



FAMILY-FOCUSED MANAGEMENT
OF OVERWEIGHT IN
PRE-PUBERTAL CHILDREN –
A RANDOMISED CONTROLLED TRIAL

The Healthy Eating and Lifestyle
through Positive Parenting (HELPP)
study



Rebecca K Golley
BSc(Hons), B Nut Diet



Department of Nutrition and Dietetics,
School of Medicine, Flinders University



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Table of Contents

VOLUME 1

| | |
|---|-----------|
| TABLE OF CONTENTS..... | 2 |
| THESIS SUMMARY..... | 7 |
| DECLARATION..... | 9 |
| ACKNOWLEDGEMENTS..... | 10 |
| ABBREVIATIONS..... | 12 |
| LIST OF TABLES AND FIGURES..... | 14 |
| CHAPTER 1 WEIGHT MANAGEMENT IN CHILDREN UNDER TEN YEARS OF AGE – A REVIEW OF THE EVIDENCE..... | 22 |
| 1.1 Introduction..... | 22 |
| 1.2 Defining overweight and assessing adiposity change..... | 24 |
| 1.2.1 Defining overweight and adiposity change in adults..... | 24 |
| 1.2.2 Defining overweight and adiposity change in children..... | 24 |
| 1.3 Prevalence and trends of childhood overweight..... | 27 |
| 1.4 The consequences of childhood overweight..... | 28 |
| 1.4.1 Introduction..... | 28 |
| 1.4.2 Persistence into adulthood..... | 29 |
| 1.4.3 Metabolic consequences and the metabolic syndrome..... | 30 |
| 1.4.4 Psychosocial consequences..... | 32 |
| 1.4.5 Health-related quality of life..... | 34 |
| 1.4.6 Other consequences of overweight and obesity..... | 35 |
| 1.4.7 Summary - the health consequences of overweight in childhood..... | 35 |
| 1.5 The aetiology of childhood overweight..... | 36 |
| 1.5.1 Introduction..... | 36 |
| 1.5.2 Genes..... | 36 |
| 1.5.3 Behavioural and environmental influences on childhood overweight..... | 37 |
| 1.5.4 Risk factors for childhood overweight..... | 43 |
| 1.5.5 Summary – the aetiology of childhood overweight..... | 45 |
| 1.6 Management of childhood overweight..... | 45 |
| 1.6.1 Introduction..... | 45 |
| 1.6.2 Lessons from adult weight management..... | 46 |

| | |
|---|------------|
| 1.6.3 The evidence-base for management of overweight in children..... | 51 |
| 1.6.4 What is the best strategy to reduce energy intake during child weight management?..... | 53 |
| 1.6.5 What is the best strategy to increase energy expenditure during child weight management?..... | 62 |
| 1.6.6 What is the best strategy to facilitate achievement of energy moderating during child weight management?..... | 66 |
| 1.6.7 Does the format of and frequency of contact during of child weight management influence effectiveness?..... | 72 |
| 1.6.8 Use of medication and surgery in child weight management..... | 74 |
| 1.6.9 Broader health outcomes and program evaluation of child weight management programs..... | 75 |
| 1.7 Child weight management – areas for further research..... | 77 |
| 1.7.1 Evidence-based, age-appropriate child weight management..... | 77 |
| 1.7.2 Improving the evidence base..... | 80 |
| 1.8 Thesis aims and hypothesis..... | 81 |
| 1.8.1 Thesis research question(s) and general aim..... | 81 |
| 1.8.2 Specific thesis aims..... | 82 |
| 1.8.3 Thesis hypothesis..... | 82 |
| CHAPTER 2 STUDY METHODOLOGY..... | 83 |
| 2.1 Introduction..... | 83 |
| 2.2 Overview of the intervention programs..... | 83 |
| 2.2.1 Child behaviour modification and family support component..... | 84 |
| 2.2.2 Nutrition component..... | 85 |
| 2.2.3 Physical activity component..... | 88 |
| 2.3 Study Design..... | 89 |
| 2.3.1 Design..... | 89 |
| 2.3.2 Target population..... | 89 |
| 2.3.3 Overview of study outcomes..... | 90 |
| 2.4 Study procedures..... | 95 |
| 2.4.1 Recruitment..... | 95 |
| 2.4.2 Eligibility screening..... | 95 |
| 2.4.3 Consent..... | 95 |
| 2.4.4 Randomisation..... | 96 |
| 2.4.5 Delivery of the interventions..... | 96 |
| 2.4.6 Data Collection..... | 98 |
| 2.5 Data analysis..... | 107 |
| 2.5.1 Sample size calculation..... | 107 |
| 2.5.2 Data handling and management..... | 107 |
| 2.5.3 Data Preparation..... | 108 |
| 2.5.4 Primary analysis..... | 109 |

| | |
|--|-----|
| 2.5.5 Secondary analysis – per protocol..... | 111 |
|--|-----|

CHAPTER 3 PRIMARY STUDY RESULTS – CHANGES IN ADIPOSITY 112

| | |
|--|------------|
| 3.1 Flow of participants through the study..... | 112 |
| 3.1.1 Subject enrolment..... | 112 |
| 3.1.2 Group allocation..... | 113 |
| 3.1.3 Intervention session and follow up attendance..... | 113 |
| 3.2 Participant characteristics at baseline..... | 114 |
| 3.2.1 Family and sociodemographic characteristics..... | 114 |
| 3.2.2 Child characteristics..... | 114 |
| 3.2.3 Characteristics by recruitment cohort and study site..... | 115 |
| 3.3 Primary study outcome – overall adiposity..... | 115 |
| 3.3.1 BMI z score by intention to treat analysis..... | 115 |
| 3.3.2 BMI z score by gender..... | 116 |
| 3.3.3 BMI z score by per protocol analysis..... | 116 |
| 3.4 Truncal adiposity..... | 117 |
| 3.4.1 Waist circumference z score by intention to treat analysis..... | 117 |
| 3.4.2 Waist circumference and waist circumference z score by per protocol analysis | 117 |
| 3.5 Discussion..... | 118 |
| 3.5.1 Key findings..... | 118 |
| 3.5.2 Gender differences..... | 121 |
| 3.5.3 Study power and clinical relevance..... | 122 |
| 3.5.4 Potential bias..... | 124 |
| 3.5.5 Conclusion..... | 126 |

CHAPTER 4 SECONDARY STUDY RESULTS - GROWTH, METABOLIC PROFILE AND PSYCHOSOCIAL HEALTH..... 127

| | |
|---|------------|
| 4.1 Growth..... | 127 |
| 4.2 Metabolic profile..... | 128 |
| 4.2.1 Metabolic data available for analysis..... | 128 |
| 4.2.2 Baseline metabolic profile..... | 128 |
| 4.2.3 Lipids over time by study group..... | 128 |
| 4.2.4 Blood pressure over time by study group..... | 129 |
| 4.2.5 Endocrine outcomes over time by study group..... | 129 |
| 4.2.6 Prevalence of metabolic risk factors and metabolic syndrome 12 months after commencing the study..... | 129 |
| 4.3 Body size dissatisfaction..... | 129 |
| 4.3.1 Validation of the children’s body image scale (CBIS) in overweight children | 129 |
| 4.3.2 Body size dissatisfaction of study children at study baseline..... | 130 |

| | | |
|------------------|---|------------|
| 4.3.3 | Body size satisfaction by time and study intervention group..... | 131 |
| 4.4 | Parent reported health-related quality of life (HR-QOL)..... | 131 |
| 4.4.1 | Baseline HR-QOL..... | 131 |
| 4.4.2 | HR-QOL between groups at 6 and 12 months..... | 132 |
| 4.4.3 | HR-QOL over time..... | 132 |
| 4.5 | Discussion..... | 133 |
| 4.5.1 | Growth..... | 133 |
| 4.5.2 | Metabolic health..... | 134 |
| 4.5.3 | Body dissatisfaction..... | 137 |
| 4.5.4 | Physical, psychosocial and family health..... | 139 |
| 4.5.5 | Conclusion..... | 142 |
| CHAPTER 5 | STUDY PROCESS AND IMPACT EVALUATION..... | 143 |
| 5.1 | Introduction..... | 143 |
| 5.2 | Process evaluation..... | 143 |
| 5.2.1 | Program attendance..... | 143 |
| 5.2.2 | Parent satisfaction..... | 144 |
| 5.3 | Impact Evaluation..... | 146 |
| 5.3.1 | Parent reported lifestyle changes made during the study..... | 146 |
| 5.3.2 | Child health behaviours..... | 148 |
| 5.3.3 | Parental perceived sense of competency..... | 149 |
| 5.3.4 | Parental weight status..... | 150 |
| 5.4 | Discussion..... | 150 |
| 5.4.1 | Process evaluation..... | 151 |
| 5.4.2 | Impact evaluation..... | 152 |
| 5.4.3 | Potential bias..... | 156 |
| 5.4.4 | Conclusion..... | 158 |
| CHAPTER 6 | GENERAL DISCUSSION..... | 159 |
| 6.1 | Overview..... | 159 |
| 6.2 | Key findings and interpreting the results..... | 160 |
| 6.2.1 | Key findings across outcomes..... | 160 |
| 6.2.2 | Interpreting the outcomes: a consistent pattern..... | 161 |
| 6.3 | Study strengths and limitations..... | 164 |
| 6.3.1 | Study strengths..... | 164 |
| 6.3.2 | Study limitations..... | 167 |
| 6.4 | Potential bias and study generalisability..... | 170 |
| 1.5 | Implications for practice and future directions..... | 171 |
| 6.3.3 | Implications for practice..... | 171 |

| | |
|--|------------|
| 6.3.4 Future directions..... | 173 |
| 6.4 Conclusion..... | 177 |
| TABLE OF CONTENTS – VOLUME 2..... | 179 |
| TABLES AND FIGURES CHAPTER 1..... | 184 |
| TABLES AND FIGURES CHAPTER 2..... | 205 |
| TABLES AND FIGURES CHAPTER 3..... | 214 |
| TABLES AND FIGURES CHAPTER 4..... | 228 |
| TABLES AND FIGURES CHAPTER 5..... | 242 |
| REFERENCES..... | 254 |
| APPENDIX 1 EXAMPLE OF THE WRITTEN RESOURCES FOR THE PARENTING PLUS INTENSIVE LIFESTYLE EDUCATION GROUP..... | 276 |
| Facilitators Checklist - HELPP Lifestyle Support Program..... | 277 |
| Parent handout – parenting plus intensive lifestyle education group..... | 280 |
| APPENDIX 2 PAMPHLET PROVIDED TO THE PARENTING ALONE AND WAITLISTED CONTROL STUDY GROUPS..... | 283 |
| APPENDIX 3 EXAMPLE OF THE ACTIVITY SESSIONS CHILDREN IN THE PARENTING PLUS INTENSIVE LIFESTYLE EDUCATION STUDY GROUP..... | 286 |
| APPENDIX 4 VALIDATION OF A TOOL TO ASSESS FOOD GROUP INTAKE IN 5-10 YEAR OLD CHILDREN..... | 288 |
| APPENDIX 5 DATA COLLECTION SHEETS..... | 290 |
| Study eligibility screening form..... | 290 |
| Anthropometric data collection sheet..... | 292 |
| Parent completed demographic, psychosocial and health behaviour questionnaire..... | 294 |
| Child Body Image Scale..... | 315 |

Satisfaction questionnaire.....319

**APPENDIX 6 PAPERS, ABSTRACTS AND CONFERENCE PRESENTATIONS
ARISING FROM THIS THESIS.....321**

Papers.....321

Abstracts.....321

Conference Presentations.....321

Thesis Summary

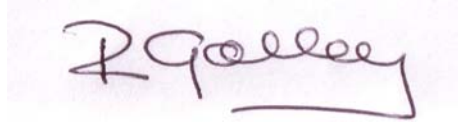
Over a quarter of children and two thirds of adults in Australia are overweight, with these estimates reflecting global trends. The literature review in Chapter 1 highlights that treatment of childhood overweight is an important part of the public health approach required to address the obesity epidemic. Energy moderation, behaviour modification and family support are the cornerstones of treatment of childhood overweight. However the evidence to guide best practice is limited, with a call being made for well designed studies to inform age-appropriate effective, long term child weight management. Studies are needed in a range of populations and to assess a range of health outcomes. This thesis tested the hypothesis that, pre-pubertal children whose parents participate in a parent-led, family-focused child weight management intervention comprising parent skills training and intensive lifestyle education will have adiposity, metabolic profiles and indicators of physical and psychosocial functioning after 12 months that are a) improved compared to children wait listed for intervention and b) no different to children whose parents participate in parenting skills training alone (without intensive lifestyle education).

Methods of the randomised controlled trial undertaken with 111 overweight, pre-pubertal 6-9 year olds to test this hypothesis are detailed in Chapter 2. Parents were defined as the agents of change, responsible for attending intervention sessions and implementing family-focused lifestyle change to support child weight management. Two interventions, both utilising parenting skills training, but differing in the presence or absence of intensive lifestyle education were compared to a group waitlisted for intervention with a brief pamphlet. Program effectiveness was defined in terms of adiposity together with broader health and evaluation outcomes.

Chapter 3 describes the study population, their flow through the study, the primary outcome BMI z score and waist circumference z score. With parenting plus intensive lifestyle education there was a 10% reduction in BMI z score over 12 months. However this was not statistically different to the 5% reduction observed with parenting alone or intervention waitlisting. There was a significant reduction in waist circumference between baseline and 12 months with parenting alone and parenting plus lifestyle education, but not waitlisting. There was a group, time and gender interaction, with boys receiving intervention having greater reductions in adiposity. In determining intervention effectiveness, growth, metabolic profile and psychosocial outcomes are presented in Chapter 4. While there were limited improvements in metabolic profile and body dissatisfaction, significant improvements were observed in parent-perceived HR-QOL relating to psychosocial and family functioning. Improvements were confined to the intervention groups, parenting plus lifestyle education more than parenting alone. Chapter 5 presents the study process and impact evaluation. Parents were satisfied with the program and reported that it provided the type of help they wanted. Personal, rather than program factors such as work and family commitments limited intervention attendance to 60%. Child health behaviours and parental weight status show positive change in all groups, but favour intervention. Chapter 6 highlights key findings, study strengths/limitations and areas for further research. In conclusion, a parent-led family-focused intervention utilising parenting skills training and healthy family lifestyle is a promising intervention for young overweight children.

Declaration

'I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.'

A handwritten signature in purple ink that reads "R Golley". The signature is written in a cursive style with a horizontal line underneath the name.

Rebecca K Golley

December 2005

The conception and design of the RCT reported in the thesis was undertaken before I commenced my PhD candidature, as part of a funding proposal for a multi-site RCT. Partial funding was secured from the Australian Health Management Group Assistance to Health and Medical Research Fund which enabled the RCT to be undertaken in Adelaide only as a PhD project. I adapted the study design to delivery at one site, developed the nutrition component of the study interventions, adapted the parenting component of the study interventions, assisted with obtaining ethical approval, developed study protocols and procedures, recruited subjects, co-ordinated subject eligibility screening, delivered the study interventions (apart from physical activity component) and co-ordinated outcome measurements by a blinded assessor. In consultation with my supervisors and a statistician I developed the study analysis plan and I performed the data entry and analysis. I designed and performed the secondary analysis of the National Nutrition Survey data and developed the evidence-based food-based recommendations underpinning the study interventions (chapter 2, appendix 6). I designed and performed the baseline analysis for the purposes of Metabolic Syndrome definition comparison (chapter 2, appendix 6). I took a leadership role in the preparation of all manuscripts arising from the study. The thesis study (HELPP) also formed the pilot work for a successful National Health and Medical Research Council grant for a multi-site study (PEACH) undertaken in Sydney and Adelaide from 2003.'

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Assoc Prof Lynne Daniels and Dr Anthea Magarey conceived the original study idea, and I thank them for the opportunity to undertake my thesis in this challenging area. I have appreciated the faith, independence and collegueship you both have extended me, blended perfectly with endless expertise and nurturing guidance. This unique blend of supervision qualities has facilitated my growth in research, dietetic and academic life. Special thanks to Professor Louise Baur, Assoc Prof Kate Steinbeck and Dr Nicola Spurrier for their support, advice and collegueship during my candidature.

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I need to make special mention of the contributions of the following groups and individuals without which HELPP could not have succeeded. Thanks to; the FMC media unit for promoting media coverage of the study; Jane Bowen, Rochelle Kuhn and Kate Wood assistance with recruitment of cohorts 3 and 4, and conducting the dietary assessment tool validation; to Dr David Lyons, Dr David Everett, Dr Nicola Spurrier, Dr Brian Coppin and Dr David Thomas for screening subjects; Michelle Howard and Kevin Duffy for enabling us to conduct the study at the Women's Children's Hospital (WCH); I am indebted to Dr Anthea Magarey for all the (early morning) subject measurements to maintain assessor blinding and to Heather Garreffa and Judy Beltess for their expertise in collecting paediatric blood samples; the Division of Laboratory Medicine, WCH, Adelaide and Diagnostic Laboratory, Department of Endocrinology Royal Prince Alfred Hospital, Sydney for blood analysis; Ms Sarah Garnett and Ms Margie Gruca, The Children's Hospital at Westmead for access to their waist circumference z-score calculation program; Professor Kevin Norton and Max Martin for the development of the physical activity program and Ross Bament,

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Thank you to my colleagues and friends in the Department of Nutrition and Dietetics, Flinders University. I have felt a welcome and valued member of the department and have appreciated your support. I also need to acknowledge the friendship and support of my fellow PhD candidates, Michelle Miller, Rebecca Haigh, Jane Bowen - it was always reassuring to know I wasn't alone.

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Last but not least, to the 111 'HELPP' families, without whom none of this could have been possible. Credit must be given for your dedication to your child's health and willingness to try a new family-focused approach and participate in research. Many thanks for your early morning attendance to measurement sessions and children's braveness in providing a blood sample. I wish you all the best in the years ahead.

Abbreviations

| | |
|---------|--|
| AGHE | Australian Guide to Healthy Eating |
| BF | Body fat |
| BM | Body mass |
| BMI | Body mass index |
| BT | Behaviour therapy (behaviour modification) |
| BW | Body weight |
| C | Child |
| CBIS | Child body image scale |
| CHQ | Child health questionnaire |
| CI | Confidence interval |
| CONSORT | CONsolidated Statement Of Reporting Trials |
| CVD | Cardiovascular disease |
| EGIR | European Group for the Study of Insulin Resistance |
| FFM | Fat free mass |
| FMC | Flinders Medical Centre |
| FMS | Fundamental Movement skills |
| GI | Glycaemic index |
| HDL-C | High density lipoprotein cholesterol |
| HELPP | Health Eating and Lifestyle through Positive Parenting |
| HR-QOL | Health related quality of life |
| HT | Hypertension |
| IOTF | International obesity task force |
| LCD | Low calorie diet |
| LDL-C | Low density lipoprotein cholesterol |
| LFD | Low fat diet |
| MS | Metabolic Syndrome |
| NCEP | National Cholesterol Education Program |
| NHANES | National Health, Nutrition and Exercise Survey |
| NHMRC | National Health and Medical Research Council |
| NR | Non-restricted |
| NS | Not statistically significant |

| | |
|-----------------------|--|
| OR | Odds ratio |
| P | Parent |
| P+DA | Parenting skills training plus intensive lifestyle education |
| P | Parenting skills training alone |
| PAR™ | Planned activities routine |
| PS | Problem solving |
| PSMF | Protein sparing modified fast |
| PSOC | Parents sense of competency |
| R | Restricted |
| RCT | Randomised controlled trial |
| S/D-BP | Systolic/Diastolic blood pressure |
| SD | Standard deviation |
| SEIFA | Socio-Economic Index for Areas |
| SES | Socioeconomic status |
| SPSS | Statistical Package for the Social Sciences |
| TC | Total cholesterol |
| TG | Triglycerides |
| TLD | Traffic light diet |
| Triple P [®] | Positive Parenting Program [®] |
| UK | United Kingdom |
| US | United States of America |
| VLCD | Very low calorie diet |
| WCH | Women's and Children's Hospital |
| WHO | World Health Organisation |
| WLC | 12 month wait listed control |
| %O'WT | Percent overweight |

List of Tables and figures

Table 1.1 The health consequences associated with childhood overweight by relative prevalence

Table 1.2 Prevalence rates of the Metabolic Syndrome (MS) in adults and children

Table 1.3 Effectiveness of dietary approaches for adult weight management versus no treatment or each other

Table 1.4 Overview of behaviour modification strategies used in weight management programs

Table 1.5 Features of the Family Behavioural Weight Management Program which has been published extensively by Epstein and colleagues

Table 1.6 Summary of the National Health and Medical Research Council recommendations for conventional treatment in the Clinical Practice Guidelines for Management of Overweight and Obesity in Children and Adolescents

Table 1.7 Dietary strategies used to moderate energy intake for weight management in children

Table 1.8a Summary of studies using a specified energy intake and quantitative dietary approach for child weight management

Table 1.8b Summary of studies using a specified energy intake and semi-quantitative dietary approach for child weight management

Table 1.8c Summary of studies using a child or family healthy eating dietary approach for child weight management

Table 1.9 The traffic light diet (TLD), a set energy, semi-quantitative approach to energy moderation and the most commonly used dietary strategy in child weight management studies

Table 1.10 Summary of studies using family support (parent attendance and/or supporting parents) in child weight management

Table 1.11 Summary of secondary outcomes examined as part of weight management programs conducted with children

Table 2.1 Goals of two parent-led, family focused weight management programs for 6 to 9 year olds utilising parenting skills training alone plus intensive lifestyle education of parenting skills training alone (P)

Table 2.2 Structure and content of two child weight management programs for 6 to 9 year olds which involved parenting skills training only (P) or parenting skills training plus intensive lifestyle education (P+DA)

Table 2.3 Application of the general child behaviour 'Positive Parenting Program' Planned Activities Routine[®] to weight-related behaviours

Table 2.4 Child-specific cut points used to define presence of cardiovascular risk factors in 6-9 year old pre pubertal children

Table 2.5 The 13 domains of health-related quality of life (HR-QOL) assessed in the 50-item Parent Report Child Health Questionnaire (CHQ PF50) grouped according to physical, psychosocial or family functioning

Table 2.6 Comparison of traditional and linear mixed model (mixed-effects) approaches for the analysis of repeated measure data

Table 3.1 The number of enquires received from families interested in participating in the study and the number (percent) of families enrolling in the study by recruitment strategy

Table 3.2 Mean \pm SD or percent for indicators of socioeconomic status and family structure of 111 families at baseline of the study compared with the mean values of the South Australian (SA) population

Table 3.3 Mean \pm SD anthropometric measurements and weight status of 6-9 year old pre-pubertal children at baseline of the study

Table 3.4 Mean \pm SD age, anthropometry, parent characteristics and indicators of socioeconomic status for 6-9 year old pre-pubertal children at baseline of the study by site of intervention delivery

Table 3.5 Mean \pm SD weight, body mass index (BMI) and BMI z score for 6-9 year old pre-pubertal children at baseline, and 6 and 12 months after parents commenced the parenting plus intensive lifestyle education (P+DA), parenting alone (P) interventions or were waitlisted for intervention for 12 months (WLC)

Table 3.6 Weight status of 6-9 year old pre-pubertal children at baseline, and 6 and 12 months after parents commenced a 6 month parenting plus intensive lifestyle education (P+DA), parenting alone (P) intervention or were waitlisted for intervention for 12 months (WLC)

Table 3.7 Mean \pm SD weight (kg), body mass index (BMI), and BMI z score at baseline, 6 and 12 months for 6-9 year old pre-pubertal children whose parents attended $\geq 75\%$ of the parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were waitlisted for intervention for 12 months (WLC)

Table 3.8 Mean \pm SD waist circumference (cm) and waist circumference z score for 6-9 year old pre-pubertal children at baseline, 6 and 12 months after parents

commenced a 6 month parenting plus intensive lifestyle education (P+DA) or parenting alone (P) child weight management program or were waitlisted for a program for 12 months (WLC)

Table 3.9 Mean \pm SD waist circumference and waist circumference z score at baseline, 6 and 12 months for 6-9 year old pre-pubertal children whose parents attended $\geq 75\%$ of the parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention sessions or were waitlisted for intervention for 12 months (WLC)

Table 4.1 Mean \pm SD height and height z score for 6-9 year old pre-pubertal children at baseline, 6 and 12 months after parents commenced the parenting plus lifestyle education (P+DA) or parenting alone (P) intervention or were waitlisted for intervention for 12 months (WLC)

Table 4.2 Metabolic variables obtained from 6-9 year old pre-pubertal children at baseline, 6 and 12 months measurement sessions

Table 4.3 Mean \pm SD of metabolic variables for 6-9 year old pre-pubertal children at baseline of the study, and prevalence of elevated metabolic risk factors at baseline and 12 months follow up

Table 4.4 Mean \pm SD for metabolic variables for 6-9 year old pre-pubertal children at baseline, 6 and 12 months by study group

Table 4.5 Mean \pm SD systolic (SBP) and diastolic (DBP) blood pressure for 6-9 year old pre-pubertal children at baseline, 6 and 12 months by study group

Table 4.6 Mean \pm SD glucose and insulin for 6-9 year old pre-pubertal children at baseline, 6 and 12 months by study group

Table 4.7 Construct validity¹ of the child body image size (CBIS) tool measuring body size dissatisfaction in 6-9 year old pre-pubertal children at baseline of the study

Table 4.8 Child reported body size dissatisfaction by gender in 6-9 year old pre-pubertal children at baseline of the study compared to a normative Australian community sample

Table 4.9 Child reported body size dissatisfaction at baseline, 6 and 12 months following parent participation in the parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or waitlisting for intervention for 12 months (WLC)

Table 4.10 Mean±SD scores for parent-reported domains of health-related quality of life for 6-9 year old pre-pubertal children at baseline of the study (HELPP) compared to 5-10 year old Victorian school children

Table 4.11 Median and interquartile range for domains of health-related quality of life (HR-QOL) in 6-9 year old pre-pubertal children reported by parents at baseline, 6 and 12 months of the study by intervention group

Table 5.1 Frequency of parent attendance at the parenting alone (P) and parenting plus lifestyle education (P+DA) intervention sessions

Table 5.2 The number of parents completing evaluation measures at baseline, 6 and 12 months after commencing the 6 month parenting alone (P) or parenting plus intensive lifestyle education (P+DA) interventions or being wait listed for intervention for 12 months (WLC)

Table 5.3 Parent responses when asked at the end of the intervention about their satisfaction with the 6 month child weight management programs, parenting alone (P) or parenting plus intensive lifestyle education (P+DA)

Table 5.4 Responses circled by study parents participating in the parenting alone (P) or the parenting plus intensive lifestyle education (P+DA) intervention programs when asked about factors they felt had impacted on their ability to attend intervention sessions and implement the program at home

Table 5.5 Summary of parent responses to open-ended questions about what they most liked, what they least liked and what else should have been in the parenting alone (P) or parenting plus intensive lifestyle education (P+DA) intervention programs

Table 5.6 Summary of parent responses to open-ended questions asking about what they felt they had learnt and what changes they had made immediately following completion of the parenting alone (P) or parenting plus intensive lifestyle education (P+DA) intervention programs

Table 5.7 Median (IQR) daily food group serves for children at baseline, 6 and 12 months following parent participation in the parenting plus lifestyle education (P+DA) or parenting alone (P) intervention or 12 month intervention waitlist (WLC)

Table 5.8 Median (interquartile range) minutes per day engaged in small screen activities and active play for study children at baseline, 6 and 12 months following parent participation in the parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were wait listed for intervention for 12 months

Table 5.9 Baseline parents sense of competency, satisfaction with parenting and perceived parenting efficacy for parents of study children at baseline by child gender

Table 5.10 Mean \pm SD body mass index (BMI) and waist circumference for parents of 6-9 year old pre-pubertal overweight children at baseline, and 6 and 12 months following parent participation in the parenting plus intensive lifestyle

education (P+DA) or parenting alone (P) child weight management intervention or were wait listed for intervention for 12 months

Figure 1.1 The World Health Organisation multi-level public health approach to address the obesity epidemic utilising both prevention and management strategies

Figure 1.2 Prevalence of overweight in children from the United Kingdom (UK), Australia and the United States (US) between 1971-1985 and 1988-1995

Figure 1.3 Aetiological model of overweight as the interaction between genetic, physiological, behavioural and environmental factors

Figure 1.4 Dietary factors involved in the aetiology overweight

Figure 1.5 Changes in selected nutrient and food intake of Australian boys and girls aged 10-15 years between 1985 and 1995

Figure 1.6 Parental and family factors influencing children's food preferences, eating beliefs and habits

Figure 2.1 The Australian Guide to Healthy Eating; the national food selection guide recommending volume and quality of foods within and between the five food groups, water and 'extras' (high energy/fat/sugar/salt) foods

Figure 2.2 An activity pyramid appropriate to guide recommendations for physical and sedentary activity levels in 6-9 year old children

Figure 3.1 Progress of subjects through the phases of the randomised controlled trial from recruitment to analysis by group allocation to either parenting alone (P), parenting plus intensive lifestyle education (P+DA) or waitlisting for intervention for 12 months (WLC)

Figure 3.2 Mean \pm SD body mass index (BMI) z score¹ for 6-9 year old pre-pubertal children at baseline (n=111), 6 (n=57) and 12 months (n=91) after parents commenced the six month parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were waitlisted for intervention for 12 months (WLC)

Figure 3.3 Mean(SD) body mass index (BMI) z score for 6-9 year old pre-pubertal children at baseline (40 boys, 71 girls), 6 (20 boys, 37 girls) and 12 months (33 boys, 59 girls) after parents commenced a 6 month parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were waitlisted for intervention for 12 months (WLC)

Figure 3.4 Mean \pm SD waist circumference z score for 6-9 year old pre-pubertal children at baseline (40 boys, 71 girls), 6 (20 boys, 37 girls) and 12 months (33 boys, 59 girls) after parents commenced a 6 month parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were waitlisted for intervention for 12 months (WLC)

Figure 4.1 Mean \pm SD HDL-C for 6-9 year old pre-pubertal children at baseline and 6 and 12 months after parents participated in the parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were wait listed for intervention for 12 months (WLC)

Figure 4.2 Mean \pm SD diastolic blood pressure for 6-9 year old pre-pubertal children at baseline, 6 and 12 months after parents participated in a parenting plus intensive lifestyle education (P+DA) or parenting alone (P) intervention or were wait listed for intervention for 12 months (WLC)

Figure 5.1 Mean \pm SD parent sense of competency (PSOC), satisfaction with parenting (PSOC-satisfaction) and perceived parenting efficacy (PSOC-efficacy) at baseline, 6 months and 12 months after parent participation in the parenting plus lifestyle education (P+DA) or parenting alone (P) interventions to being waitlisted for intervention for 12 months