0.64  $p<0.001$   
 3 versus 2: difference: 0.25  $p=0.018$

There was a significant increase in the frequency of including salad/vegetables with the main meal from baseline (T1) to 6 months post program (T3), demonstrating a sustaining of effect after completion of the program (T2).

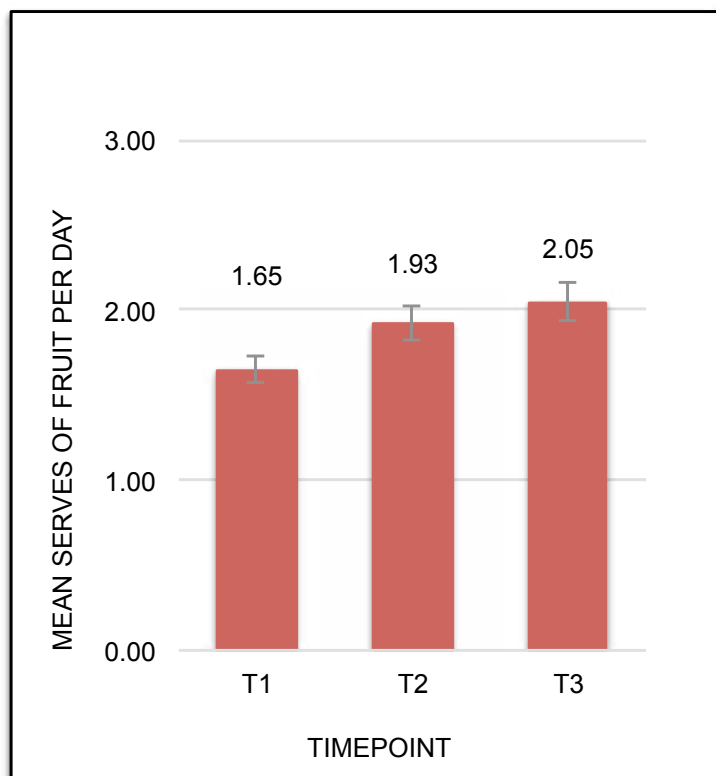
**Figure 14a: Daily fruit intake – T1-T2 group comparison**



Interaction effect: Not significant  
 $p=0.06$

The frequency of daily fruit intake increased in the intervention group from baseline (T1) to program completion (T2), but there was no significant difference between groups over time.

**Figure 14b: Daily fruit intake - sustained effect in intervention group**

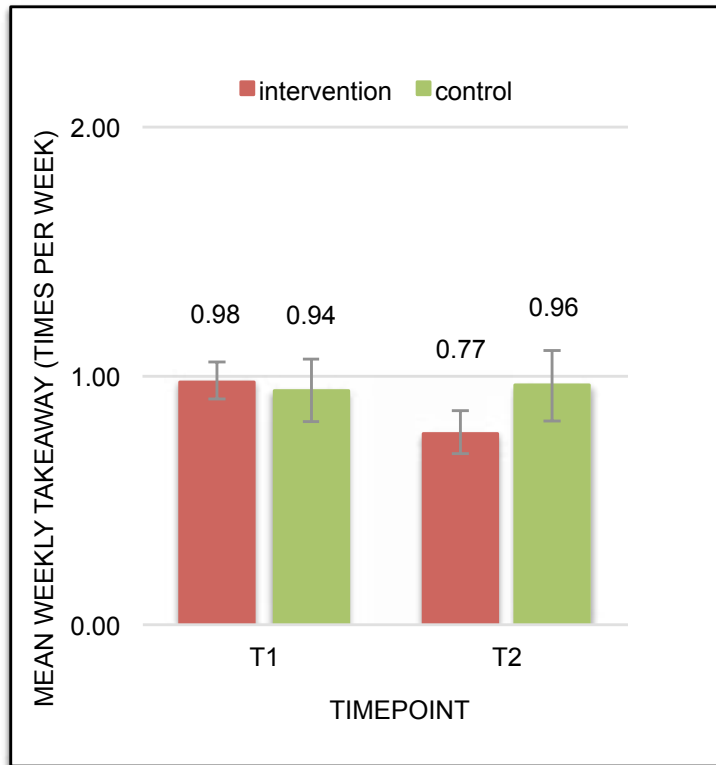


Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.27  $P < 0.001$   
3 versus 1: difference: 0.40  $p < 0.001$   
3 versus 2: difference: 0.12  $p = 0.055$

Despite no statistical significant difference between groups, there was a significant increase in daily fruit consumption in the intervention group between baseline (T1) and 6 months post program (T3).

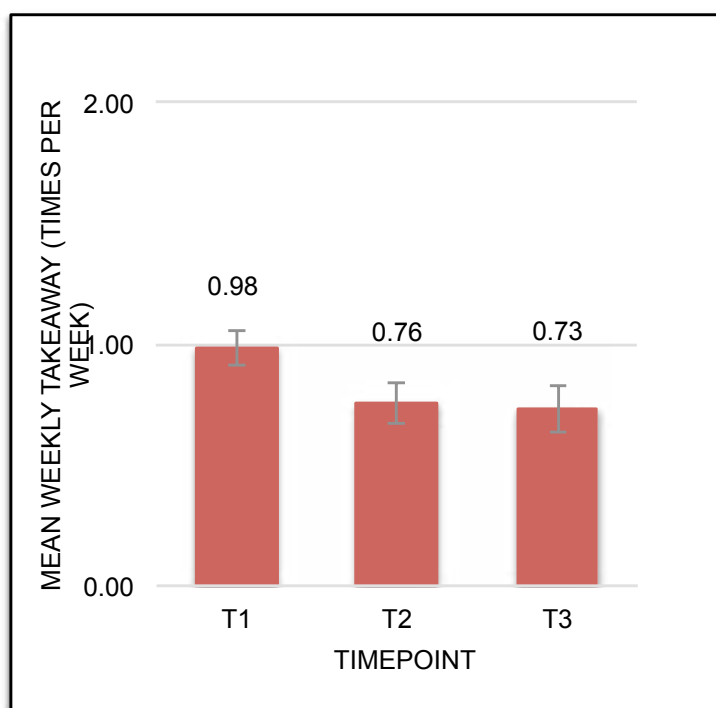
**Figure 15a: Frequency of eating take-away / fast food per week – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. Between T1 and T2, the intervention group significantly decreased mean frequency of eating take-away/ fast food per week. The control group did not show a significant change.

**Figure 15b: Frequency of eating take-away/fast food per week - sustained effect in intervention group**



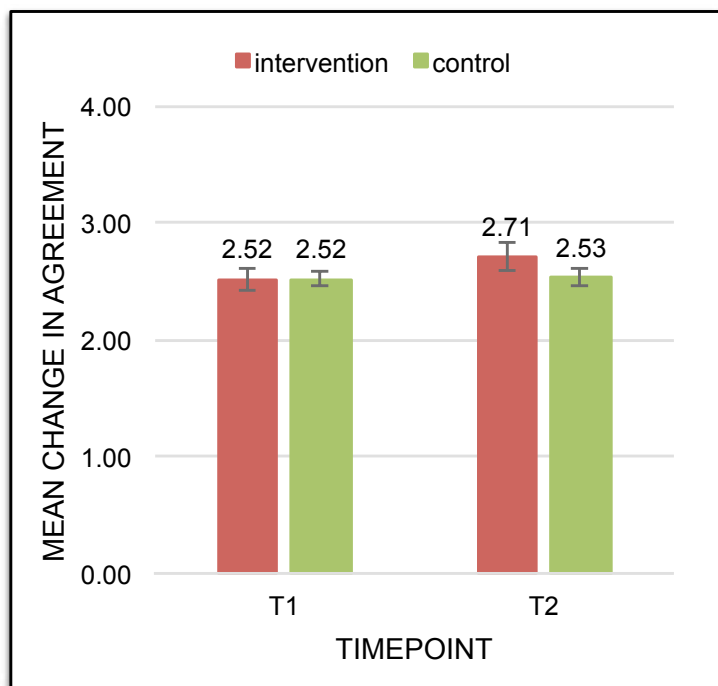
Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference:  $-0.23$   $p < 0.001$   
 3 versus 1: difference:  $-0.25$   $p < 0.001$   
 3 versus 2: difference:  $-0.02$   $p = 0.607$

There was a significant decrease in the frequency of including eating take-away / fast food per week from baseline (T1) to 6 months post program (T3), demonstrating a sustaining of effect after completion of the program (T2).

# KNOWLEDGE, ATTITUDES, BELIEFS AROUND HEALTHY EATING HABITS

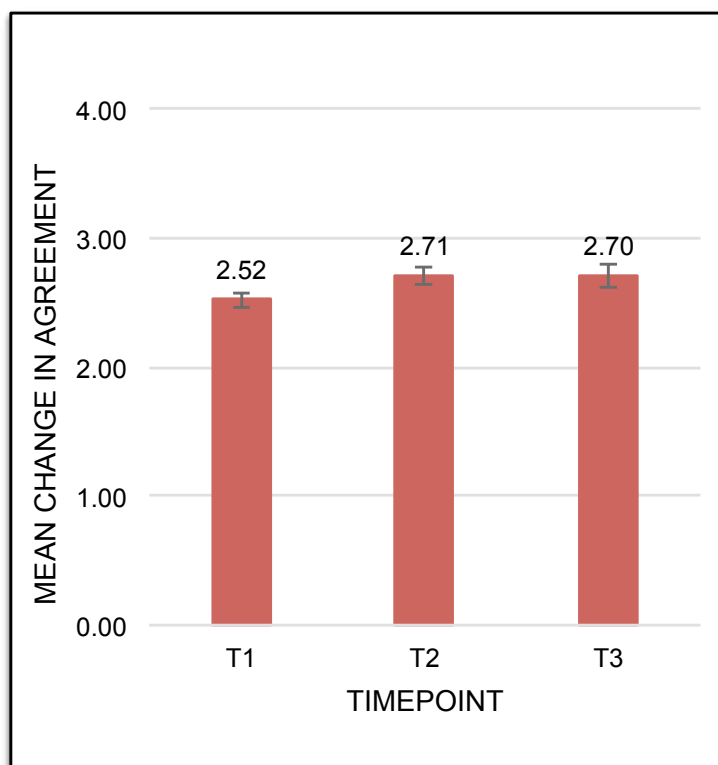
**Figure 16a: I find it easy to change my eating habits – T1-T2 group comparison**



Interaction effect: Significant  
 $p=0.02$

There was a significant difference between groups over time. Between T1 and T2, the intervention group significantly improved their attitude around finding it easy to change their eating habits. The control group did not show a significant change.

**Figure 16b: I find it easy to change my eating habits - sustained effect in intervention group**

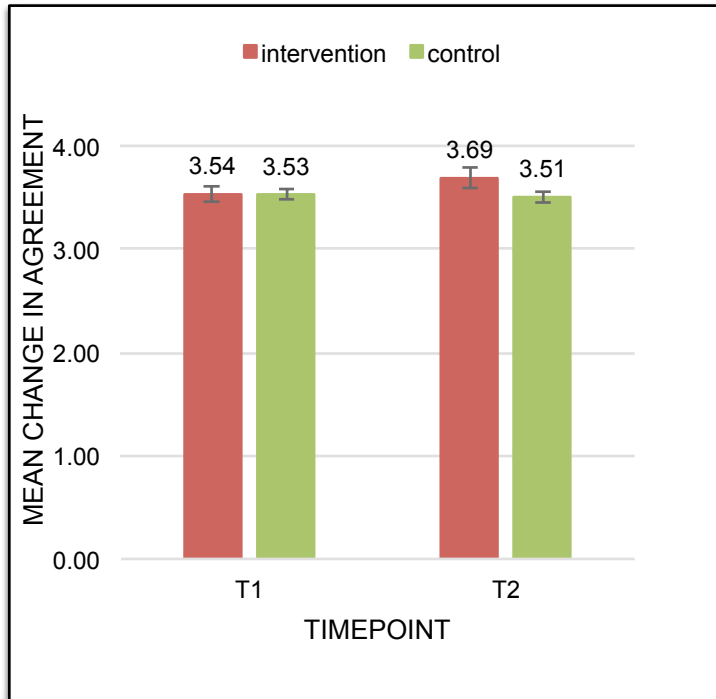


Overall effect of change over time:  
 Significant  $p<0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.17  $p<0.001$   
 3 versus 1: difference: 0.18  $p<0.001$   
 3 versus 2: difference: 0.00  $p=0.94$

There was a significant increase in attitude around the ease of changing eating habits from baseline (T1) to 6 months post program (T3), demonstrating a sustaining of effect after completion of the program (T2).

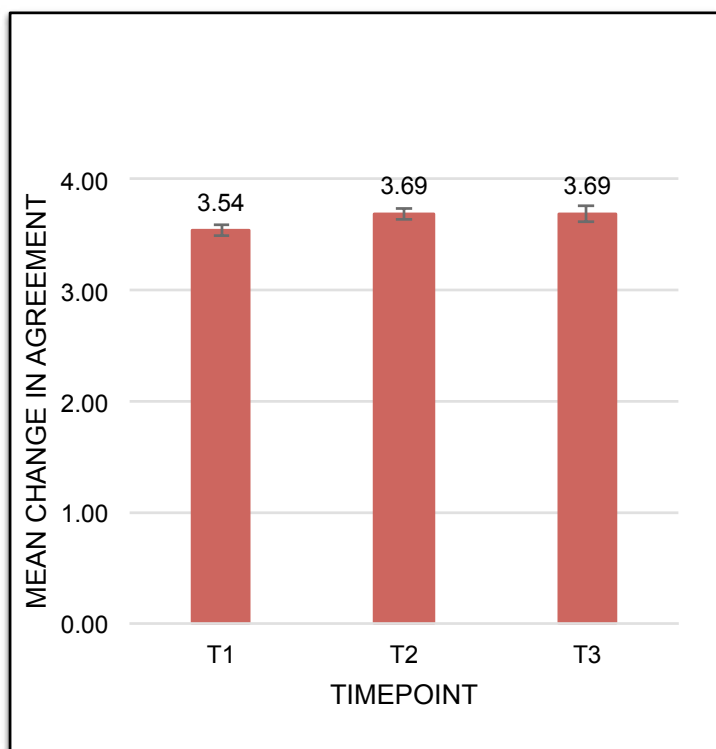
**Figure 17a: Vegetables can be tasty foods – T1-T2 group comparison**



Interaction effect: Significant  
 $p=0.01$

There was a significant difference between groups over time. The intervention group significantly increased its positive attitude towards vegetables being tasty foods between baseline (T1) and post program (T2). The control group did not show a significant change.

**Figure 17b: Vegetables can be tasty foods - sustained effect in intervention group**

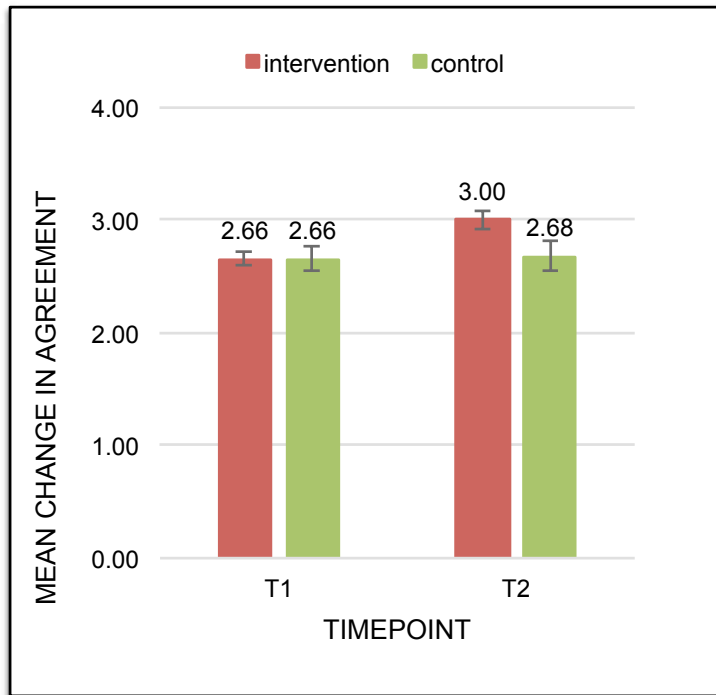


Overall effect of change over time:  
Significant  $p<0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.15  $p=0.001$   
3 versus 1: difference: 0.15  $p<0.001$   
3 versus 2: difference: 0.00  $p=0.97$

There was a significant increase in positive attitudes towards vegetables being tasty foods between (T1) to 6 months post program (T3) demonstrating a sustaining of effect after completion of the program (T2).

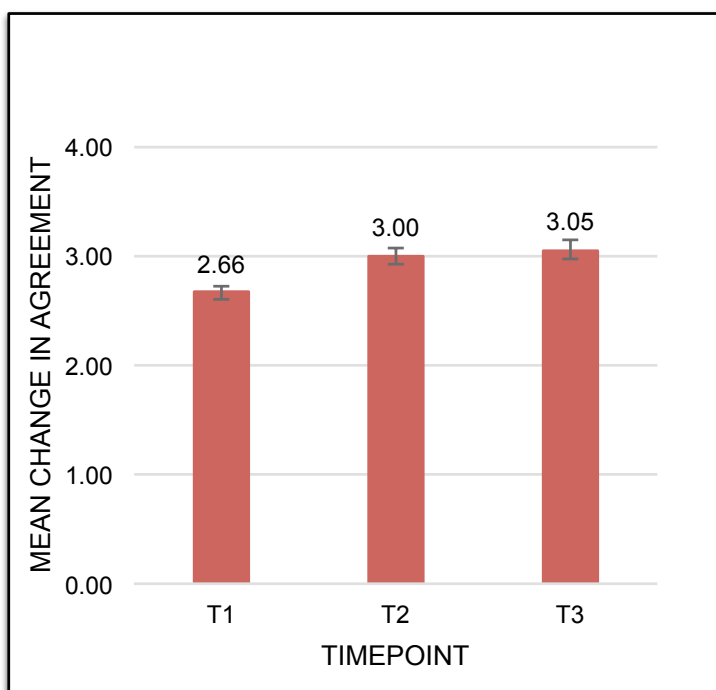
**Figure 18a: I eat enough fruit and vegetables – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. Between T1 and T2, intervention participants significantly increased their belief that they ate enough fruit and vegetables. The control group did not show a significant change.

**Figure 18b: I eat enough fruit and vegetables - sustained effect in intervention group**

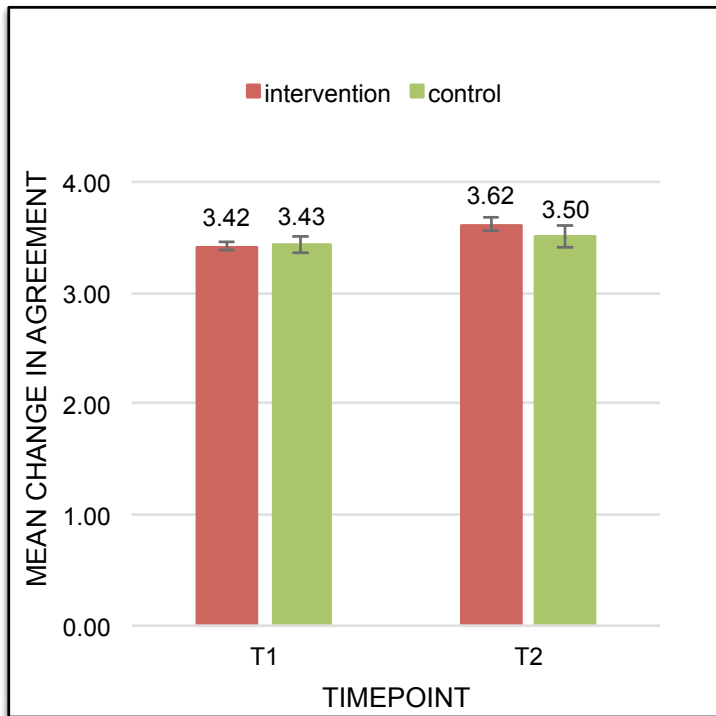


Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.34  $p < 0.001$   
3 versus 1: difference: 0.39  $p < 0.001$   
3 versus 2: difference: 0.06  $p = 0.26$

There was a significant increase in intervention participants of the belief that they ate enough fruit and vegetables from baseline (T1) to 6 months post program (T3) demonstrating a sustained effect after completion of the program (T2).

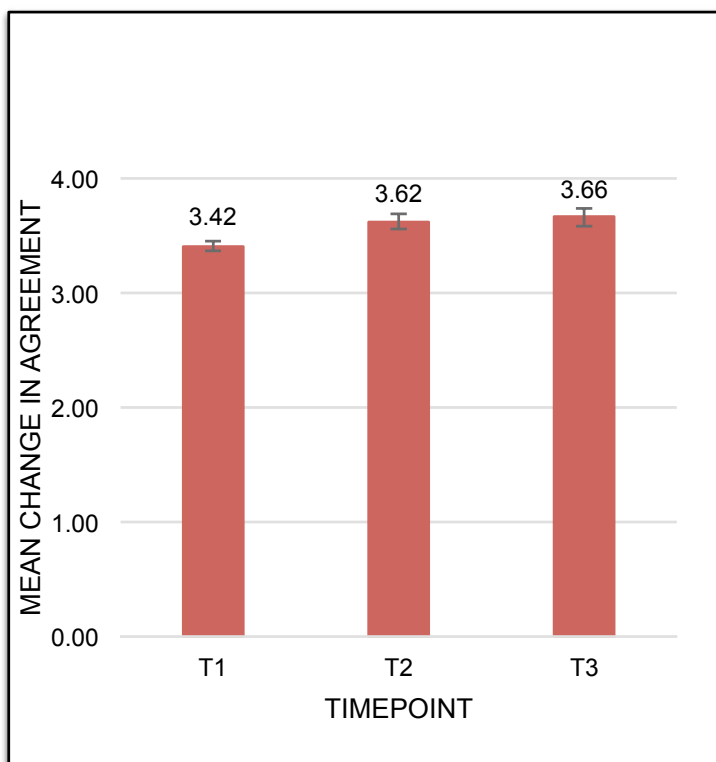
**Figure 19a: Fruit and vegetables are cheaper when they are in season – T1-T2 group comparison**



Interaction effect: Significant  
 $p=0.04$

There was a significant difference between groups over time. The intervention group significantly increased its knowledge about whether fruit and vegetables were cheaper when in season between baseline (T1) and post program (T2). The control group did not show a significant change.

**Figure 19b: Fruit and vegetables are cheaper when they are in season - sustained effect in intervention group**

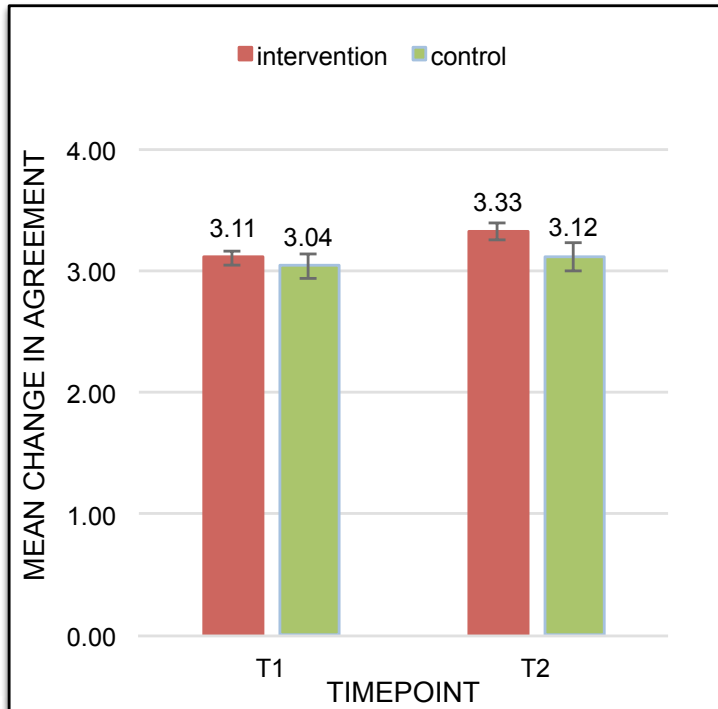


Overall effect of change over time:  
 Significant  $p<0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.21  $p<0.001$   
 3 versus 1: difference: 0.24  $p<0.001$   
 3 versus 2: difference: 0.04  $p=0.41$

There was a significant increase in knowledge about whether fruit and vegetables were cheaper when in season from baseline (T1) to 6 months post program (T3), demonstrating a sustained effect after completion of the program (T2).

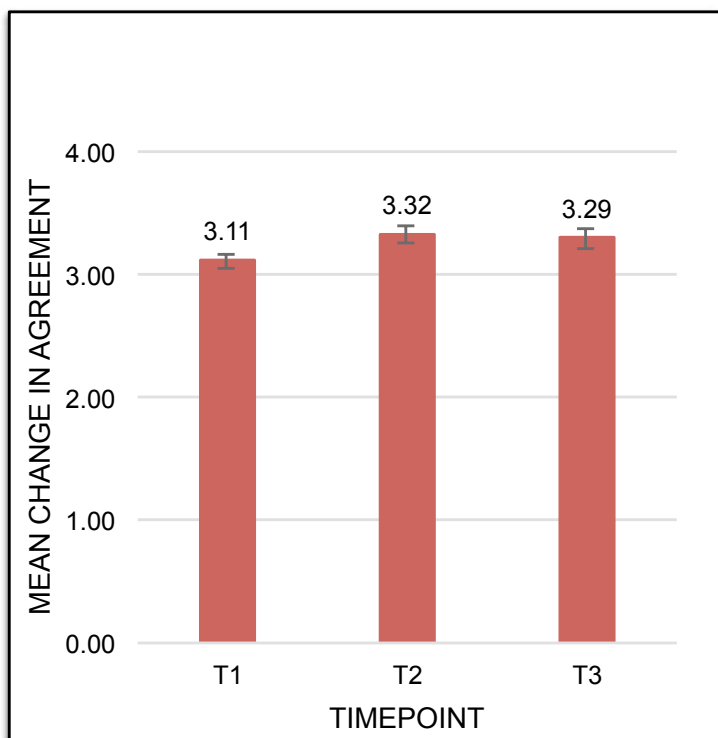
**Figure 20a: My lifestyle does not prevent me eating a healthy diet - T1-T2 group comparison**



Interaction effect: Not significant  
 $p=0.07$

There was no significant difference between groups over time. Intervention participants increased their belief that their lifestyle did not prevent them from eating a healthy diet from baseline (T1) to post program (T2), but there was no significant difference between groups over time.

**Figure 20b: My lifestyle does not prevent me eating a healthy diet - sustained effect in intervention group**



Overall effect of change over time:  
 Significant  $p<0.001$

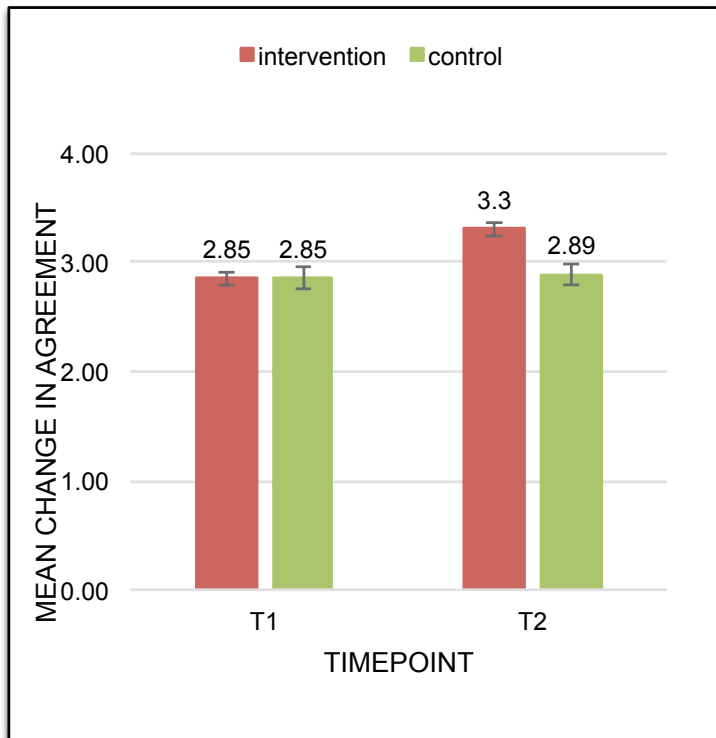
Pairwise comparisons:  
 2 versus 1: difference: 0.21  $p<0.001$   
 3 versus 1: difference: 0.18  $p<0.001$   
 3 versus 2: difference: -0.03  $p=0.55$

There was a significant increase in belief that participants' lifestyle did not prevent them from eating a healthy diet from baseline (T1) to 6 months post program (T3).



# COOKING SKILLS AND KNOWLEDGE

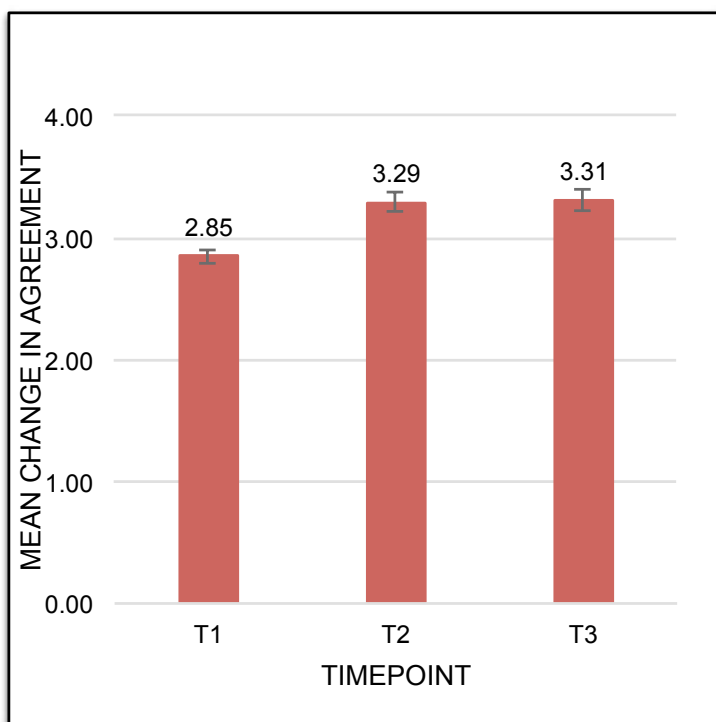
**Figure 21a: I can make a healthy meal from scratch in 30 minutes – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. The intervention group significantly increased its skills and knowledge about making a healthy meal from scratch in 30 minutes from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 21b: I can make a healthy meal from scratch in 30 minutes - sustained effect in intervention group**



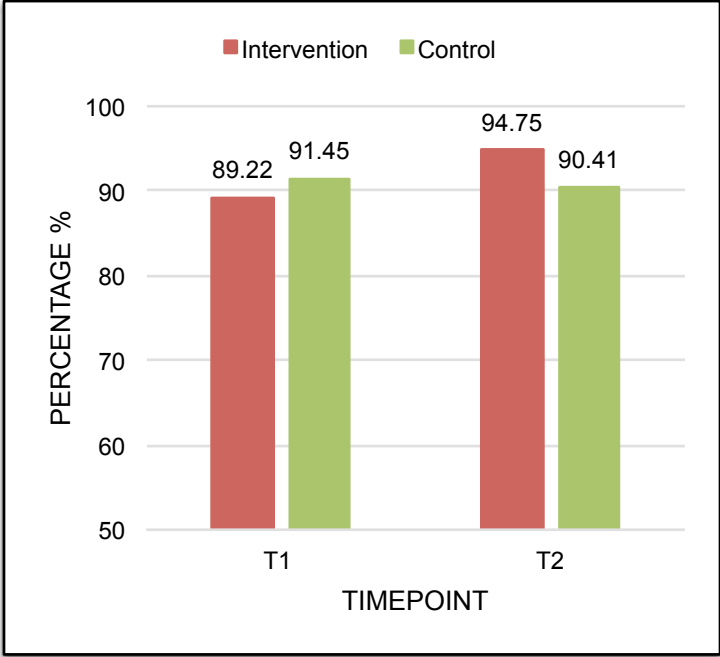
Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.44  $p < 0.001$   
 3 versus 1: difference: 0.46  $p < 0.001$   
 3 versus 2: difference: 0.02  $p = 0.67$

There was a significant increase in skills and knowledge about making a healthy meal from scratch in 30 minutes from baseline (T1) to 6 months post program (T3), demonstrating a sustained effect after completion of the program (T2)

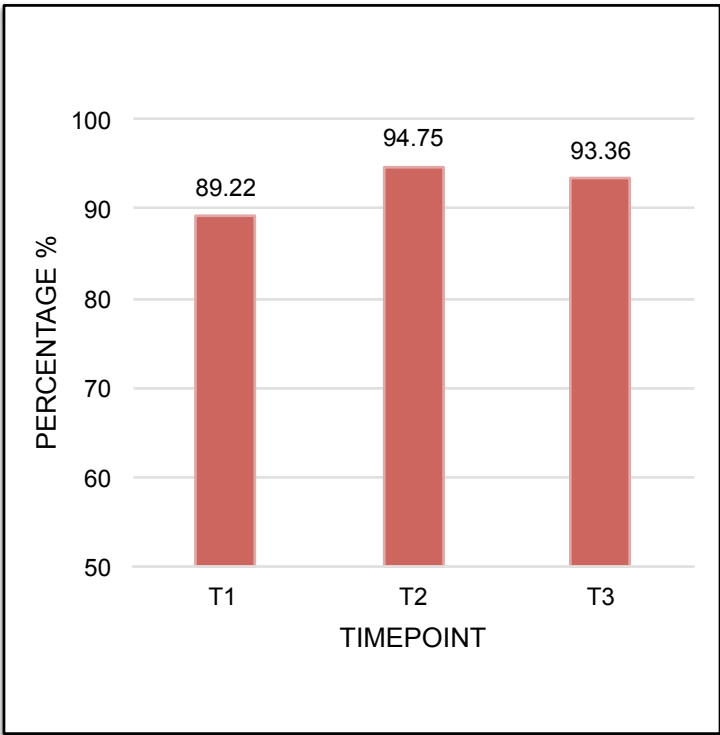
# NUTRITION KNOWLEDGE

**Figure 22a: Frequency of answering a nutrition knowledge question about salt correctly – T1-T2 group comparison**



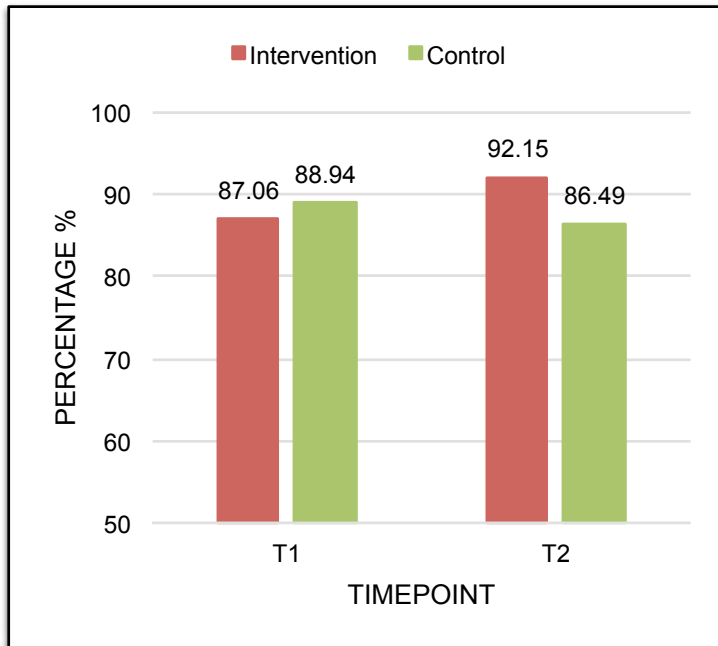
There was a significant difference in nutritional knowledge about salt between groups over time ( $p=0.04$ ).

**Figure 22b: Frequency of answering a nutrition knowledge question about salt correctly - sustained effect in intervention group**



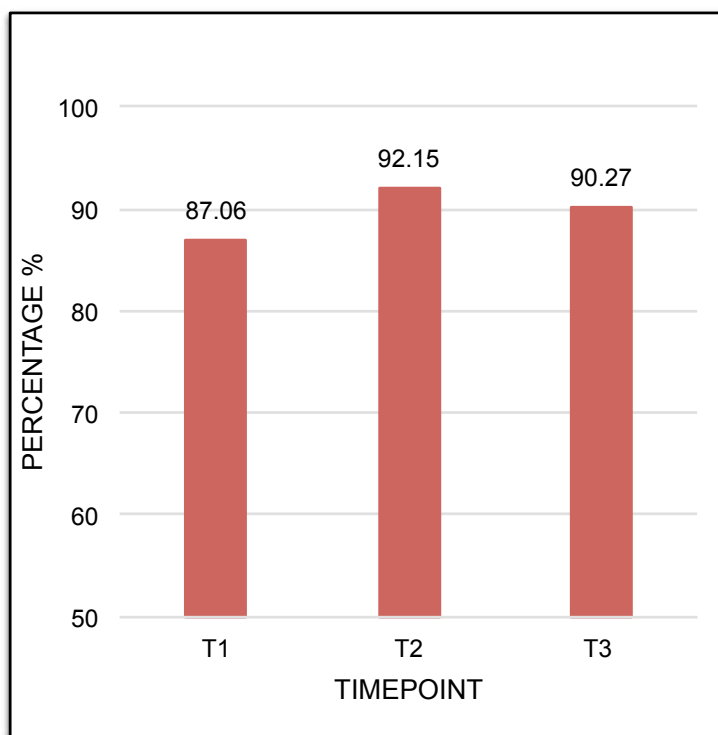
There was a significant sustained increase in knowledge around salt after the program ( $p=0.001$ ).

**Figure 23a: Frequency of answering a nutrition knowledge question about sugar correctly – T1-T2 group comparison**



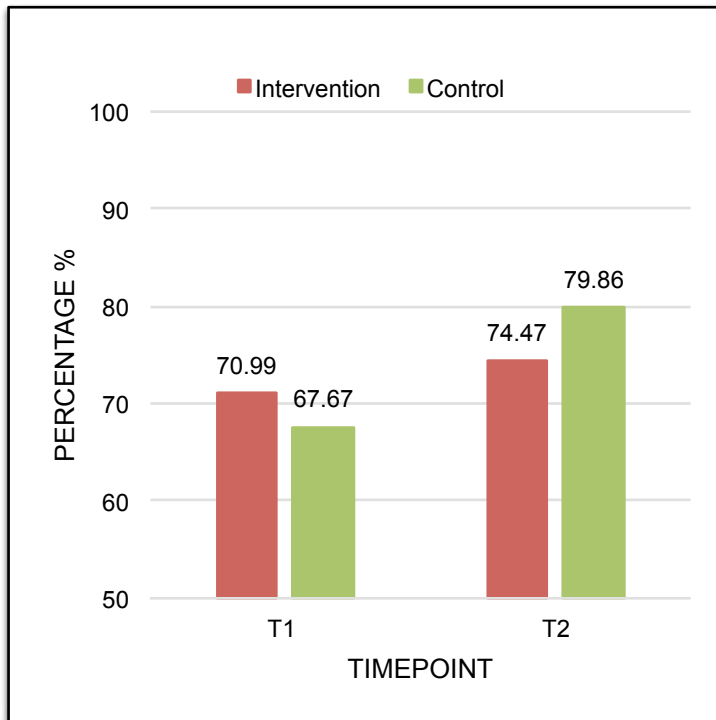
There was a significant difference in nutritional knowledge about sugar between groups over time ( $p=0.02$ ).

**Figure 23b: Frequency of answering a nutrition knowledge question about sugar correctly - sustained effect in intervention group**



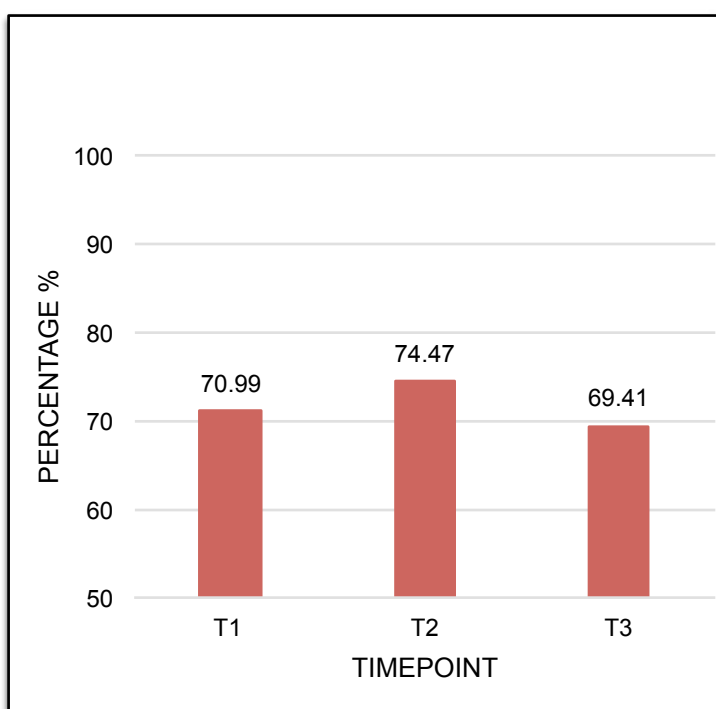
There was a significant sustained increase in knowledge about sugar after the program ( $p=0.02$ ).

**Figure 24a: Frequency of answering a nutrition knowledge question about fat correctly – T1-T2 group comparison**



There was a significant difference between groups over time ( $p=0.03$ ) in terms of their nutrition knowledge around fat.

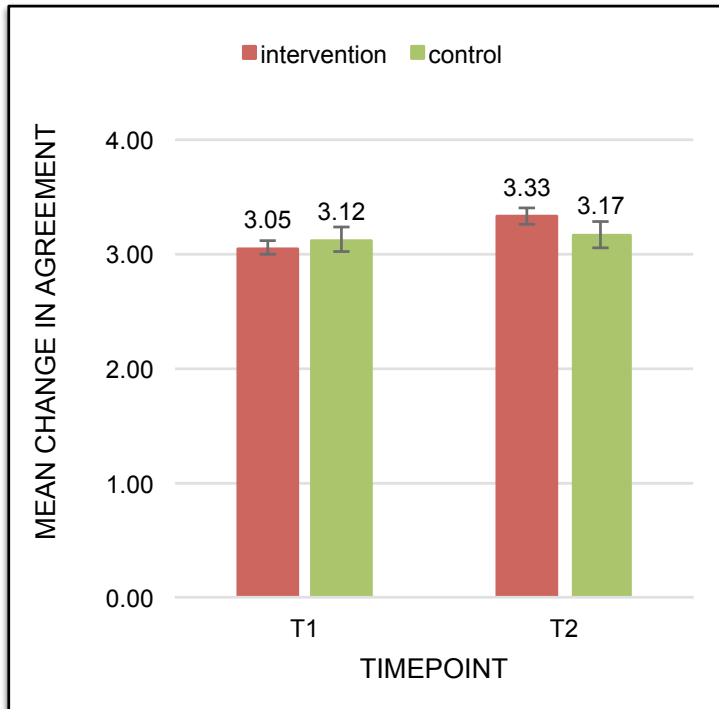
**Figure 24b: Frequency of answering a nutrition knowledge question about fat correctly - sustained effect in intervention group**



Increases in nutritional knowledge about fat were not sustained after the program ( $p=0.42$ ).

# ENJOYMENT AND SATISFACTION AROUND COOKING

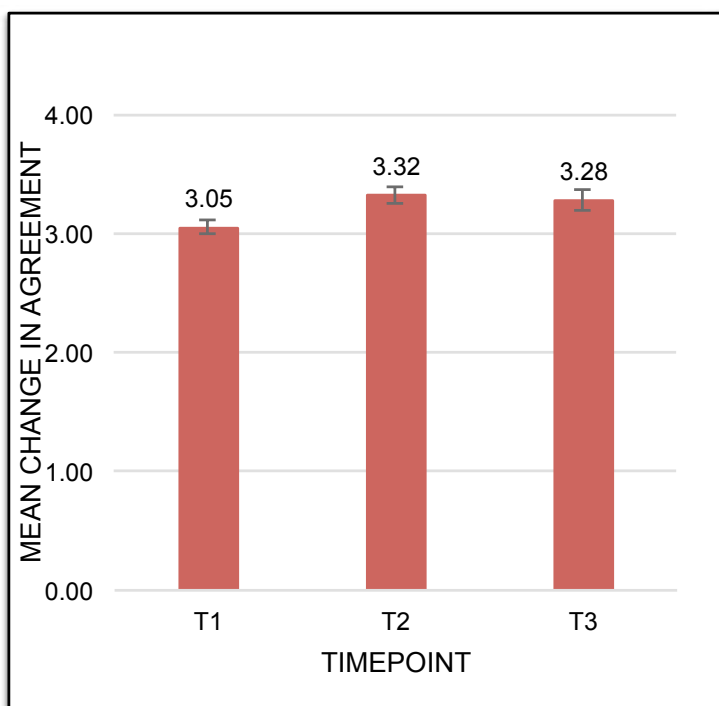
**Figure 25a: I enjoy cooking – T1-T2 group comparison**



Interaction effect: Significant  
 $p=0.001$

There was a significant difference between groups over time. The intervention group significantly increased their level of enjoyment for cooking from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 25b: I enjoy cooking - sustained effect in intervention group**

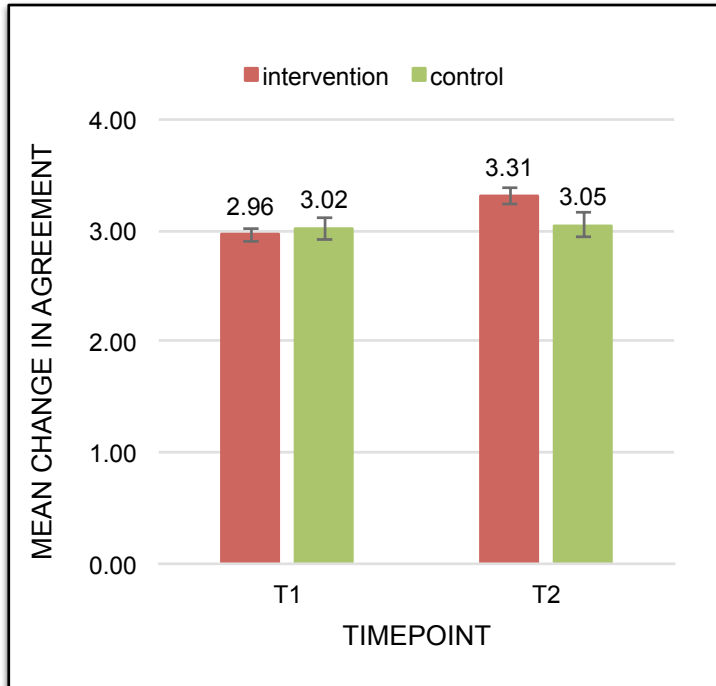


Overall effect of change over time:  
Significant  $p<0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.27  $p<0.001$   
3 versus 1: difference: 0.23  $p<0.001$   
3 versus 2: difference: -0.04  $p=0.31$

There was a significant increase in level of enjoyment for cooking from baseline (T1) to 6 months post program (T3) demonstrating a sustained effect after completion of the program (T2).

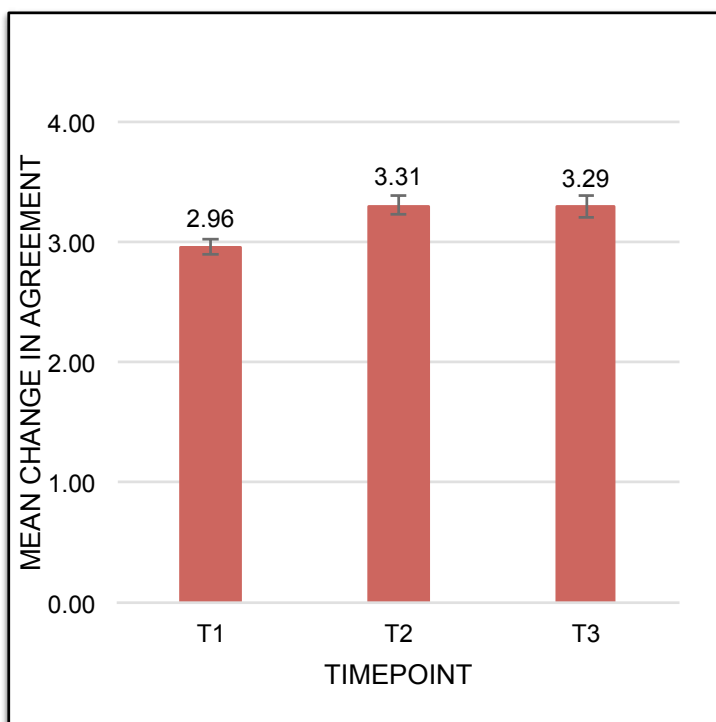
**Figure 26a: I get a lot of satisfaction from cooking my meals – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. The intervention group significantly increased their level satisfaction from cooking their meals from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 26b: I get a lot of satisfaction from cooking my meals - sustained effect in intervention group**

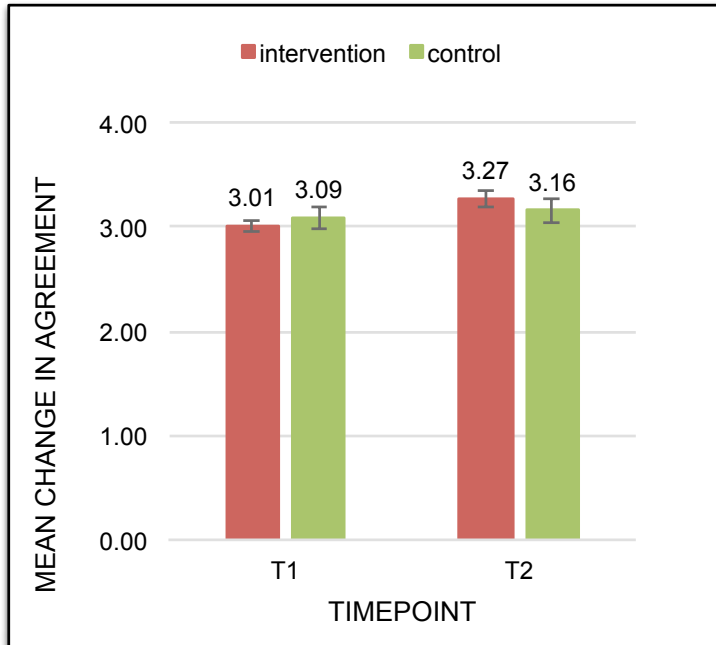


Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.35  $p < 0.001$   
 3 versus 1: difference: 0.33  $p < 0.001$   
 3 versus 2: difference: -0.02  $p = 0.11$

There was a significant increase satisfaction from cooking meals from baseline (T1) to 6 months post program (T3) demonstrating a sustained effect after completion of the program (T2).

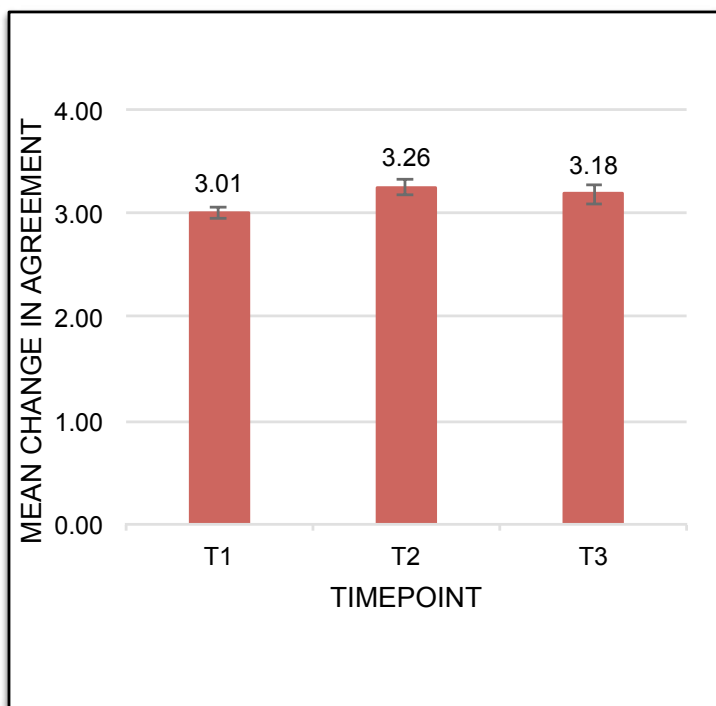
**Figure 27a: I enjoy cooking for others – T1-T2 group comparison**



Interaction effect: Significant  
 $p=0.004$

There was a significant difference between groups over time. The intervention group significantly increased their level of enjoyment for cooking for others from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 27b: I enjoy cooking for others - sustained effect in intervention group**

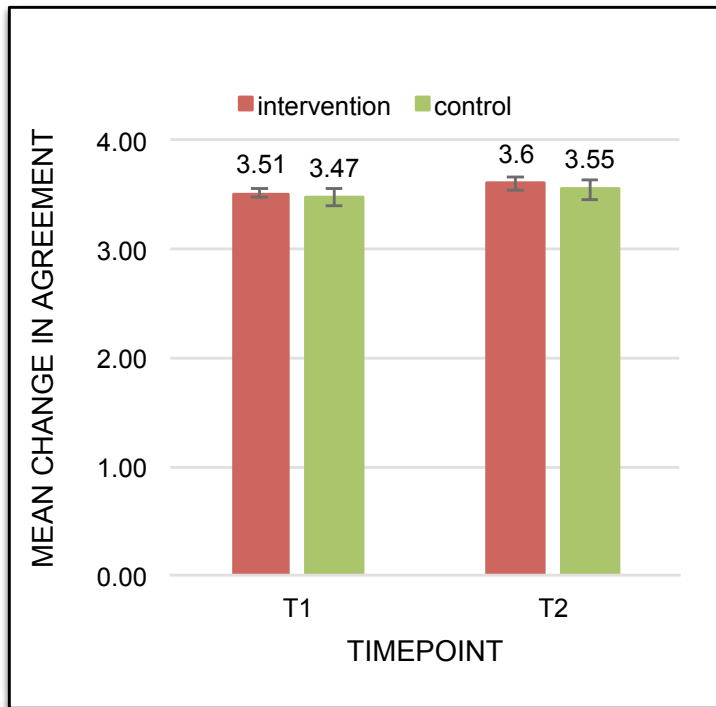


Overall effect of change over time:  
Significant  $p<0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.25  $p<0.001$   
3 versus 1: difference: 0.18  $p<0.001$   
3 versus 2: difference: -0.08  $p=0.11$

There was a significant increase in level of enjoyment for cooking for others from baseline (T1) to 6 months post program (T3) demonstrating a sustained effect after completion of the program (T2).

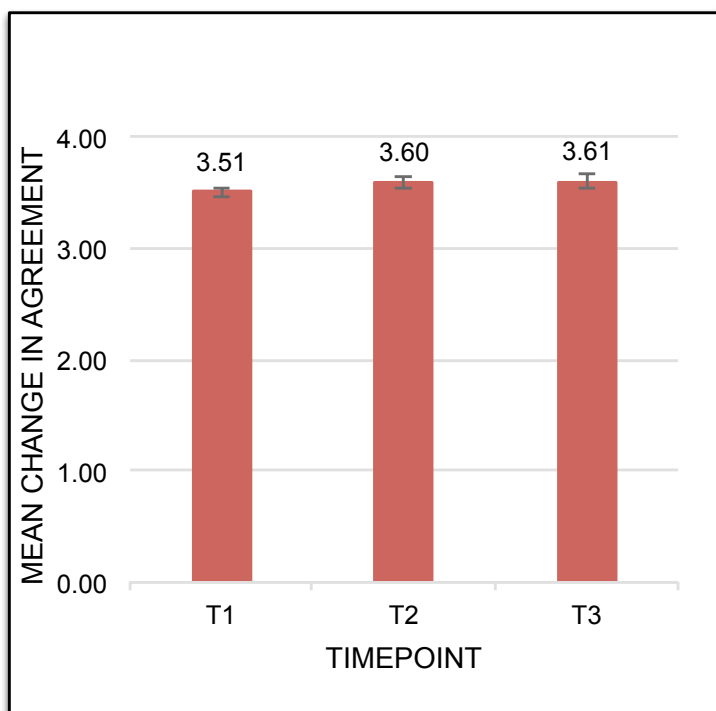
**Figure 28a: I enjoy eating a meal with others – T1-T2 group comparison**



Interaction effect: Not significant  
 $p=0.81$

There was no significant difference between groups over time. There was no significant change in the level of enjoyment of eating a meal with others in both the control and intervention groups between T1 and T2.

**Figure 28b: I enjoy eating a meal with others - sustained effect in intervention group**



Overall effect of change over time:  
Significant  $p<0.001$

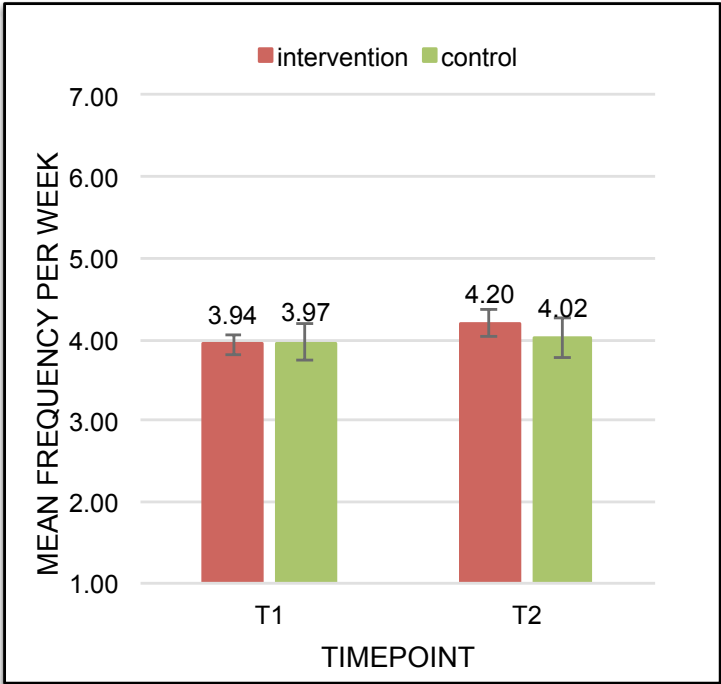
Pairwise comparisons:  
2 versus 1: difference: 0.09  $p=0.01$   
3 versus 1: difference: 0.10  $p=0.01$   
3 versus 2: difference: 0.01  $p=0.77$

There was a significant increase in level of enjoyment of eating a meal with others from baseline (T1) to 6 months post program (T3).



# SOCIAL CONNECTEDNESS AROUND COOKING AND EATING

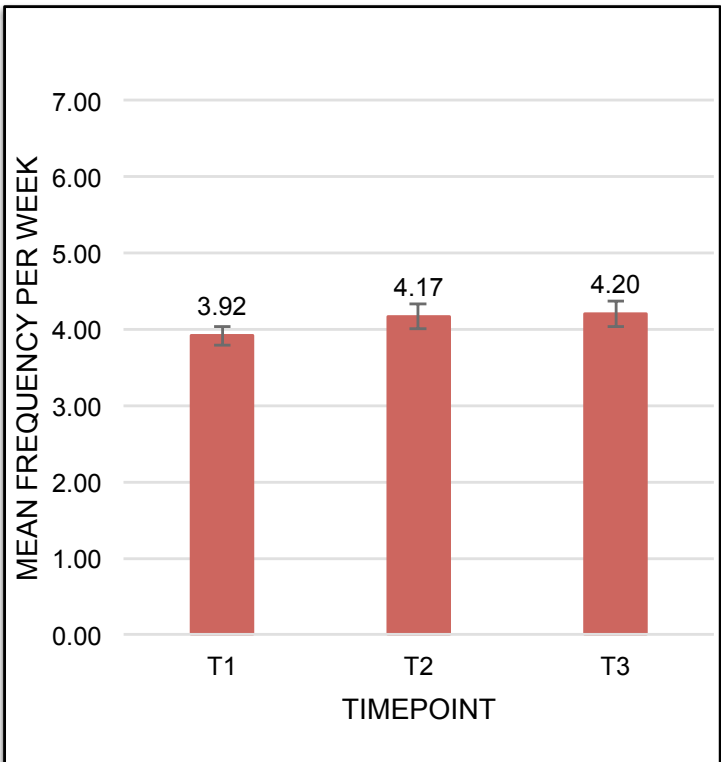
**Figure 29a: Frequency of eating together in a typical week – T1-T2 group comparison**



Interaction effect: Not significant  
 $p = 0.13$

There was no significant difference between groups over time. The intervention group significantly increased mean frequency of eating with together with others in a typical week from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 29b: Frequency of eating together in a typical week - sustained effect in intervention group**

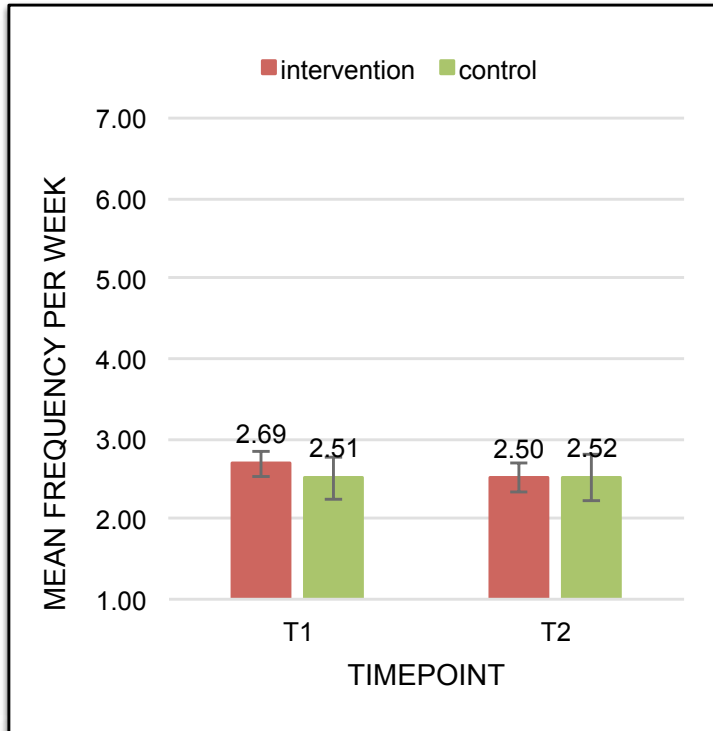


Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.25  $p < 0.001$   
 3 versus 1: difference: 0.28  $p < 0.001$   
 3 versus 2: difference: 0.04  $p = 0.692$

There was a significant increase in the frequency of eating together with others in a typical week from baseline (T1) to 6 months post program (T3) demonstrating a sustained increase after completion of the program (T2).

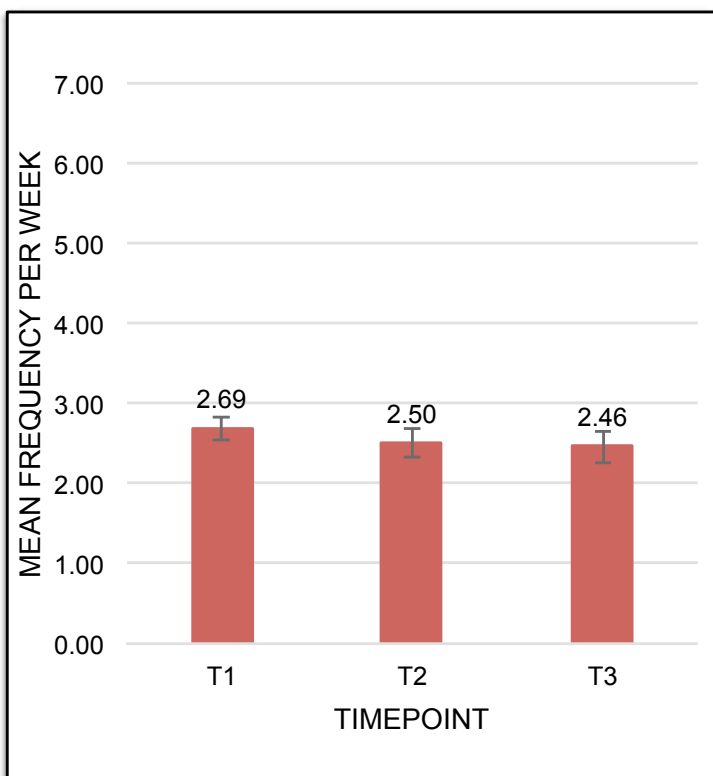
**Figure 30a: Frequency of eating dinner in front of the television in a typical week – T1-T2 group comparison**



Interaction effect: Not significant  
 $p = 0.17$

There was no significant difference between groups over time. The intervention group significantly decreased mean frequency of eating dinner in front of the television in a typical week from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 30b: Frequency of eating dinner in front of the television in a typical week - sustained effect in intervention group**

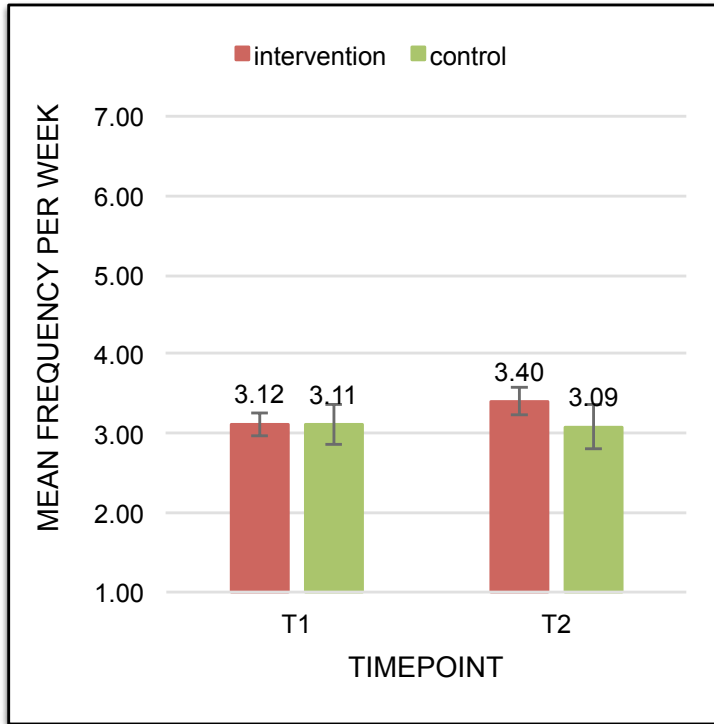


Overall effect of change over time:  
 Significant  $p = 0.006$

Pairwise comparisons:  
 2 versus 1: difference:  $-0.19$   $p = 0.009$   
 3 versus 1: difference:  $-0.238$   $p = 0.007$   
 3 versus 2: difference:  $-0.04$   $p = 0.657$

There was a significant decrease in mean frequency of eating dinner in front of the television in a typical week from baseline (T1) to 6 months post program (T3) demonstrating a sustained decrease after completion of the program (T2).

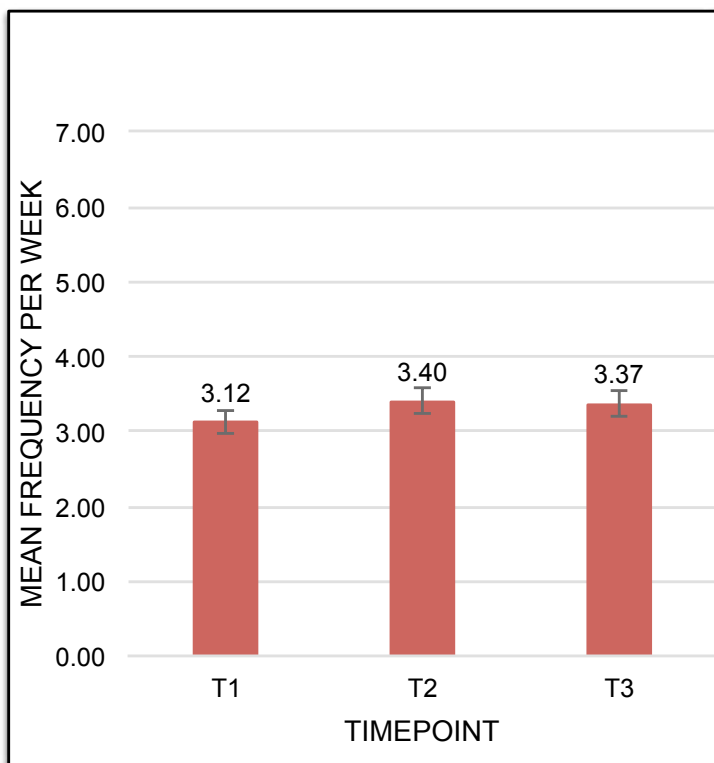
**Figure 31a: Frequency of eating dinner at a dinner table in a typical week- T1-T2 group comparison**



Interaction effect: Significant  
 $p = 0.009$

There was a significant difference between groups over time. The intervention group significantly increased mean frequency of eating dinner at the dinner table in a typical week from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 31b: Frequency of eating dinner at a dinner table in a typical week - sustained effect in intervention group**



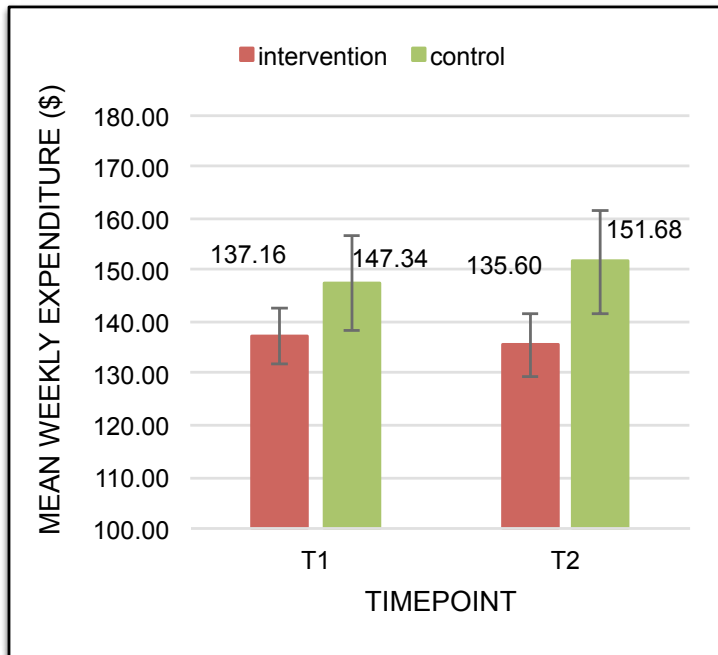
Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.28  $p < 0.001$   
 3 versus 1: difference: 0.25  $p < 0.001$   
 3 versus 2: difference: -0.02  $p = 0.775$

There was a significant increase in the frequency of eating dinner at the dinner table in a typical week from baseline (T1) to 6 months post program (T3) demonstrating a sustaining of effect after completion of the program (T2).

# AFFORDABILITY OF A HEALTHY MEAL

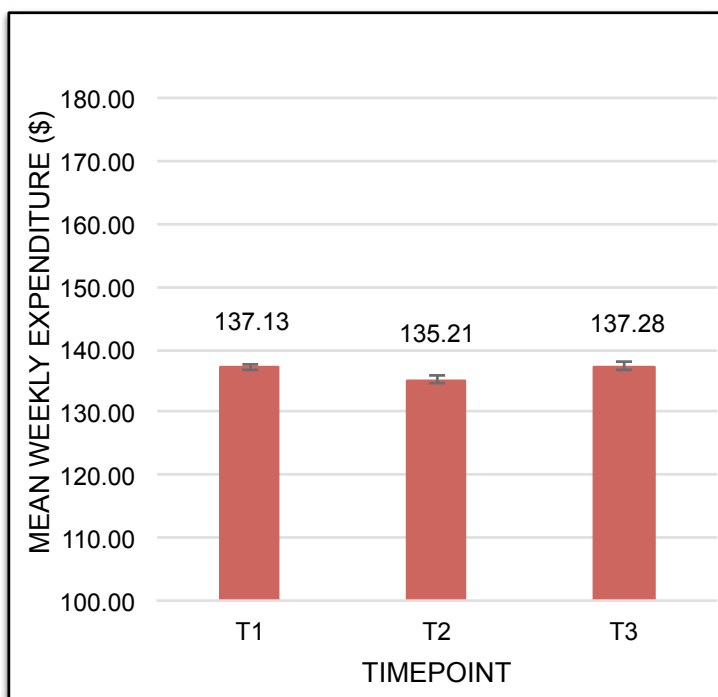
**Figure 32a: Total weekly household food and drink expenditure (\$)** – T1-T2 group comparison



Interaction effect: Not significant  
 $p = 0.206$

There was no significant difference between groups over time. There was no significant change in mean total food and drink expenditure in both control and intervention group between baseline T1 to T2.

**Figure 32b: Total weekly household food and drink expenditure (\$)** - sustained effect in intervention group

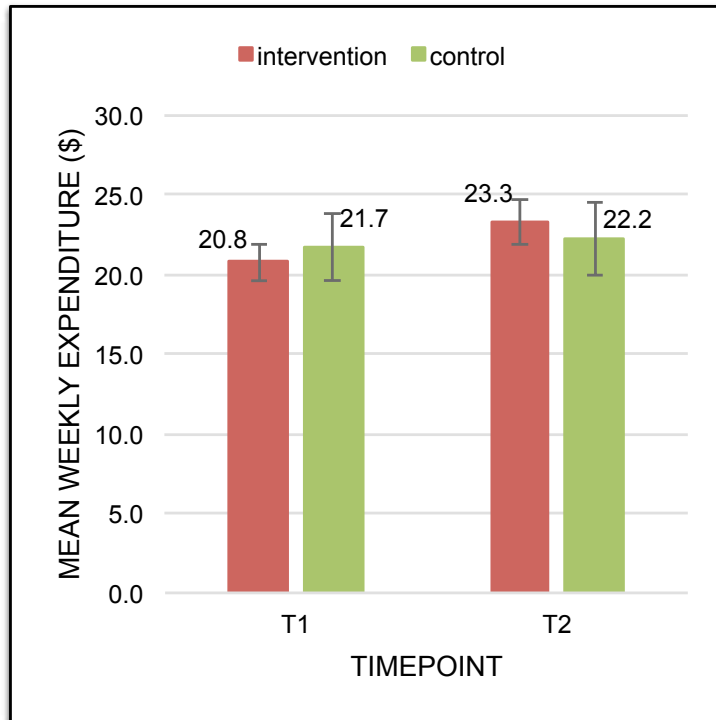


Overall effect of change over time:  
 Significant  $p = 0.695$

Pairwise comparisons:  
 2 versus 1: difference: -1.93  $p = 0.44$   
 3 versus 1: difference: 0.15  $p = 0.96$   
 3 versus 2: difference: 2.08  $p = 0.50$

There was no significant change in mean total weekly household food and drink expenditure from baseline (T1) to 6 months post program (T3) demonstrating the program did not have an effect on participants' weekly food and drink spending after completion of the program (T2).

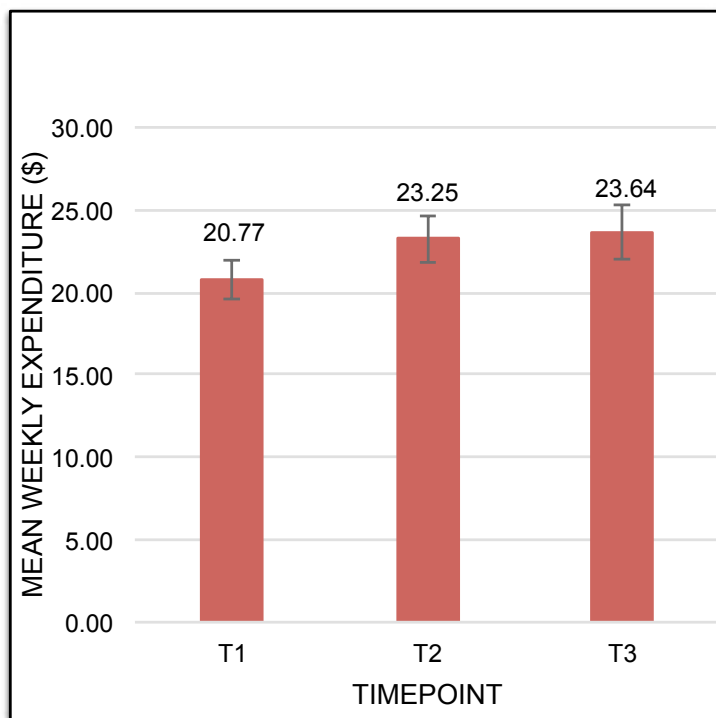
**Figure 33a: Total weekly household fruit and vegetable expenditure (\$) – T1-T2 group comparison**



Interaction effect: Not significant  
 $p = 0.097$

There was no significant difference between groups over time. The intervention group significantly increased its mean total weekly household fruit and vegetable expenditure from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 33b: Total weekly household fruit and vegetable expenditure (\$) - sustained effect in intervention group**

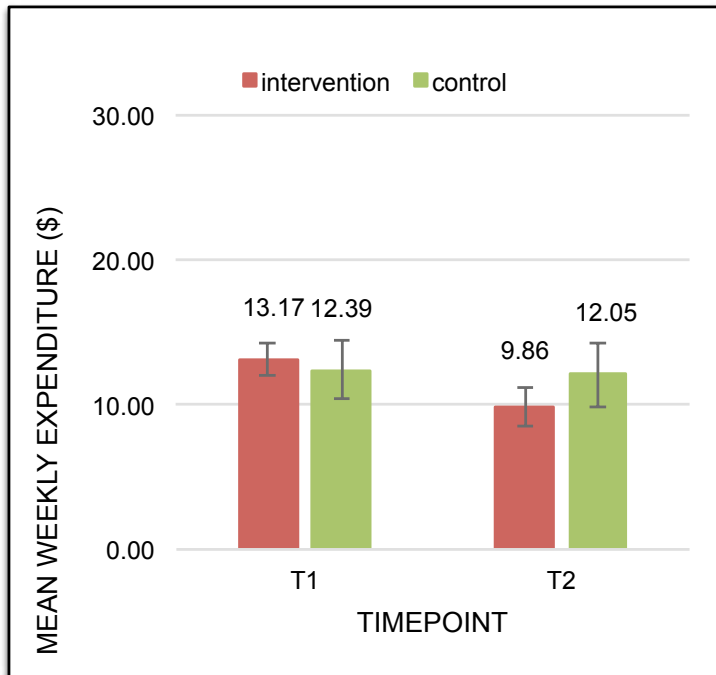


Overall effect of change over time:  
 Significant  $p = 0 < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 2.48  $P < 0.001$   
 3 versus 1: difference: 2.86  $p < 0.001$   
 3 versus 2: difference: 0.39  $p = 0.63$

There was a significant increase in the mean total weekly household fruit and vegetable expenditure from baseline (T1) to 6 months post program (T3). This demonstrates a sustained increase in fruit and vegetable purchasing after completion of the program (T2).

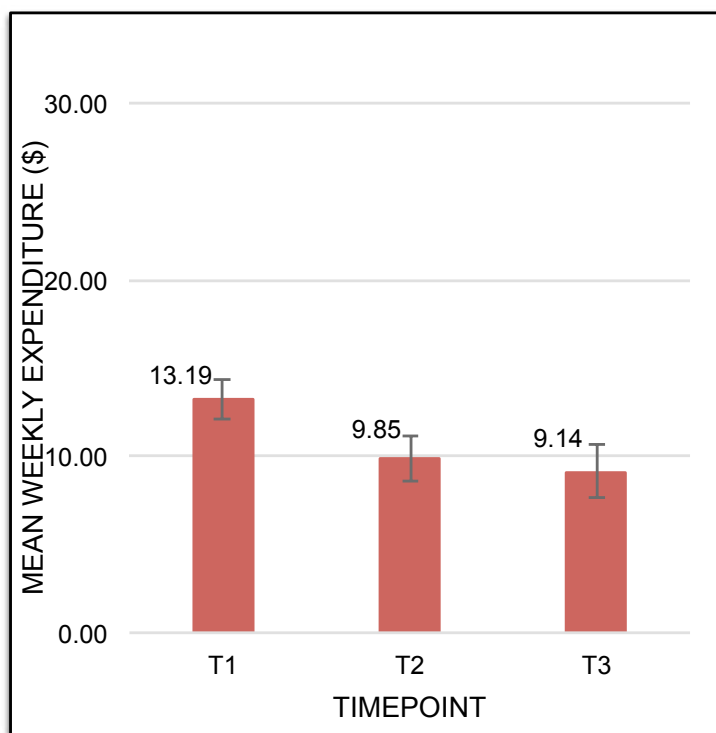
**Figure 34a: Total weekly household take away/fast food expenditure (\$) – T1-T2 group comparison**



Interaction effect: Significant  
 $p = 0.004$

There was a significant difference between groups over time. The intervention group significantly decreased its mean total weekly household take away/fast food expenditure from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 34b: Total weekly household take away/fast food expenditure (\$) - sustained effect in intervention group**



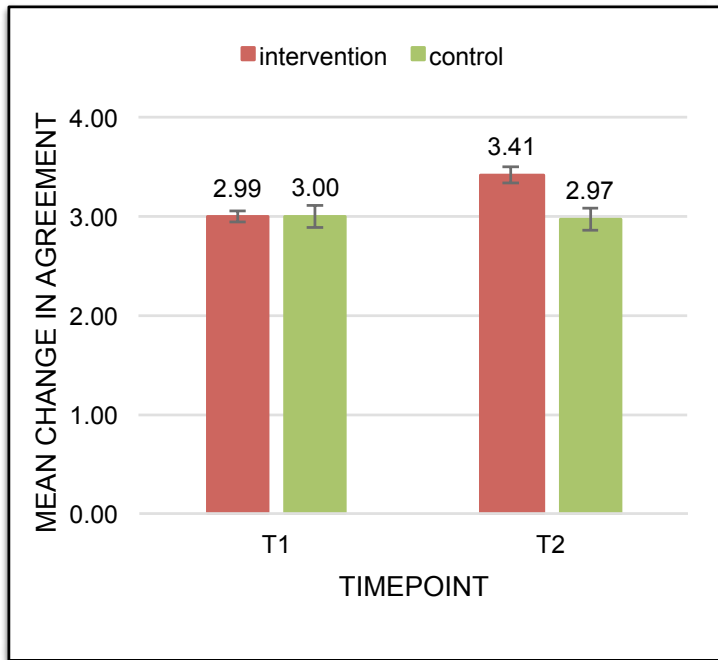
Overall effect of change over time:  
 Significant  $p = 0 < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: -3.34  $p < 0.001$   
 3 versus 1: difference: -4.05  $p < 0.001$   
 3 versus 2: difference: -0.71  $p = 0.29$

There was a significant decrease in the mean total weekly household take away/fast food expenditure from baseline (T1) to 6 months post program (T3). This demonstrates a sustained decrease in take away and or fast food purchasing after completion of the program (T2).

# ATTITUDES AND BELIEFS OF AFFORDABILITY OF A HEALTHY MEAL

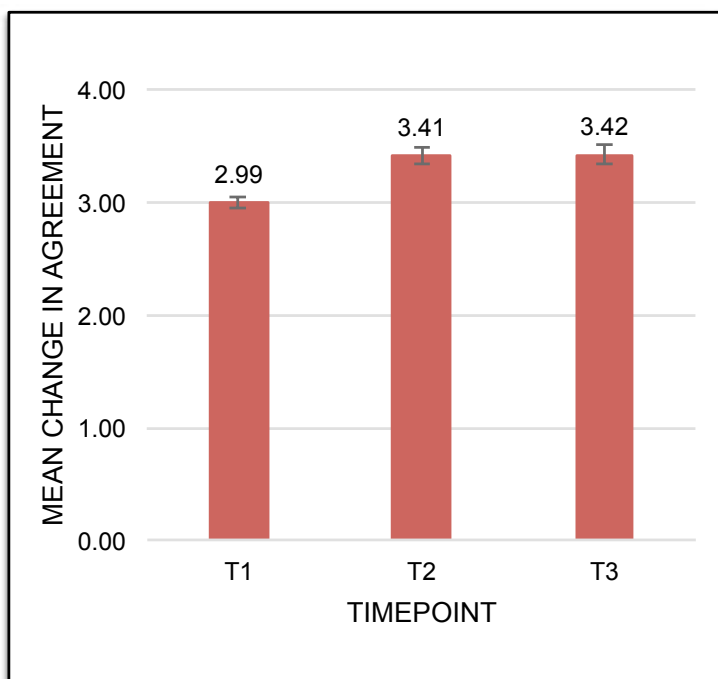
**Figure 35a: I can prepare a meal from basics that is low in price - T1-T2 group comparison**



Interaction effect: significant  
 $p < 0.001$

There was a significant difference between groups over time. The intervention group significantly increased its belief that it could prepare a meal from basics that were low in price from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 35b: I can prepare a meal from basics that is low in price - sustained effect in intervention group**

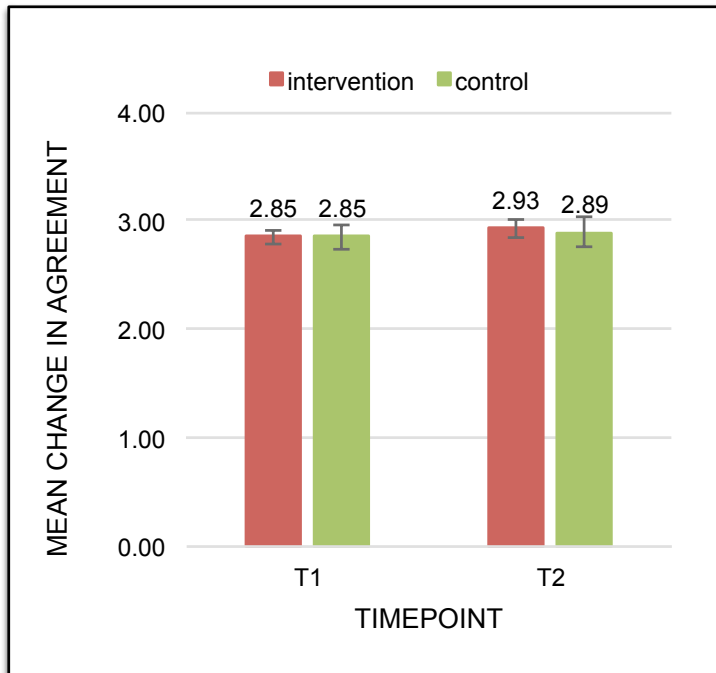


Overall effect of change over time:  
 Significant  $p < 0.001$

Pairwise comparisons:  
 2 versus 1: difference: 0.42  $p < 0.001$   
 3 versus 1: difference: 0.43  $p < 0.001$   
 3 versus 2: difference: 0.01  $p = 0.79$

There was a significant increase in belief of intervention participants that they could prepare a meal from basics that was low in price from baseline (T1) to 6 months post program (T3) demonstrating a sustained effect after completion of the program (T2).

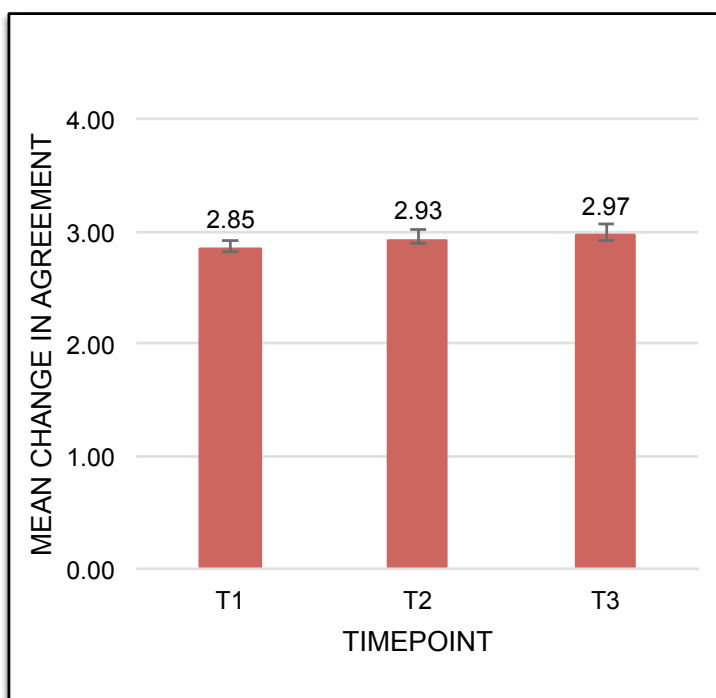
**Figure 36a: Buying more fruit/vegetables would not be difficult on my budget – T1-T2 group comparison**



Interaction effect: Not significant  
 $p=0.60$

There was no significant difference between groups over time in the belief that buying more fruit and vegetables would not be difficult on their budget.

**Figure 36b: Buying more fruit/vegetables would not be difficult on my budget - sustained effect in intervention group**



Overall effect of change over time:  
 Significant  $p<0.001$

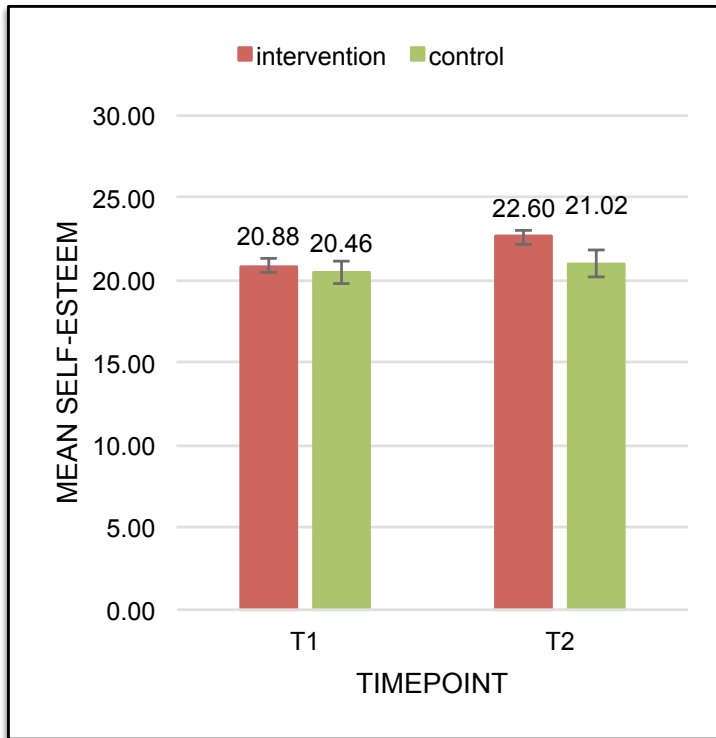
Pairwise comparisons:  
 2 versus 1: difference: 0.08  $p=0.09$   
 3 versus 1: difference: 0.11  $p=0.03$   
 3 versus 2: difference: 0.04  $p=0.52$

There was a significant increase in attitude around the belief that buying more fruit and vegetables would not be difficult on their budget between baseline (T1) to 6 months post program (T3), but not between baseline (T1) and post program (T2).



# SELF-ESTEEM

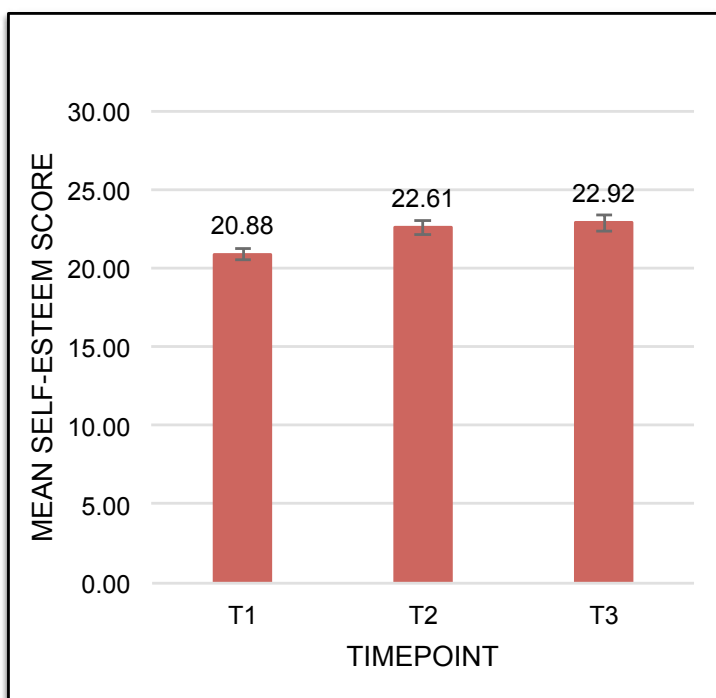
**Figure 37a: Global self-esteem score – T1-T2 group comparison**



Interaction effect: Significant  
 $p = 0.002$

There was a significant difference between groups over time. The intervention group significantly increased their mean global self-esteem score from baseline (T1) to post program (T2). The control group did not show a significant change.

**Figure 37b: Global self-esteem score - sustained effect in intervention group**



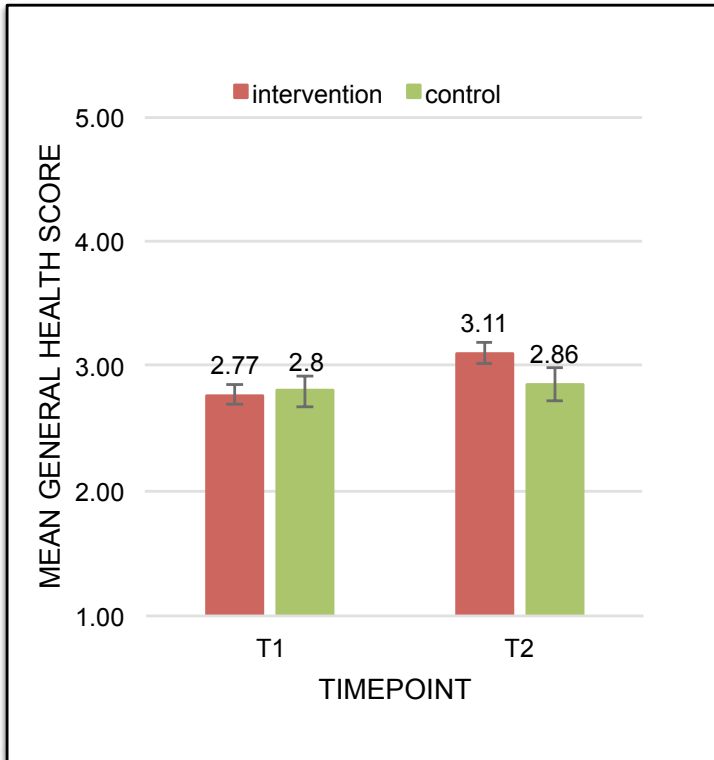
Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 1.73  $p < 0.001$   
3 versus 1: difference: 2.04  $p < 0.001$   
3 versus 2: difference: 0.31  $p = 0.24$

The increase in the mean global self-esteem score in the intervention group was sustained at 6 months post program (T3).

# GENERAL HEALTH

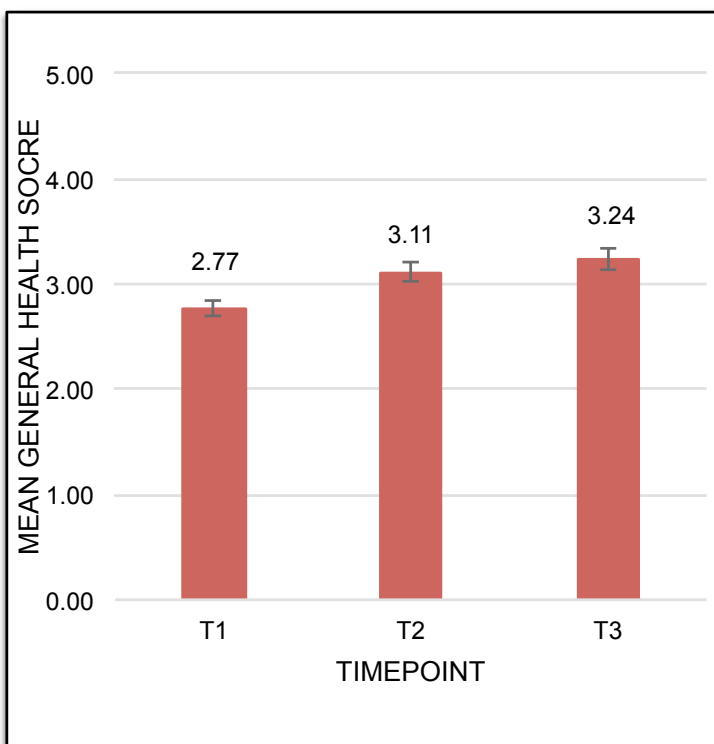
**Figure 38a: Perceived general health – T1-T2 group comparison**



Interaction effect: Significant  
 $p < 0.001$

There was a significant difference between groups over time. The intervention group significantly increased its mean perceived general health rating from baseline (T1) to post program (T2). The control group did not show a significant change. All participants began the program within the normal self-esteem range

**Figure 38b: Perceived general health - sustained effect in intervention group**



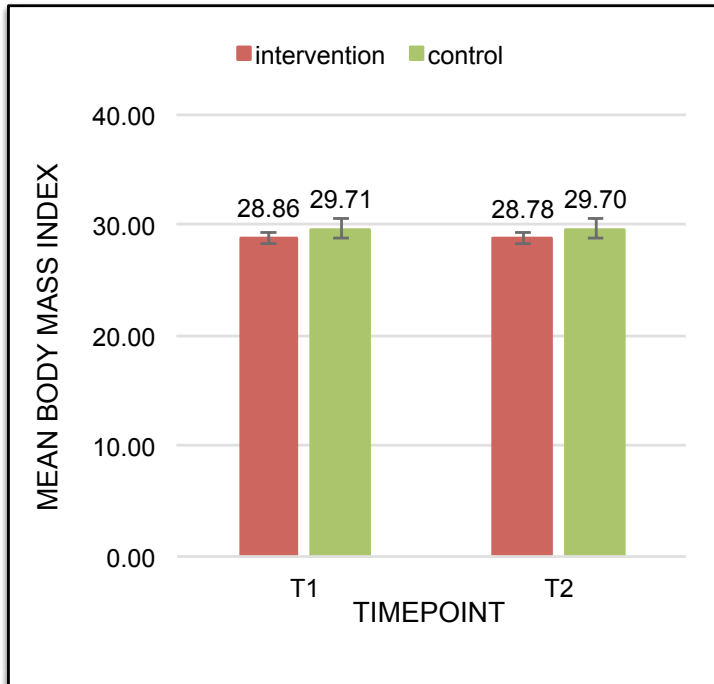
Overall effect of change over time:  
Significant  $p < 0.001$

Pairwise comparisons:  
2 versus 1: difference: 0.34  $p < 0.001$   
3 versus 1: difference: 0.47  $p < 0.001$   
3 versus 2: difference: 0.13  $p = 0.01$

There was a significant increase in mean perception of general health between baseline (T1) and 6 months post program (T3) demonstrating a sustaining of effect after completion of the program (T2). After the program, the positive effects on perceived general health continued.

# BODY MASS INDEX (BMI)

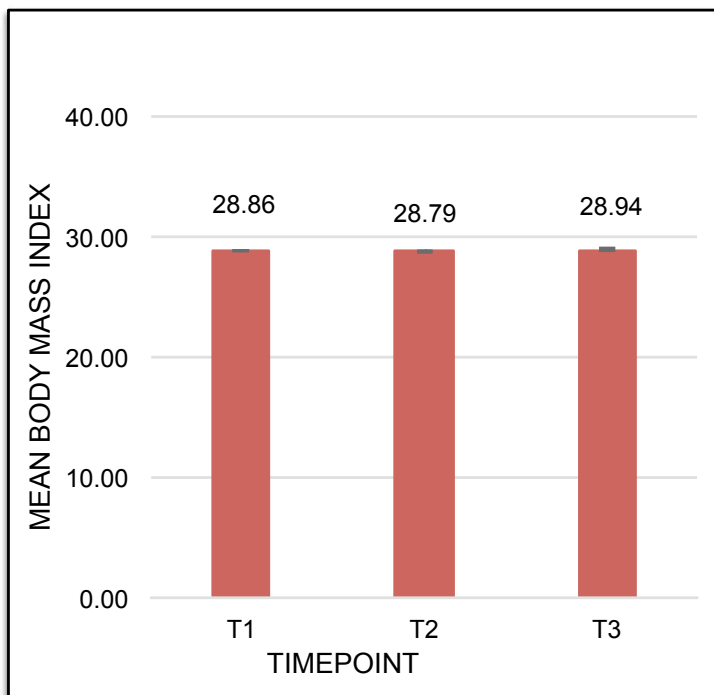
**Figure 39a: Body mass index – T1-T2 group comparison**



Interaction effect: not significant  
 $p=0.76$

There was no significant difference between groups over time. There was no significant change in BMI in both control and intervention group between baseline T1 to T2.

**Figure 39b: Body mass index - sustained effect in intervention group**



Overall effect of change over time:  
Significant  $p= 0.68$

Pairwise comparisons:  
2 versus 1: difference:  $-0.07$   $p=0.61$   
3 versus 1: difference:  $0.08$   $p=0.65$   
3 versus 2: difference:  $0.15$   $p= 0.39$

There was no significant change BMI from baseline (T1) to 6 months post program (T3) demonstrating the program did not have an effect on BMI after completion of the program (T2).

# Qualitative STUDY

## STUDY DESIGN/METHODS

The aim of this qualitative study was to explore participant expectations and experiences of the program, to understand the barriers and facilitators which they faced when cooking and to explore any unexpected outcomes. Using a longitudinal qualitative design, fifteen program participants were purposively selected to attend repeated semi-structured interviews. Each participant was interviewed three times - before program commencement, at program completion and at six months follow-up (Table 3).

**Table 3: qualitative study time point, data collection methods and interview topics.**

Study time frame	Methods	Interview Topics
Before program commencement or up until three weeks into the program	Face to face semi-structured interviews n = 15 Two participants were interviewed as a couple and one participant was interviewed with a carer.	<ul style="list-style-type: none"> <li>• Motivations for joining the program</li> <li>• Expectations about joining the program</li> <li>• Current cooking and food attitudes and behaviours</li> </ul>
Program completion	Face to face (11) and phone (4) semi-structured interviews n = 15	<ul style="list-style-type: none"> <li>• Program feedback – the intervening and contextual (environmental) conditions</li> <li>• Current food and cooking behaviours and attitudes</li> <li>• Changes as a result of the program</li> <li>• Unexpected outcomes</li> <li>• Reflections from last interview</li> </ul>
Six month follow-up	Face to face (8) and phone (5) semi-structured interviews n = 13 Two participants were interviewed as a couple. Two participants were lost to follow-up.	<ul style="list-style-type: none"> <li>• Current food and cooking behaviours and attitudes</li> <li>• Changes as a result of the program</li> <li>• Unexpected outcomes</li> <li>• Reflections from last interview, and over the last six months.</li> </ul>

---

---

## **SAMPLE AND RECRUITMENT**

Participants were purposively selected to ensure a diverse group. Specific factors taken into consideration in the sampling included: socio-economic status, age, gender, family structure, and cooking confidence level. Two methods were used to recruit participants. Firstly, the quantitative survey included a question asking if the participant was willing to be contacted for an interview. Secondly, some people were recruited in person during the researcher's observations of classes in their first week of the program. Identified participants were provided with information about the study and invited to participate in an interview.

## **DATA COLLECTION**

Interviews were of approximately 30-40 minutes duration and took place in a public location that provided a comfortable, convenient environment for both interviewer and the participant. All interviews were digitally recorded and each participant received a \$15 supermarket gift voucher after each interview in appreciation for their time. General interview topic guides for each round of interviewing are shown in table 3. All interviews were conducted face-to-face or via the telephone. Interviews were conducted with individual participants, with the exception of one with a couple and another in the presence of the participant's carer.

## **ANALYSIS**

All interview transcripts and memos were transcribed verbatim and uploaded into a qualitative software package NVivo 9 (QSR International Pty Ltd 2011) to assist with data management. Participant names were replaced with pseudonyms. Data was analysed thematically, to compare and contrast responses. The analyses drew upon relevant theory and themes, and were compared to the literature to determine if findings resonated with existing knowledge or made new contributions to the evidence.

# Qualitative RESULTS

---

The fifteen interviewees represented people from various stages of life, including a young adult living at home with family, both working and stay-at-home mothers, a young adult with an intellectual disability and retired or semi-retired people whose children had left home. Participants varied in age from 21 to 69 years, household characteristics and levels of food preparation responsibility and confidence. For all quotes presented, pseudonyms have been used to maintain participant anonymity.

## **PROGRAM EXPERIENCES AND EXPECTATIONS**

The decision to enrol in the Jamie's Ministry of Food program occurred at a time of significant change in the life circumstances for many participants. These included health issues, family changes, or financial difficulties. Many participants were seeking an opportunity for either self-improvement or respite from daily realities by enrolling in the program. Some were looking for a positive change in their life and saw the program as a starting step in this process. Others saw it as an avenue for help and assistance, something they were "needing" or an "outlet... to not think about what was going on at home". For some participants, life was particularly tough at the time of the initial interview and they saw the program as an opportunity to do something positive and as an outlet from their hardship. Participant circumstances evolved and changed during the evaluation period which often led to changes in their cooking roles. For example, retirement, moving house, being made redundant or working different or longer hours changed people's schedules and routines, which in turn impacted on their domestic cooking practices.

For the most part, the participants' expectations of the program were met, and in some cases, they were exceeded. For most participants, the ten-week program went by quickly and the allocated time was sufficient to learn the skills needed to prepare the meal for that week. There were obvious and expected social interactions within the class setting. Classes provided an opportunity to learn from other class members and program staff through discussion in an encouraging and positive way.

---

---

**“There was lots of discussion [about] what other people do... those of more experience they would come up with other scenarios and flavour combinations, you know...”** ~ Leah, mother in her 40’s

Participants were expressive and excited after completing the program. Many gave detailed description of the foods prepared. There was excitement about new foods, taste and flavours which they had tried.

**“I think that is the most unexpected thing... I want to try these [foods], to cook these things now whereas, like I said before I didn’t cook curries or stir-fries. I didn’t want to, yuck!”** ~ Katie, student in her 20’s

Overall, participants indicated they enjoyed the Jamie’s Ministry of Food program. It offered *“something new and exciting each week”*. This created excitement, enjoyment and anticipation about what would be cooked each week, thereby motivating participants to continue and to recommend the program to others.

**“I just loved it. And I tell everybody how much I loved it...”** ~ Barbara, semi-retired in her 50’s

In addition, the affordability of the Jamie’s Ministry of Food program was consistently a positive aspect of the program. The program was considered a “bargain” compared to other cooking classes. When asked how much they would be prepared to pay for the program, responses ranged from \$5 to \$20 per week. However, views differed, and for some, the average cost of \$10 per week was still a lot of money, and may compete with other weekly expenses. For the most part, the current cost of the program was considered value for money.

**“Ten dollars is like a cup of coffee for the week, a cup of coffee and a cake, so you get rid of the coffee and the cake...”** ~ Kaye, mother in her 30’s

---

---

## **BARRIERS AND FACILITATORS TO COOKING**

Cooking and eating attitudes, beliefs, knowledge and behaviours were explored to understand what hindered or helped their cooking experiences at home. Cooking enjoyment or lack of enjoyment played a major role in participant attitudes around cooking. For many, cooking was an enjoyable process which allowed opportunities to be creative by “creating something from nothing”. However, this creative process was only enjoyable under the right circumstances. Some did not enjoy cooking and yet it was an essential task, described by some participants as “a necessary evil”. Lack of cooking enjoyment stemmed from feelings of failure and linked strongly to other barriers such as lack of skills, confidence and time.

Participants reported lack of time as a barrier to cooking and also limited skills and knowledge which prevented quick meal preparation. Work, family and social commitments also impacted on the time available to cook. Many participants begrudged time spent cooking as it took them away from other activities that they preferred to do.

**“I don’t mind cooking but then if it doesn’t turn out right I think I have wasted all that time...”** ~ Leah, mother in her 40’s

Cooking confidence is an important aspect in the cooking process affecting skills, meal planning and food attitudes (27). At the outset, participants described a lack of confidence in their ability to cook, read recipes, prepare new foods, prepare food for others and prepare a healthy meal. Whilst participants had the ability to prepare a simple meal from scratch at home, they were limited by their lack of confidence to go beyond that basic level, which restricted their ability to prepare certain types of foods, extend their cooking repertoire, and their willingness to cook for others beyond their immediate family.

**“I’m confident in the meals that I do on a regular basis, umm if it’s something new I take hours.... ”** ~ Kaye, mother in her 30’s.



---

---

Not surprisingly new cooking skills and knowledge were gained through the program, which influenced cooking behaviours at home. All participants interviewed described learning something from the program. No matter what level of cooking skills the participant started from, everyone reported that they came away with something new. The program offered a number of tools and techniques which enabled participants to overcome cooking barriers. The course facilitated a number of ways to make cooking “easier and more practical”. Some indicated that use of the correct equipment made cooking easier. Participants explained how using sharper knives, buying new saucepans and new kitchen equipment had added enjoyment to their domestic cooking experience. The use of cookbooks was discussed by two participants who previously made no use of them. These two participants both discussed selecting recipes with their family and using the cookbooks as tools to prepare meals from scratch. There was also an improved sense of preparedness, with improved knowledge about meal planning, for example, having a stocked pantry, freezer and/or vegetable garden. Being prepared and having the skills and knowledge helped to anticipate cooking barriers.

**“We make up a lot of the dishes ahead of time and especially the pizza.... we put it in the freezer, the leftovers because then they can pull it out when I’m not there...”** ~ Leah, mother in her 40’s

**“I am going to make some stock on the weekend and make the pizza sauce, so it’s there in the freezer ready to go...”** ~ Rochelle, mother with no children living at home in 50’s.

**“If I flipped through a recipe book and I saw ingredients that I didn’t know or steps that I didn’t understand I would immediately just go not that one, whereas now if I read through it a bit more and [I can] kind of figure it out...”** ~ Katie, student in her 20’s

In contrast, one retired male participant felt that learning new knowledge at his age and situation was “probably a little bit too late”.

Another facilitator to cooking, gained by many participants as a result of the program, stemmed from feelings of accomplishment and achievement. They felt a sense of achievement by “passing” or completing the program and having hard evidence of what they had prepared each week.

**“That is what you got out of each evening; you would come back [home] and say well this is what I cooked”** ~ Peter, semi-retired in his 60’s

---

---

The opportunity to prepare a successful meal in class and take it home also allowed families to experiment with family food preferences.

**“Because there is nothing worse than if you spend half an hour, an hour cooking something and you dish it all up and you get to “I don’t like that can I have a sandwich. ” And you think well what was the point? If you are in a hurry or you are busy I don’t tend to go for something new, I just want something I know they are going to eat. So [the program] gave me that avenue before I invested the time at home.”**

~ Leah, mother in her 40’s

A sense of accomplishment was felt long after the program ended with participants indicating continued feelings of happiness and increased levels of support from others in their home.

**“My kids and my husband are encouraging me to try new things”**

~ Kaye, mother in her 30’s.

Feelings of resentment towards cooking dissipated, and for many, the cooking and eating process became more inclusive of other family members, and therefore more enjoyable.

**“You find it’s a little lonely task and everybody else is watching the news or doing something... and I’m stuck in the kitchen. How did that happen? Whereas now it’s more interactive and people are sort of appreciating it and wanting to do part of it”** ~ Leah, mother in her 40’s.

---

---

## UNEXPECTED OUTCOMES

In addition to changes in attitudes and behaviours around food and cooking, there were also a few accounts of broader unexpected outcomes. Some participants indicated they felt improvements in their general and emotional health. Examples of perceived changes to health included a belief that their skin was healthier, they felt more energetic, and they had a positive attitude towards healthy eating and physical activity. In addition, the Jamie's Ministry of Food program provided an opportunity to be a part of a group and to do something fun. Through inclusion and active learning, it provided an avenue for those who normally found socialising difficult.

**“I have had anxiety about social things for a long time and I have never liked it. That is why I like it at home. I am happy in my bubble, but I just kind of kicked myself up the bum a bit and went if you want to meet people and want to have fun go do things.... I did that and I did some other classes, and I have recently joined a gym for health reasons just to get fit and healthy and that was one of the things I would never have thought about in my wildest dreams...”** ~ Katie, student in her 20's

One participant, who at the time of the first interview was emerging from a period of mental illness, which had meant leaving employment and seeking professional help, reported an improved mental state after the program. Before the program she was not doing any cooking with this job falling to her husband during the time of her illness; however she felt eager to get back in the kitchen. This participant had the predetermined intention to cook more at home before beginning the program. After the program there was a remarkable improvement in her confidence and she expressed a renewed energy and interest in cooking. She had taken the initiative to prepare the family Christmas dinner, and was “looking forwards to what we are going to cook”. She indicated she felt ready to cook again and return to the workforce.

**“I cook most days....it's not a burden, it's pleasant.”**

~ Dolly, semi-retired grandmother

## QUALITATIVE SUMMARY

---

In summary upon completion of the program, all participants reported acquiring new cooking skills and knowledge. The course facilitated ways to make cooking easier and simpler thereby reducing the time taken to prepare meals. The process of cooking in class allowed participants to gain the confidence to experiment with family and personal food preferences by trying and experimenting with new foods in a safe environment. After completing the Jamie's Ministry of Food program, attitudes around cooking had changed for many. Cooking no longer felt like a chore and was considered a more enjoyable process. The program was seen as an opportunity to convert cooking into a positive experience through increased skills and efficiency and a broadened cooking repertoire.



# Discussion

---

---

## **IMPACTS AND OUTCOMES**

Overall, the results from both the quantitative and qualitative studies reflect positive and sustained impacts of Jamie's Ministry of Food Australia to equip participants with the knowledge, skills and confidence to cook, and to also change cooking, eating and purchasing behaviours towards a healthier diet. What is most telling about the results is the alignment of these positive and statistically significant findings to the primary aims, objectives and key messages that the program communicates about learning skills and building cooking confidence, cooking from scratch with fresh healthy ingredients, increasing vegetable intake and the production of nutritious meals on any budget. The inclusion of a control comparison group strengthens the likelihood that changes over time are attributable to the program itself and not to extraneous factors. Furthermore, the 6 month follow up provides evidence of the enduring impacts of the program on participants.

### **The key findings of this evaluation include:**

#### **Cooking confidence increased**

Cooking confidence has been associated with healthier cooking and eating behaviours (13, 28) and its promotion has been recommended as a strategy to improve fruit and vegetable consumption particularly in low income populations (29). The results overwhelmingly suggest that the program is successful in improving cooking confidence, as highlighted by all six cooking confidence measures showing a statistically significant increase ( $p < 0.001$ ) in the intervention group from baseline (T1) to post program (T2), which was sustained at 6 months post program (T3). This was not seen in the control group in any of the confidence measures. When the results were adjusted for age, gender and levels of employment both independently and all together, there was virtually no change in the confidence intervals and all results remained statistically significant ( $p < 0.001$ ) (results not shown).

---

---

The program puts great emphasis on building participant confidence to cook simple meals in a supportive and non-judgmental environment and to experience success to follow a simple recipe and have a meal turn out well.

**“[In class] everything you cook turned out. It was never a failure for anybody. There were some people who had skills and some people who didn’t have skills and they all seemed to manage a good outcome”** ~ Dolly, semi-retired grandmother in her 50’s.

### **Knowledge, attitudes and beliefs towards cooking and healthy eating improved**

The quantitative results showed small but positive and statistically significant increases in the intervention participants’ attitudes, knowledge and beliefs around healthy eating, particularly with respect to vegetables as tasty foods and fruit and vegetable consumption. Interestingly, knowledge of nutrition was relatively high in both control and intervention participants at baseline. In line with current thinking about mechanisms influencing behaviour change, knowledge alone is not a good predictor of behaviour change; having the skills and confidence to execute a behaviour is more likely to influence behaviour change (30).

A notable change was seen in participants’ beliefs that they could put together a healthy meal from scratch in 30 minutes; this significantly increased in the intervention group ( $p < 0.001$ ) from a baseline value in the “disagree” category (2.85) to the “agree” category (3.30) and was sustained at six months post program (3.31). As time is often described as a barrier to healthy cooking and eating (1, 30), this result suggests that the program is in part addressing this barrier to behaviour change.

**“I can cut up a bit better now and prepare things and it’s a bit quicker which makes it easier....”** ~ Leah, mother in her 40’s.

### **Cooking meals from basic ingredients and vegetable intake increased whereas take-away consumption decreased**

---

---

The focus of the program to encourage participants to cook using basic ingredients, to include vegetables or a salad with the main meal and to rely less on meals made outside of the home was, for the most, reflected in positive changes to cooking and eating behaviours over time. Statistically significant increases ( $P < 0.001$ ) in the intervention group between baseline and post program were found in the frequency of cooking the main meal from basic ingredients, consumption of vegetables with the main meal and a reduction in weekly take-away consumption although effect sizes were modest in all variables. These changes were not seen in the control group. While daily fruit consumption increased in the intervention group between baseline (1.65 serves per day) and post program (1.93 serves per day) and at 6 months post program (2.05 serves per day) there was no significant difference between the change over time in the control and intervention groups ( $p = 0.06$ ). Similarly, a small reduction in ready-made meal consumption was seen in the intervention group, but there was no significant difference in change over time between groups ( $p = 0.06$ ). Low baseline means of ready-made meal consumption in both control and intervention groups (~ 1 time per week) suggest that this type of meal consumption was not as common in the evaluation sample as has been reported elsewhere (16).

In addition to cooking confidence, the other primary outcome was an increase in participants' vegetable intake reinforced through recipe selection, messages embedded within the program and an emphasis on the importance of cooking balanced, healthy meals. Inadequate vegetable intake is of current public health concern in Australia given a declining trend in the proportion of Australians and specifically, Queenslanders who consume adequate vegetables (22, 24) coupled with the importance of vegetable consumption for prevention of coronary heart disease (31) and stroke (32). Based on data from the Queensland self-reported health status surveys of 2009-10 and 2012 (22, 24), mean daily vegetable intake in adults declined very slightly from 2.5 to 2.4 serves per day over this time. Baseline means for the total evaluation sample was 2.47 serves per day which suggests that the evaluation sample was a valid representation of the population from which it was drawn. The evaluation demonstrated that self-reported daily vegetable intake increased significantly in the intervention group by 0.52 serves per day (2.97 serves,

---

---

p<0.001) but not in the control group, and there was a significant difference in change over time between groups (P<0.001). Six months post intervention, daily vegetable intake increased slightly to 3.05 serves per day (0.60 serves increase from baseline) in the intervention group showing that the program effect was sustained even long after the program had ceased. These results remained significant at the p<0.001 level when adjusted for age, gender, levels of employment status and all covariates together. Results of statistical comparisons between the mean vegetable intake at six months post program for intervention participants and the mean Queensland state-wide vegetable intake demonstrated a statistically significant difference of 0.74 serves per day (SD 0.09, p<0.001). This is an important finding given published risk reduction estimates for diseases such as a 7% risk reduction of coronary heart disease and a 3% risk reduction of stroke by increasing one serve a day of vegetable intake (31, 33). Furthermore, this increase goes against current population dietary intake trends.

**“I have introduced new veggies that I wouldn't have used to touch because I was probably scared of using them because I didn't know how to use them properly I think that is the main problem”**

~ Kaye, mother in her 30's.

**“You are a little bit more conscience of it now.... one example would be Mum and Dad did salmon patties last night and if that was what they bought home a few months ago we would have just eaten [them] like that. Because something [was] bought home [and] we are all lazy after a day at work. But last week I came home and made three big plates of salad and then so we had that with them so we got more out of the fridge now and I think it is just a different mindset of how to have dinner...”** ~ Katie, student in her 20's.

### **Enjoyment, satisfaction and social connectedness around cooking and eating increased.**

Enjoyment of cooking and social connectedness around cooking and eating have been shown to be important predictors of healthy cooking and eating behaviours(1). Jamie's Ministry of Food emphasises the importance of finding joy in cooking and encouraging cooking and eating to be a shared



---

---

experience. While the program increased individuals' personal enjoyment and satisfaction of cooking, it did not significantly impact on the frequency of eating dinner together ( $p=0.13$ ) or eating dinner in front of the TV ( $p=0.17$ ). There was a small but statistically significant increase however in the frequency of eating dinner at the dinner table in the intervention group in comparison to the control group ( $p=0.01$ ) from baseline to program completion. The following quote is an example of the perceived social benefits of eating.

**"...that was the way it was... there is always conversation around the meal table, family time, conversation around the table [about what's been happening... it's more than the food...]"** ~ Jenny, retired grandmother in her 60's.

**Expenditure on a healthier diet increased whilst overall weekly food expenditure remained unchanged.**

Total weekly household food and drink expenditure did not change significantly over time or between groups; however changes in weekly spending on take-away and fruit and vegetables did change over time. A statistically significant decrease of \$3.31 in the weekly take-away / fast food expenditure in the intervention group (representing a 25% reduction in expenditure from a baseline value of approximately \$13) was found between baseline and post intervention which was not seen in the control group. At 6 months post program, there was a further decrease in take-away food expenditure to \$9.14.

While total fruit and vegetable expenditure increased in the intervention group between baseline and follow up by \$2.50 (representing a 12% increase from baseline), the change over time was not significantly different from the control group ( $p=0.10$ ). However the results appear to be internally consistent with the magnitude of weekly expenditure increase on fruit and vegetables being similar to the decrease in weekly expenditure in take-away food, thereby resulting in no change in total food and drink expenditure. This is positive and also reflects the reported behaviour changes related to a reduction in take-away consumption and an increase in vegetable intake as a result of the program.

---

---

Complementing these changes in food purchasing behaviours, participants in the intervention group reported an increase in the belief that they could prepare a meal from basics that is low in price from baseline to post program which was sustained at 6 months post program ( $p < 0.001$ ). This indicates that the program taught participants to purchase and cook basic meals within their own budget constraints.

**“Normally if I was having Thai Green [Curry] or Sizzling Beef we would get takeaway.... Whereas now I think well that’s easy... and it’s so much nicer. And the pizza bases normally I just go to the shop and buy pizza bases, but then they were so easy to make and it was so yummy...”** ~ Leah, mother in her 40’s.

### **Some positive improvements in health outcomes were found**

Jamie’s Ministry of Food focuses on skills acquisition, knowledge, confidence and behaviour change. However, the evaluation also explored more downstream health related outcomes such as psychological benefits (improvements in global self-esteem), increased general feelings of health and wellbeing (perceived general health status) and changes in weight status (as measured by body mass index (BMI)). While the program does not claim to target these health outcomes in the first instance, the results indicate a positive significant increase in intervention participants’ perceived general health status from a baseline mean value in the “fair” category (2.77) to a post program mean value in the “good” category (3.11) which was sustained at 6 months post program (3.24). Mean global self-esteem also shifted positively in the intervention group from baseline to post program although the shift was small and the mean self-esteem score remained in the “normal” category as it was at baseline. This is an interesting finding given recent evidence of the negative association between higher fruit and vegetable intake and lower odds of depression (34) suggesting that a healthy diet potentially plays an important role in the prevention of depression. BMI did not change in either control or intervention group over time (interaction effect ( $p = 0.76$ )) however, given recent evidence that the bodyweight response to a change of energy intake is slow (35), it is not surprising that BMI did not change over the evaluation period.

---

---

**“I have noticed that my skin feels healthier... I seem to have more energy and I thought maybe that is because we have cut out all the extra crap or all the added preservatives and stuff like [that] since now we are going healthy, like the healthy option with the fresh food... Since we have cut out all the bottle jars and stuff we have noticed, both of us seem to have more energy and even the kids have more energy...”**

~ Kaye, mother in her 30's

### **STRENGTHS AND LIMITATIONS OF THE STUDY**

The evaluation used a mixed methods approach to employ the strengths of both research paradigms to gain both quantification of impacts but also a deeper understanding of the mechanisms at play that influenced change. The qualitative study used a longitudinal design which allowed a greater understanding of how participants from varying backgrounds and stages of life experienced the program and how it influenced them over time.

The quantitative study achieved large sample sizes in comparison to other evaluations of cooking skills programs (18) and utilised a control group and 6 months follow up to explore the sustainability of effects. The questionnaire which included validated measures (36) and measures used in population health surveys (22) for ease of comparison was written in plain English and was well completed. This is important in evaluations of this nature given that previous studies have identified participant burden as a barrier to evaluation recruitment and retention (15). Analysis performed used a mixed modelling approach enabled all data to be used and adjustment for potential confounders to be undertaken.

Limitations of the quantitative study include the lack of randomisation for allocation into control and intervention groups leading to some differences at baseline between groups in terms of age, gender and employment status. However, it was not deemed acceptable to randomise in this instance given that Jamie's Ministry of Food encourages participation with family and friends and randomisation would potentially have prevented these shared experiences. Whilst a six month control comparison would have been the ideal, it was not considered acceptable to either implementers or participants to make wait listed participants wait a further six months before entry into their program.

# Conclusion

---

---

This evaluation has demonstrated that Jamie's Ministry of Food Ipswich has been successful in achieving many positive personal, dietary and potentially health impacts for participants. It has achieved this by simultaneously influencing a multitude of factors that impact on cooking and eating behaviours towards a healthier diet. These benefits, for the most, were sustained at six months after the program ended, which suggests that the program has lasting effects on program participants. Based on these findings, Jamie's Ministry of Food should therefore be considered as a potential component in any group of interventions targeting healthy eating.

# Acknowledgements

---

---

The authors of this report acknowledge, Chief Executive Officer, Alicia Peardon and all the staff of The Good Foundation (including staff at the Ipswich site) for assisting with the implementation of the evaluation, and to all participants who kindly offered their time to complete the evaluation questionnaires. The authors also wish to acknowledge Catherine Keating of Deakin University and Christina Stubbs of Queensland Health for early input into research design as well as Dr John Reynolds and Dr Mohammadreza Mohebbi of Deakin University, for statistical support. Moodie and Swinburn are researchers within an NHMRC Centre for Research Excellence in Obesity Policy and Food Systems (APP1041020).



# References

---

1. Soliah LAL, Walter JM, Jones SA. Benefits and Barriers to Healthful Eating: What Are the Consequences of Decreased Food Preparation Ability? *Am J Lifestyle Med.* 2011;6(2):152-8.
2. Illman MW, Rifas-Shiman SL, Frazier AL, Rockett HR, Camargo CA, Jr, Field AE, et al. Family dinner and diet quality among older children and adolescents. *Arch Fam Med.* 2000;9(3):235-40.
3. Woodruff SJ, Hanning RM, McGoldrick K, Brown KS. Healthy eating index-C is positively associated with family dinner frequency among students in grades 6-8 from Southern Ontario, Canada. *Eur J Clin Nutr.* 2010;64(5):454-60.
4. Burns C, Jackson M, Gibbons C, Stoney RM. Foods prepared outside the home: association with selected nutrients and body mass index in adult Australians. *Public Health Nutr.* 2002;5(3):4418.
5. Jaworowska A, Blackham T, Stevenson L, Davies IG. Determination of salt content in hot takeaway meals in the United Kingdom. *Appetite.* 2012;59(2):517-22.
6. Jaworowska A, Blackham T, Davies IG, Stevenson L. Nutritional challenges and health implications of takeaway and fast food. *Nutr Rev.* 2013;71(5):310-8.
7. Guthrie JF, Lin BH, Frazao E. Role of food prepared away from home in the American diet, 1977-78 versus 1994-96: changes and consequences. *J Nutr Educ Behav.* 2002;34(3):140-50.
8. Prentice AM, Jebb SA. Fast foods, energy density and obesity: a possible mechanistic link. *Obes Rev.* 2003;4(4):187-94.
9. Odegaard AO, Koh WP, Yuan JM, Gross MD, Pereira MA. Western-style fast food intake and cardiometabolic risk in an Eastern country. *Circulation.* 2012;126(2):182-8.

- 
- 
10. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2012;380(9859):2224-60.
  11. Engler-Stringer R. Food, cooking skills, and health: a literature review. *Canadian Journal Of Dietetic Practice And Research: A Publication Of Dietitians Of Canada = Revue Canadienne De La Pratique Et De La Recherche En Dietetique: Une Publication Des Dietetistes Du Canada*. 2010;71(3):141-5.
  12. Caraher M, Dixon P, Lang T, Carr-Hill R. The state of cooking in England: the relationship of cooking skills to food choice. *British Food Journal*. 1999;101(8):590-609.
  13. Hartmann C, Dohle S, Siegrist M. Importance of cooking skills for balanced food choices. *Appetite*. 2013;65(0):125-31.
  14. Engler-Stringer R, Berenbaum S. Collective Kitchens in Canada: A Review of the Literature. *Can J Diet Prac Res*. 2005;66(4):246-51.
  15. Wrieden WL, Anderson AS, Longbottom PJ, Valentine K, Stead M, Caraher M, et al. The impact of a community-based food skills intervention on cooking confidence, food preparation methods and dietary choices - an exploratory trial. *Public Health Nutr*. 2006;10(2):203-11.
  16. Garcia AL, Vargas E, Lam PS, Smith F, Parrett A. Evaluation of a cooking skills programme in parents of young children - a longitudinal study. *Public Health Nutr*. 2013:1-9.
  17. Flynn MM, Reinert S, Schiff AR. A Six-Week Cooking Program of Plant-Based Recipes Improves Food Security, Body Weight, and Food Purchases for Food Pantry Clients. *J Hung & Env Nutr*. 2013;8(1):73-84.
  18. Reicks M, Trofholz AC, Stang JS, Laska MN. Impact of Cooking and Home Food Preparation Interventions Among Adults: Outcomes and Implications for Future Programs. *J Nutr Educ Behav*. 2014.
  19. Queensland Government Statstician's Office. Regional Profiles Summary - Ipswich City Local Government Area (LGA) 2014 [cited 2014 April 15]. Available from: <http://statistics.oesr.qld.gov.au/qld-regional-profiles>.

- 
- 
- 20.** Australian Bureau of Statistics. Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia - Data only Australian Bureau of Statistics.,, 2006 Contract No.: Cat. No. 2033.0.55.001.
  - 21.** Australian Bureau of Statistics. 2011 Census Quick Stats: Ipswich (c) 2013 [updated 28/03/2013; cited 2014 March 13]. Available from: [http://www.censusdata.abs.gov.au/census\\_services/getproduct/census/2011/quickstat/LGA33960](http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/LGA33960).
  - 22.** Queensland Health. Self-Reported Adult Health Status: Queensland. 2009 Survey Report. Brisbane: Queensland Health 2009.
  - 23.** Queensland Health. Self- reported Health Status 2009-2010: Local government Area Summary Report. Brisbane 2011.
  - 24.** Queensland Health. Self Reported Health Status 2012: Survey report. Brisbane: 2012.
  - 25.** Backholer K, Mannan HR, Magliano DJ, Walls HL, Stevenson C, Beauchamp A, et al. Projected socioeconomic disparities in the prevalence of obesity among Australian adults. *Aust N Z J Public Health.* 2012;36(6):557-63.
  - 26.** Flego A, Herbert J, Gibbs L, Swinburn B, Keating C, Waters E, et al. Methods for the evaluation of the Jamie Oliver Ministry of Food program, Australia. *BMC Public Health.* 2013;13:411.
  - 27.** Stead M, Caraher M, Wrieden W, Longbottom P, Valentine K, Anderson A. Confident, fearful and hopeless cooks: Findings from the development of a food-skills initiative. *British Food Journal.* 2004;106(4):274-87.
  - 28.** Brunner TA, van der Horst K, Siegrist M. Convenience food products. Drivers for consumption. *Appetite.* 2010;55(3):498-506.
  - 29.** Winkler E, Turrell G. Confidence to Cook Vegetables and the Buying Habits of Australian Households. *Journal of the American Dietetic Association.* 2010;110(5, Supplement 1):S52-S61.
  - 30.** Morin P, Demers K, Turcotte S, Mongeau L. Association between perceived self-efficacy related to meal management and food coping strategies among working parents with preschool children. *Appetite.* 2013;65:43-50.

- 
- 
- 31.** Dauchet L, Amouyel P, Hercberg S, Dallongeville J. Fruit and vegetable consumption and risk of coronary heart disease: a meta-analysis of cohort studies. *J Nutr.* 2006;136(10):2588-93.
  - 32.** Hariri M, Darvishi L, Maghsoudi Z, Khorvash F, Aghaei M, Iraj B, et al. Intakes of Vegetables and Fruits are Negatively Correlated with Risk of Stroke in Iran. *Int J Prev Med.* 2013;4(Suppl 2):S300-5.
  - 33.** Dauchet L, Amouyel P, Dallongeville J. Fruit and vegetable consumption and risk of stroke: a meta-analysis of cohort studies. *Neurology.* 2005;65(8):1193-7.
  - 34.** McMartin SE, Jacka FN, Colman I. The association between fruit and vegetable consumption and mental health disorders: evidence from five waves of a national survey of Canadians. *Prev Med.* 2013;56(3-4):225-30.
  - 35.** Hall KD, Sacks G, Chandramohan D, Chow CC, Wang YC, Gortmaker SL, et al. Quantification of the effect of energy imbalance on bodyweight. *Lancet.* 2011;378(9793):826-37.
  - 36.** Barton KL, Anderson AS, Wrieden WL. Validity and reliability of a short questionnaire for assessing impact of cooking skills interventions. *J Hum Nutr Diet.* 2011.

