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**KARITANE PRODUCTS SOCIETY SENIOR RESEARCH FELLOW IN  
EARLY CHILDHOOD OBESITY.  
ANNUAL REPORT 2007**

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	<b><u>PAGE</u></b>
<b>1. Research and Activities Report</b>	
a) Research funding	2
b) Collaborations	3
c) Other contributions to the research environment	3
<b>2. Community Involvement (talks, conferences, awards or recognition)</b>	5
<b>3. Plans for the coming year</b>	6
<b>4. Comments from the Leading Thinker</b>	7
<b>5. Summary of staff and postgraduates supervised</b>	8
<b>6. Appendices</b>	
1) Media	9
2) Internal or professional newsletters	10
3) Publicity materials, conference reports/programmes	10
4) Published research articles	11

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# 1. RESEARCH AND ACTIVITIES REPORT

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Dr Rachael Taylor was appointed Karitane Products Society Senior Research Fellow in Early Childhood Obesity in March 2007 and took up the post in May 2007. She has been on maternity leave since the end of October 2007 and will return in May 2008. Despite the relatively short period of her appointment her research and professional outputs have been remarkable. She has been awarded two major research grants (by the Health research Council of New Zealand and Lottery Health Research), published research papers and submitted several others, initiated new research projects, supervised research students and played a key role as a member of the ENCDR and in a range of professional activities.

Her work as Karitane Products Society Senior Research Fellow in Early Childhood Obesity has been facilitated by her membership of the Edgar National Centre for Diabetes Research (ENCDR) which has in turn benefited from her involvement. Obesity is clearly the key risk factor in type 2 diabetes and preventing excess weight gain in early life is universally acknowledged as the key top reversing the epidemic of type 2 diabetes.



Professor Jim Mann  
Director, Edgar National Centre for Diabetes Research  
Professor in Human Nutrition and Medicine

## **a) Research funding**

- Health Research Council of New Zealand (Programme Grant extension): ‘Lifestyle and nutritional approaches to reduce obesity, type 2 diabetes and its complications’. Investigators: Prof Jim Mann, Dr Rachael Taylor, Dr Kirsten McAuley, Dr Kirsten Coppel, Ms Lorraine Brooking, Assoc Prof Sheila Williams, Assoc Prof Geoff Chase, Dr Alex Chisholm, Dr Geoff Shaw, Ms Eleanor Murphy, Dr David Tipene-Leach, Ms Helen Pahau, Assoc Prof Patrick Manning, Prof Rob Walker, Dr Wayne Sutherland, Miss Victoria Farmer, Mr Chris Booker. Starting on 01/07/07 for 3 years (\$2,116,152)

This HRC programme grant funds 3 projects:

- i. **‘The APPLE project: preventing obesity in children via environmental intervention’**. Principal Investigator: Dr Rachael Taylor. Commencing 1st September 2007 for 3 years (\$948,554)
  - ii. **‘Ngati and Healthy’**. Principal Investigator: Prof Jim Mann. Commencing 1st September 2007 for 3 years (\$713,105).
  - iii. **‘Validation of a new clinical test for insulin sensitivity’**. Principal Investigator: Dr Kirsten McAuley. Commencing 1<sup>st</sup> September 2007 for 2 years (\$454,493).
- Lottery Health Research. ‘Impact of removing televisions from households: feasibility study’. Investigators: Dr Rachael Taylor, Assoc Prof Oliver Davidson, Prof Grant Schofield, Dr Martha Bell, Miss Victoria Farmer. Starting on 01/01/08 for 1 year (\$72,877).

## **b) Collaborations**

This position has enabled many collaborations to be initiated as well as continued. Including those with:

- Professor Jim Lewis, Associate Professor and Chair in Health Management and Policy, University of New Hampshire, USA.
- Professor Grant Schofield, Director of the Centre for Physical Activity and Nutrition Research, Auckland University of Technology.
- Members of the University of Otago Centre for Translational Research in Chronic Diseases (CTRCD) with involvement in the CTRCD's current evaluation of the Healthy Eating, Healthy Action (HEHA) government strategy. The CTRCD comprises members from many national and international institutions and departments.

## **c) Other contributions to the research environment**

- (i) APPLE (A Pilot Programme for Lifestyle and Exercise) Study. The active intervention phase of the APPLE Study has been completed and evaluated. APPLE is the first controlled community-based intervention study aimed at reducing childhood obesity in New Zealand and findings from this project have been published in the American Journal of Clinical Nutrition and the Health Education Journal. A manuscript detailing the results from the two year follow-up of APPLE is currently being considered by the American Journal of Clinical Nutrition.
- (ii) HEAT (Healthy Eating And Training) Study. This HRC funded project which examined approaches to the long-term maintenance of weight loss provided the central component of Dr Kelly Dale's PhD thesis for which I was a co-supervisor. The first paper summarising the findings has been submitted to the British Medical Journal.
- (iii) Initiation of new projects:
  - Impact of removing televisions from households: feasibility study. We are currently determining the feasibility of a trial designed to remove televisions from the households of 10-13 year old children (for a short time period). Focus groups with children of this age and their parents are being conducted to ascertain what the barriers to such an initiative would be, what it would take for families to accept such a challenge and their perceptions regarding what changes this might bring to their family lifestyles.
  - Family based treatment for overweight preschool children. This project investigates the usefulness of motivational interviewing for increasing the acceptance of a child's weight status, and the uptake of families into a family-based weight management programme for their overweight children. Much of last year was spent developing and testing a motivational questionnaire which is currently being analysed. An application for funding for the full intervention is currently with the HRC.
  - Primary prevention of rapid weight gain in early childhood. A second application is with the HRC for this large project which aims to determine

the usefulness of sleep training and additional food/activity guidance over and above what is currently provided within the Well Child framework.

- Impact of sugary drinks on nutrient intake of New Zealand children. New Zealand children currently consume too much sugar, much of it from sugary drinks. We are using the Children's Nutrition Survey data to model what would happen to energy and nutrient intakes if sugary drinks (juice, soft drinks etc) were totally removed from the diets of New Zealand children. These theoretical calculations will also provide an indication of what dietary benefits may be obtained from smaller reductions in sugary drink intake.

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## **2. Community Involvement**

### **(talks, conferences, awards or recognition)**

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#### **Conferences**

- Taylor R, McAuley KA, Barbezat W, Williams SM, Mann JI. Reducing excessive weight gain in 5-12 year old children via enhancing non-curricular activity and healthy eating: the APPLE project. ADS & ADEA Annual Scientific Meeting in association with NZSSD. 5-7 September (Christchurch, NZ). Oral Presentation.
  
- Dale K, McAuley K, Mann J, Taylor R, Chisholm A, Vorgers S, Williams S, Farmer V. Determining optimal approaches for successful maintenance of weight loss. 25<sup>th</sup> International Symposium on Diabetes and Nutrition. 25<sup>th</sup> Diabetes and Nutrition Study Group Symposium (Finland). Oral Presentation.

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### **3. PLANS FOR THE COMING YEAR**

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- The APPLE Study enters a new phase: process evaluation and a further survey to determine the extent to which benefits accrued during the active intervention phase have been sustained.
- The completion of the one year feasibility study funded by Lottery Health Research for the study to investigate the impact of removing televisions from households (1 Jan 2008 – 31 Dec 2008).
- Completion of the collection and analysis of over 1500 questionnaires administered in the Paediatric Outpatients Department of the Dunedin Hospital. These questionnaires will inform a further study to investigate motivation, both on family and individual levels, to take part in healthy lifestyle interventions.
- Phase 1 of the obesity treatment initiative (evaluating different ways of feeding back weight status information to parents of preschool children) will take place and the intervention will start to be developed.
- If funded, we will also begin work on the infant study, developing the protocols required.
- Participation in the Centre for Translational Research in Chronic Diseases (CTRCD) evaluation of the Healthy Eating, Healthy Action (HEHA) government strategy. The CTRCD has been awarded a potential contract of \$4m for this evaluation.

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## 4. COMMENTS FROM THE LEADING THINKER

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It has been a busy nine months since being employed as the Karitane Products Society Senior Research Fellow in Early Childhood Obesity in May 2007. We have completed the follow-up analyses of our community-based obesity prevention initiative in primary-school children, the APPLE project. At the end of the two-year study, we found that body mass index (BMI), waist circumference and systolic blood pressure were all reduced in intervention children relative to controls by important amounts. At follow-up, approximately two years later, intervention children still had significantly lower BMI values and a lower prevalence of overweight. This was an exciting finding, given our main intervention initiative (provision of Activity Co-ordinators to schools) was removed at the end of the intervention. The APPLE study has received widespread attention, both nationally and internationally, and a manuscript detailing the follow-up results is currently being considered by the American Journal of Clinical Nutrition.

Several other papers in childhood body composition and obesity have also been submitted since May including 1) an analysis of which BMI cut-off should be used in the national screening initiative underway as of February 2008 (the B4 School check), 2) determining whether waist circumference is an appropriate index of central fat distribution in preschool-aged children and 3) evaluating what influences physical activity in young children aged 3 to 5 years of age from a local birth cohort.

Some considerable time has also been spent developing two new projects in particular. The first concerns the new B4 School check mentioned above. Next year, every 4-year-old child will have their height and weight measured as part of a readiness for school check. However, the ethics of screening mean that participants should receive appropriate information regarding the outcomes and suitable treatment pathways must be available for those identified at risk. At this time, neither situation is apparent in New Zealand. Our proposed study, for which I am the Principal Investigator, will determine how best to feed back information to parents regarding the weight status of their child. This is an emotive issue at any age, but particularly in preschoolers where up to 80% of parents do not recognise overweight in their children. The second aim of this project is to evaluate the effectiveness of a nurse-led family support programme aimed at maximising healthy lifestyles in families with young children. The programme has been developed to be suitable for use in either primary or secondary care. We have submitted an application to the Health Research Council for this project and have recruited a top nutrition student to undertake her PhD.

We have also submitted a funding proposal to HRC for the second major project. We are working with Prof Barry Taylor (Paediatrics) to develop an obesity prevention initiative aimed at children from birth to 3 years of age. We aim to determine if additional education and support to that provided by the current Well Child system can reduce the number of children with excessive weight gain in the first 3 years of life, improve breastfeeding rates, encourage healthier eating habits, reduce sedentary activity and improve sleeping habits in children. This ambitious project will have 3 arms, a 'control' group which will receive the current Plunket care, a food+activity group which will receive approximately 8 additional home (or clinic) visits targeting food and activity behaviours, and a food+activity+sleep group which is the same as intervention 2 with additional education and support around maximising sleeping habits in infants.

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## **5. SUMMARY OF STAFF AND POSTGRADUATES SUPERVISED**

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**Dr Rachael Taylor** (Karitane Products Society Senior Research Fellow in Early Childhood Obesity) *PhD*

Dr Rachael Taylor was employed in this position in May 2007. Dr Taylor has had over 12 years experience in investigating various aspects of body composition, obesity and health in children and adolescents. She was also the principal investigator for the APPLE (A Pilot Programme for Lifestyle and Exercise) Study, the first successful New Zealand obesity prevention initiative in children which demonstrated that a relatively simple intervention can significantly reduce the rate at which primary school aged children gain weight.

The Karitane Products Society endowment is for a Senior Research Fellow therefore there are no staff members other than Dr Rachael Taylor

### **POSTGRADUATES SUPERVISED**

#### *PhD*

- Kelly Whiteford. The HEAT study; Encouraging Weight Maintenance. 2003 – 2007.
- Amber Parry-Strong. Dietary intervention for the Diabetes Excess Weight Loss (DEWL) Study. 2007 -
- Philippa Carter. The FLAME study; longitudinal study of weight, food and activity in 3 to 7 year old children. 2005 -

#### *MSc*

- Amber Strong. Reducing sugary drink consumption and increasing fruit and vegetable consumption of primary school children. 2005 – 2006.

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## 6. APPENDICES

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### APPENDIX 1: Media

There has been considerable interest in the endowment of the Karitane Products Society Senior Research Fellowship in Early Childhood Obesity as well as in the results from the APPLE Study. Some examples of this media follow:

*'Program helps kids stay at a healthy weight'*

20 September 2007

Article on Health News by Reuters:

[www.sutterdoc.com/health/healthinfo/reuters....cfm?fx=article&id=38901](http://www.sutterdoc.com/health/healthinfo/reuters....cfm?fx=article&id=38901)

*'Dr Rachael Taylor on school tuck shops'*

11 June 2007

Interview with Dr Rachael Taylor on TV One Breakfast:

[http://tvnz.co.nz/view/video\\_popup\\_windows\\_skin/1178637](http://tvnz.co.nz/view/video_popup_windows_skin/1178637)

*'Government launches \$6m "Feeding our Futures" programme'*

24 May 2007

New Zealand Herald Article:

[http://www.nzherald.co.nz/.../story.cfm?c\\_id=280&objectid=10441578](http://www.nzherald.co.nz/.../story.cfm?c_id=280&objectid=10441578)

*'Child obesity focus of research post'*

8 May 2007

Article on TV One News:

<http://tvnz.co.nz/view/page/1107145>

*'Otago to research child obesity'*

8 May 2007

Article in New Zealand Herald:

[http://www.nzherald.co.nz/...story.cfm?c\\_id=1&objectid=10438406](http://www.nzherald.co.nz/...story.cfm?c_id=1&objectid=10438406)

*'Lessons learned from healthier school setting'*

10 March 2007

Article in New Zealand Herald:

[http://www.nzherald.co.nz/.../story.cfm?c\\_id=288&objectid=10428086](http://www.nzherald.co.nz/.../story.cfm?c_id=288&objectid=10428086)

**APPENDIX 2: Internal or professional newsletters**

**APPENDIX 3: Publicity materials, conference reports/programmes**

## **APPENDIX 4: Published research articles in 2007**

### **Published**

1. Goulding A, Grant A, Taylor R, Williams S, Parnell W, Wilson N, Mann J. Ethnic differences in extreme obesity. *Journal of Pediatrics* 2007;151:542-544.
2. Taylor RW, McAuley KA, Barbezat W, Strong A, Williams SM, Mann JI. APPLE Project: 2-y findings of a community-based obesity prevention program in primary school age children. *American Journal of Clinical Nutrition* 2007;86(3):735-742.
3. Taylor RW. Obesity in New Zealand children – a weighty issue (editorial). *New Zealand Medical Journal* 2007;120(1260):ISSN 1175 8716. URL: <http://www.nzma.org.nz/journal/120-1260/2689/>

### **Submitted**

1. Taylor RW, Murdoch L, Carter P, Gerrard DF, Williams SM, Taylor BJ. Longitudinal study of physical activity and inactivity in preschoolers: FLAME study. Submitted 2007 *Medicine Science in Sports and Exercise*.
2. Taylor RW, Williams S, Baylor B. Choosing the most appropriate BMI reference data to define overweight/obesity in the new 4.5-year-old Well Child Health Check. Submitted 2007 *New Zealand Medical Journal*
3. Taylor RW, Williams SM, Grant AM, Ferguson E, Taylor BJ, Goulding A. Waist circumference as a measure of trunk fat mass in children aged 3 to 5 years. *International Journal of Pediatric Obesity* (To appear).