
**KARITANE PRODUCTS SOCIETY SENIOR RESEARCH
FELLOW IN EARLY CHILDHOOD OBESITY.
ANNUAL REPORT 2008**

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1. COMMENTS FROM THE LEADING THINKER

My role as the Karitane Senior Research Fellow in Early Childhood Obesity forms part of the innovative research undertaken by the Edgar National Centre for Diabetes Research (ENCDR). Obesity is clearly the key potentially preventable risk factor in type 2 diabetes and preventing excess weight gain in early life is widely acknowledged as the key lifestyle approach to reversing the epidemic of type 2 diabetes.

I returned from maternity leave in May of 2008, and the remainder of the year was spent completing our successful community-based obesity prevention initiative in primary-school aged children – the APPLE project – and devising several new projects. These include a major 3-year randomised controlled trial undertaken in collaboration with Professor Barry Taylor (Women's and Children's Health), to determine whether increased advice and support for parents regarding feeding, sleep and activity during the first two years of life can reduce the number of children showing excessive weight gain up to the age of 3 years. 800 children will be randomised to one of three groups and followed for 3 years (Prevention of Overweight in Infancy; POI.nz). Funding for this project was obtained from the HRC and recruitment will commence in April 2009. The second major project under development aims to determine how best to inform parents of young children that their child is overweight, in a way that is both acceptable and increases the motivation to make appropriate changes to the family lifestyle. More than 1500 children aged 4-8 years will be screened for overweight and approximately 400 eligible children will be invited to participate in a two-year trial to determine whether an inexpensive, practice nurse-led, frequent support programme can favourably impact on weight compared with usual care.

These projects, in combination with a third intervention, aimed at improving school playgrounds to encourage increased physical activity, formed the basis of a programme grant application to the HRC in 2008, with myself as principal investigator.

Rachael Taylor

2. RESEARCH AND ACTIVITIES UPDATE

1. Impact of removing televisions from households on nutrition, physical activity and family functioning: feasibility study
Because simply removing an item may be easier than restricting its use, this Lotteries funded study is assessing the feasibility of removing televisions from households (for a defined period of time). This will be compared with education targeting reducing television viewing. Focus groups have been held with 10-13 year old children and their parents surrounding how television is used in their lives, what they would do if they could not watch television and how they might be persuaded to give up their television for a short (2 month) time period. A pilot intervention is currently being planned.
Investigators: Rachael Taylor, Martha Bell, Oliver Davidson, Victoria Farmer, Jim Lewis (USA).
2. Primary prevention of rapid weight gain in early childhood, a randomised controlled trial: POI.nz
Several strategies to prevent inappropriate weight gain in the first few years of life will be trialled in this 3-year randomised controlled trial funded by the HRC. 800 mothers will be randomised to one of 4 groups (including a control group) to receive additional education and support around issues including breastfeeding, food and nutrition, activity and sleep. Mothers will be recruited in mid-pregnancy and followed for 3 years.
Investigators: Barry Taylor and Rachael Taylor (joint principal investigators), Jim Mann, Kirsten Coppell, Anne-Louise Heath, Kelly Dale, Barbara Galland, Julie Lawrence, Rachel Sayers, Andrew Gray.
3. Screening, feedback and family-based treatment of overweight in 4-8 year old children
This study aims to determine how best to inform parents of young children that their child is overweight. It is considered that only appropriate initial engagement facilitates lifestyle changes required to impact on weight. 1500 children will be screened for overweight in the primary care context. The approximately 400 participants found to be overweight will be invited to participate in a randomised controlled trial comparing the efficacy of a tailored family-based approach using practice-nurse delivered support and limited “expert” involvement with usual care on weight and other health outcomes over 24 months.
Investigators: Rachael Taylor, Adell Cox, Deirdre Brown, Barry Taylor, Oliver Davidson, Sheila Williams, Jim Ross, Anna Dawson, Jill Haszard.
4. Improving school playgrounds to enhance physical activity
Current school-based obesity prevention initiatives are often reliant on the expertise and enthusiasm of individuals. Given intensive curriculum demands, improving the number/quality of permanent play facilities in schools may offer an innovative, cost-effective, long-term solution for increasing physical activity and improving body weight in children that may be more effective at reducing health inequalities. We will work with 16 (8 control) low-mid decile Dunedin and Waitakere schools to increase

the number and quality of permanent play facilities (eg. swings, playground markings, soccer goals). Anthropometry, physical activity, quality of life and diet will be measured in 600 children at baseline, year 1 and year 2 after the introduction of new play facilities.

Investigators: Rachael Taylor, Grant Schofield, Jim Mann, Sheila Williams.

5. Family, lifestyle, activity, movement and eating study: FLAME

FLAME was an observational study in a birth cohort of 240 Dunedin children followed from 3 to 7 years of age to determine which family and lifestyle factors may predispose to excessive weight gain in early life. The final measurements commenced in 2008 and several publications are currently being planned with the completion of the measurements due in February 2009.

Investigators: Barry Taylor, Rachael Taylor, Sheila Williams, David Gerrard, Philippa Carter, Shirley Jones, Tina Forrester.

6. Body composition during growth

Ongoing research investigating body composition during growth include evaluating the usefulness of BMI as an index of obesity in children and adolescents from different ethnic groups, the suitability of waist circumference in young children, and aspects of bone health.

Investigators: Ailsa Goulding, Andrea Grant, Rachael Taylor, Sheila Williams.

3. NEW AND ONGOING RESEARCH PUBLICATIONS AND DISSEMINATIONS

PUBLICATIONS

- Taylor RW, Murdoch L, Carter P, Gerrard DF, Williams SM, Taylor BJ. Longitudinal study of physical activity and inactivity in preschoolers: the FLAME study. *Medicine and Science in Sports and Exercise* 2009; 41(1):96-102.
- 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* 2008; 3(4): 226-233.
- Taylor RW, McAuley KA, Barbezat W, Farmer VL, Williams SM, Mann JI. Two-year follow-up of an obesity prevention initiative in children: the APPLE project. *American Journal of Clinical Nutrition* 2008; 88(5): 1371-1377.
- Goulding A, Taylor RW, Grant AM, Murdoch L, Williams SM, Taylor BJ. Relationship of total body fat mass to bone area in New Zealand five-year-olds. *Calcified Tissue International* 2008; 82(4): 293-299.
- Grant AM, Taungapeau FK, McAuley KA, Taylor RW, Williams SM, Waldron MA, Duncan AW, Harper MJ, Goulding A. Body mass index status is effective in identifying metabolic syndrome components and insulin resistance in Pacific Island teenagers living in New Zealand. *Metabolism* 2008; 57(4): 511-516.

SUBMITTED OR IN PRESS

- Dale KS, McAuley KA, Taylor RW, Williams SM, Farmer VL, Hansen P, Vorgers SM, Chisholm AW, Mann JI. Determining optimal approaches for successful weight maintenance: A 2 × 2 factorial randomized controlled trial. *Canadian Medical Association Journal*. ***In press***.
- McAuley KA, Taylor RW, Farmer VL, Hansen P, Williams SM, Booker CS, Mann JI. Economic evaluation of a community-based obesity prevention program in children: the APPLE project. *Obesity*. Submitted July 2008.
- Nielsen G, Taylor RW, Williams SM, Mann JI. Permanent play facilities in school playgrounds as a determinant of children's activity. *Journal of Physical Activity and Health*. Submitted November 2008.

4. RESEARCH FUNDING

EXTERNAL FUNDING ATTRACTED

- Health Research Council of New Zealand (Project Grant): *'Primary prevention of rapid weight gain in early childhood, a randomised controlled trial'*. Barry Taylor and Rachael Taylor (joint principal investigators), Jim Mann, Kelly Dale, Barbara Galland, Kirsten Coppell, Andrew Gray. Start 31/08/2008 for 3 years (\$2,221,742).
- Ministry of Health: *'Implementation of the HEHA Strategy Evaluation'*. Start 01/06/2008 for 3.5 years. (\$4,000,000).
- Lottery Health Research: *'Impact of removing televisions from households: feasibility study'*. Rachael Taylor, Oliver Davidson, Grant Schofield, Martha Bell, Victoria Farmer. Start 01/01/2008 for 12 months (\$72,877).

ONGOING FUNDING

- Health Research Council of New Zealand (Programme Grant extension): *'Lifestyle and nutritional approaches to reduce obesity, type 2 diabetes and its complications'*. Jim Mann, Rachael Taylor, Kirsten McAuley, Kirsten Coppell, Lorraine Brooking, Sheila Williams, Geoff Chase, Alex Chisholm, Geoff Shaw, Eleanor Murphy, David Tipene-Leach, Helen Pahau, Patrick Manning, Rob Walker, Wayne Sutherland, Victoria Farmer, Chris Booker. Start 01/07/2007 for 3 years (\$2,116,152).

This HRC programme grant funds 3 projects, one of which is: **'The APPLE project: preventing obesity in children via environmental intervention'**. Principal Investigator: Rachael Taylor. Start 01/09/2007 for 3 years (\$948,554).

- Health Research Council of New Zealand (Project Grant): *'Determining optimal approaches for successful maintenance of weight loss'*. Kirsten McAuley, Jim Mann, Kelly Whiteford, Rachael Taylor, Alex Chisholm, Sheila Williams, Paul Hansen. Start 01/07/2006 for 3 years (\$533,445).

5. COLLABORATIONS

My 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.
- Dr Jill Curtin and Katherine Baghurst (PhD candidate, Curtin University of Technology).
- Dr Karen Campbell (Deakin University), Professor Louise Baur (University of Sydney) and Professor Lynne Daniels (Queensland University of Technology)

6. OTHER CONTRIBUTIONS TO THE RESEARCH ENVIRONMENT

SUPERVISION OF GRADUATE STUDENTS

PhD

- Anna Dawson. Using motivational interviewing to increase parental awareness and acceptance of overweight in children aged 4-8 years. 2008 -
- 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 -

REVIEWING

I have reviewed papers for the following journals: Journal of Adolescent Health, Journal of Science and Medicine in Sport and Obesity.

Examiner

I was external examiner for PhD candidates Jennifer Utter (University of Auckland) and Elizabeth Duncan (Auckland University of Technology).

7. COMMUNITY INVOLVEMENT, TALKS, CONFERENCES, AWARDS, OR RECOGNITION

CONFERENCE PRESENTATIONS

Taylor RW. The APPLE project: two-year follow-up results of a community-based obesity prevention initiative in children. Obesity and Diabetes: are we doing enough? Symposium, Dunedin (October, 2008).

Taylor RW. The APPLE project: two-year follow-up results of a community-based obesity prevention initiative in children. Australasian Child and Adolescent Obesity Research Network Annual Meeting. Brisbane, Australia (November, 2008).

Taylor RW. POI.nz: Prevention of overweight in infancy. Australian and New Zealand Obesity Society Annual Conference. Brisbane, Australia (November, 2008).

COMMUNITY INVOLVEMENT

I am a Member of the Food and Beverage Classification for Education Settings Technical Advisory Group which aims to provide early childhood and school settings with appropriate guidelines regarding the sale and provision of foods, and the Public Health Reference Group for Improving Nutrition, which contributed to the social marketing campaign “Feeding our Futures” targeting healthy eating in families.

8. PLANS FOR THE COMING YEAR

- Recruitment for POI.nz, our infant intervention, will commence in April. Much of this year will be spent designing the intervention and monitoring ongoing progress.
- Screening of the 1500 children for our family-based obesity treatment initiative is due to start in July this year. We are currently writing ethics proposals and developing the intervention.
- We are awaiting the results of focus group interviews regarding the acceptability to families of removing televisions from households for a defined period of time (possibly 2 months). This will lead to the development of a pilot intervention designed to evaluate how removal of television(s) affects diet, physical activity and family functioning in families of 10-13 year old children.
- Several manuscripts on the FLAME data are currently being prepared for publication.
- If successful with funding, we will develop the playground intervention to be undertaken in Dunedin and Waitakere cities. Discussions with potential schools will take place and the methodology will be finalised.
- Future studies are currently being planned regarding the relative contribution that the pre-natal environment may play in childhood obesity. 27% of New Zealand women aged 25-44 years are obese, and obesity during pregnancy is associated with numerous adverse maternal and foetal outcomes. However, few studies have examined the effect of dietary and lifestyle interventions on maternal and infant outcomes in overweight women, and these have had limited success. Few have been able to alter gestational weight gain which is related to obesity in offspring at 3 and 7 years of age. Work is required to determine optimal behavioural strategies for overweight women during pregnancy that limit postpartum weight retention and reduce the risk of obesity in their offspring.