

**EDGAR NATIONAL CENTRE
FOR DIABETES AND OBESITY RESEARCH**

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**1. REFLECTIONS OF THE FIRST SEVEN YEARS OF THE EDGAR NATIONAL
CENTRE FOR DIABETES AND OBESITY RESEARCH**

The Edgar National Centre for Diabetes Research was established seven years ago and became the Edgar National Centre for Diabetes and Obesity Research in 2010, acknowledging the importance of obesity as a determinant of type 2 diabetes and a disease entity associated with a range of other comorbidities in its own right. The Centre has spawned the Centre for Translational Research in Chronic Diseases which facilitated close collaboration with colleagues at Massey University, Victoria University of Wellington, the Auckland University of Technology and more recently Ian and Elespie Prior Policy Centre for Health and Well-being. The work of the Centre was further extended by the creation of a second Leading Thinker appointment. Dr Rachael Taylor was appointed the Karitane Senior Research Fellow in Early Childhood Obesity and promoted to Associate Professor in 2010. The vision of the Centre is “to make a significant contribution to reducing the global burden of diabetes (and obesity) through research and dissemination of knowledge”. We believe that considerable progress has been made over the relatively short life of the Centre.

1.1 Research Funding

A total of \$16,783,724 of research funding has been awarded from external grant sources during the past seven years. Details are provided in Section 2.

1.2 Research Achievements

A total of eighty two papers have been published in international medical and scientific journals. We regard the following as highlights:

- The APPLE Study (A Pilot Programme for Lifestyle and Exercise Study)

This was one of the first controlled studies internationally to clearly demonstrate the potential of a community-based intervention to reduce the risk of excessive weight gain in childhood. Six papers have been published including two in the American Journal of Clinical Nutrition, the world's leading nutrition journal. The project has formed the basis of intervention programmes in New Zealand and the United Kingdom.

- The Ngati and Healthy Prevent Diabetes Project

With partner Ngati Porou Hauora (NPH) the ENCDOR has developed and implemented the first programme aimed at reducing the rates of obesity, diabetes and cardiovascular disease amongst Maori who have diabetes rates which are amongst the highest in the world. The programme which involves

novel interventions and includes new approaches to evaluation was the overall Supreme Award winner as well as winner of the Whānau Whanui category at the Whanau Ora Award ceremony in Wellington in November 2006. These awards are a biannual celebration of successful Maori initiatives in the health and disability sector. The Ngati and Healthy Programme was also a finalist in the 2006 New Zealand Health Innovation Awards.

- Definition of Overweight and Obesity in New Zealand Māori

The cut offs for defining overweight and obesity in Māori who are at exceptionally high risk of developing diabetes has been a highly controversial issue with some researchers suggesting that higher cut offs than used for Europeans are appropriate given that Māori have a greater lean body mass than Europeans. We believe that we have been able to refute this suggestion by studying body composition and diabetes risk in a large group of people of Māori and European ethnicity. In a widely acknowledged paper published in the American Journal of Clinical Nutrition we have made the case for similar cut offs to be used for the two ethnic groups.

- The LOADD Study (Lifestyle Over and Above Drugs in Diabetes)

This randomised control trial published in the British Medical Journal in 2010 has convincingly shown that even when drug treatment for type 2 diabetes has been optimised intensified dietary advice has the potential to further improve glycaemic control to the extent that might be expected to reduce diabetes related morbidity and mortality.

- Macronutrient composition of diets designed to reduce progression of diabetes in Māori and European New Zealanders with the metabolic syndrome or at high risk of type 2 diabetes.

A series of studies has been undertaken by two Masters students and one PhD student, all of whom have now completed their degrees, to determine the macronutrient composition most likely to reduce diabetes risk. Māori typically do not choose high carbohydrate high fibre foods generally recommended for this purpose. This research has shown that a diet relatively high in protein is appropriate for this high risk group. A high protein diet is not only more compatible with the food preferences of Māori, but is associated with a greater degree of weight loss and in particular a reduction in centrally distributed adiposity.

1.3 Dissemination and Translation of Knowledge

We regard dissemination of knowledge relating to diabetes and obesity as a critically important component of our activities and in this respect believe we have accepted a leadership role.

The highlights during the past two years include:-

- 2008 Edgar National Centre for Diabetes Research and Centre for Translational Research in Chronic Diseases Symposium: Obesity and Diabetes: are we doing enough?

The symposium chaired by Sir Eion Edgar was held in the Otago Museum and attracted one hundred and fifty participants from throughout New Zealand. Colleagues from the Ministry of Health, the University of Auckland, Auckland University of Technology, and members of the Centre presented on a range of relevant topics.

· 2010 Edgar National Centre for Diabetes and Obesity Research and Centre for Translational Research in Chronic Diseases Symposium: Who Cares about New Zealand's Waistline?

Also chaired by Sir Eion Edgar, this symposium was held in Wellington. The symposium was based on the concept that a range of Actor Groups is responsible for policies related to public health. Members of the Actor groups discussed what was being done or could be done in their sphere and researchers described actions for which an evidence base existed. (e.g. a school principal discussed what could be done within schools and Rachael Taylor school based programmes which had made a difference; the Associate Minister of Health what was being done by Government and Jim Mann the research base). The occasion was universally successful attracting one hundred and fifty participants with many having to be turned away. A high level of media coverage was achieved.

Guideline development and Advisory Roles

Members of the Centre have continued to play a major role in guideline development, the provision of relevant advice at the national and international level. Jim Mann has chaired the New Zealand Obesity Guidelines Development Group and the Expert Group revising New Zealand guidelines for the management of diabetes. He also chairs the New Zealand Ministry of Health Advisory Group on cardiovascular disease and diabetes and is a member of the World health organisation advisory group on nutrition.

1.4 Other Activities

Our contribution to research work force development is demonstrated by the number of postgraduate students supervised by staff in the centre (see Appendix 3.1). We have been actively involved in relevant community organisations, notably diabetes New Zealand, Diabetes New Zealand Otago and various relevant charitable trusts. Our activities have received considerable local and national media coverage.

1.5 Evidence of Quality

Regular invitations to write editorials for journals including The Lancet and British medical Journal and to present keynote lectures at major international conferences (e.g. during the past two years: International Diabetes Federation, Montreal; International congress of Nutrition, Bangkok; International Congress of Obesity, Stockholm) provide evidence of the perceived quality of our outputs.

1.6 The Future

The centre currently has a reasonable level of research funding with several Health Research Council grant applications submitted for the current round. Clearly future activities are largely dependent upon our ability to continue to attract outside research funding but our track record offers some justification for optimism. The appointment of Dr Chris Baldi as a Senior Research Fellow in the Department of medicine offers exciting opportunities for further research collaboration as he shares many of our research interests. Dr Rachael McLean a Public Health Physician has been awarded an HRC training Fellowship to complete her PhD. Her work relating to salt and hypertension enables our interests to be extended to a new field, highly relevant to both diabetes and obesity. The ENCDOR will be fully integrated into the University of Otago World Health organisation Collaborating Centre (of which Jim Mann is Director). This will also facilitate research and

international collaboration. We continue to seek ways of extending our research activities to include type 1 diabetes.

2. RESEARCH FUNDING

A total of \$16,783,724 of research funding has been awarded from external grant sources during the past seven years.

3. APPENDICES

3.1 Graduate Students

Ten graduate students who have been fully or partially supervised by the staff of the Centre have been awarded masters or PhD degrees. Six are currently enrolled.

3.2 Research Publications

A total of eighty two papers have been published in international medical and scientific journals. Those published since the 2009 Annual Report of the Edgar National Centre for Diabetes and Obesity Research are listed below.

Askie LM, Baur LA, Campbell K, Daniels LA, Hesketh K, Magarey A, Mhrshahi S, Rissel C, Simes J, Taylor B, Taylor R, Voysey M, Wen LM and The Early Prevention of Obesity in CHildren Collaboration (epoch). Study protocol: The Early Prevention of Obesity in CHildren (EPOCH) Collaboration - an Individual Patient Data Prospective Meta-Analysis. BMC Public Health 2010 Nov 25;10(1):728.

Coppell KJ, Kataoka M, Williams SM, Chisholm AW, Vorgers SM, Mann JI. Nutritional intervention in patients with type 2 diabetes who are hyperglycaemic despite optimised drug treatment—Lifestyle Over and Above Drugs in Diabetes (LOADD) study: randomised controlled trial. BMJ. 2010; 341(c3337).

Fredensborg MH, Perry T, Mann J, Chisholm A, Rose M. Rising methods and leavening agents used in the production of bread do not impact the glycaemic index. Asia Pac J Clin Nutr. 2010;19(2):188-94.

Goulding A, Taylor RW, Grant AM, Parnell WR, Wilson NC, Williams SM. Waist-to-height ratios in relation to BMI z-scores in three ethnic groups from a representative sample of New Zealand children aged 5-14 years. Int J Obes (Lond). 2010; 18(7): 1410-6.

Mann J, Aune D. Can specific fruits and vegetables prevent diabetes? BMJ. 2010 Aug 18;341:c4395. doi: 10.1136/bmj.c4395.

Mann JI. Evidence-based nutrition: Does it differ from evidence-based medicine? Annals of Medicine. 2010; 42(7):475-86.

Mann JI and Truswell AS. Diseases of overnourished societies and the need for dietary change. In Oxford Textbook of Medicine, 5th edition. DA Warrell, TM Cox, JD Firth (eds). Oxford University Press, Oxford (2010). Chapter 11.4 (Volume 1).

Neil HA, Cooper J, Betteridge DJ, Capps N, McDowell IF, Durrington PN, Seed M, Mann JI, Humphries SE. All-cause and cardiovascular mortality in treated patients with severe

hypertriglyceridaemia: A long-term prospective registry study. *Atherosclerosis*. 2010; 211(2): 618-623.

Nielsen G, Taylor R, Williams S, Mann J. Permanent play facilities in school playgrounds as a determinant of children's activity. *Journal of Physical Activity & Health*. 2010; 7(4): 490-496

Taylor RW, Brooking L, Williams SM, Manning PJ, Sutherland WH, Coppell KJ, Tipene-Leach D, Dale KS, McAuley KA, Mann JI. Body mass index and waist circumference cutoffs to define obesity in indigenous New Zealanders. *Am J Clin Nutr*. 2010; 92(2): 390-7.

Taylor RW, Brown D, Dawson AM, Haszard J, Cox A, Rose EA, Taylor BJ, Meredith-Jones K, Treacy L, Ross J, Williams SM. Motivational interviewing for screening and feedback and encouraging lifestyle changes to reduce relative weight in 4-8 year old children: design of the MInT study. *BMC Public Health*. 2010; 10(1): 271.

Taylor RW, Grant AM, Williams SM, Goulding A. Sex differences in regional body fat distribution from pre- to postpuberty. *Obesity (Silver Spring)*. 2010; 18(7): 1410-6.

Te Morenga L, Williams S, Brown R, Mann J. Effect of a relatively high-protein, high-fiber diet on body composition and metabolic risk factors in overweight women. *European Journal of Clinical Nutrition* 2010; 64(11): 1323-31.

Todd AS, Macginley RJ, Schollum JB, Johnson RJ, Williams SM, Sutherland WH, Mann JI, Walker RJ. Dietary salt loading impairs arterial vascular reactivity. *Am J Clin Nutr*. 2010; 91(3): 557-64.

Venn BS, Williams SM, Mann JI. Comparison of postprandial glycaemia in Asians and Caucasians. *Diabetic Medicine* 2010; 27(10): 1205-8.

Taylor RW, Williams SM, Carter PJ, Goulding A, Gerrard DF, Taylor BJ. Changes in fat mass and fat-free mass during the adiposity rebound: FLAME study. *International Journal of Pediatric Obesity*, 2011; [Epub ahead of print].