

**The Food and Nutrient Intake
and Physical Activity
of
Australian Aboriginal and
Torres Strait Islander
and
Non-Indigenous Rural Children**

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Thesis submitted for fulfilment of the award of:

Doctor of Philosophy (Behavioural Science)

The University of Newcastle

4TH August 2012

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I hereby certify that this thesis is in the form of a series of published papers of which I am a joint author. I have included as part of the thesis a written statement from each co-author, endorsed by the Deputy Head of Faculty (Research), attesting to my contribution to the joint publications

Signed: _____

Date: 4th August 2012_____

My deep thanks goes to the communities of the Lower Hunter, Taree and Kempsey regions of New South Wales, particularly the people of the Awabakal, Biripi and Dunghutti nations. The staff of the Aboriginal Community Controlled Health Care Organisations of those countries provided so much support and encouragement over the years. From these communities I have learnt about the depths of human resilience and kindness, the expanse of the soul and the capacity of the spirit to respond to the ever present challenges of daily life.

There are no words to explain the twin emotions of gratitude and guilt to my children Sam and Lucy who do not remember when I wasn't 'doing the phd'. They have coped with my absences both physical and emotional, and the inevitable ups and downs.

To Tim whose endless capacity to be patient and to forgive has made the undertaking and completion of this thesis possible.

To the team of the Many Rivers project, particularly those two wonderful women who have shared each step of the journey with me: Nicole Turner and Janine Cochrane. Your support, humour, and trust has enriched my life all this time.

To my supervisors: all of them!! John Attia who brought structure and direction to my work on this thesis at a critical time and without whose disciplined intervention this moment would probably not have happened; Wayne Smith's robust encouragement; Cate D'Este's calm ongoing guidance; Vicki Flood's continued support and belief in the

project has given me personal and professional support, and encouragement at all times; and John Wiggers from whose rigor and skill I have learnt discipline, patience, project and people management, and who has been a critical mentor to myself and to all working on the project.

This thesis is dedicated to my parents who would have been very proud of the work I have done and neither of whom lived to see it. I have learnt much from my mother's intelligence and suffering as well as my father's humility and keen curiosity.

'.....we know how to wait....

....let the stars keep on turning.....

....from little things.....big things grow.....'

Paul Kelly

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Gwynn JD, Hardy LL, Wiggers JH, Smith WT, D'Este CA, Turner N, Cochrane J, Barker DJ, Attia JR. (2010) The validation of a self-report measure and physical activity Australian Aboriginal and Torres Strait Islander and non-Indigenous Rural Children. *ANZJPH*. 2010;34: S57-S65.
3. Adolescent Physical Activity Recall Questionnaire (APARQ) and protocol for administration.
4. Many Rivers Physical Activity Recall Questionnaire (MRPARQ)
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6. Accelerometer Fitting Protocol
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 - i. University of Newcastle

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9. Consent and Information letters for parents and children

- i. Information Statement
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10. Journal article and co-author statements:

Gwynn JD, Flood VM, D'Este CA, Attia JR, Turner N, Cochrane J, Wiggers, JH.

The reliability and validity of a short FFQ among Australian Aboriginal and Torres Strait Islander and non-Indigenous rural children. *PHN*. 2011;14 (3): 388-401.

11. All MRSFFQ Validation tables (Tables 1 to 25): All tables for all questions

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12. Many Rivers Short Food Frequency Questionnaire (MRSFFQ)

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15. 24-hour food recall record sheet

16. Journal article and co-author statements:

17. Journal article and co-author statements:

Louie JC, Flood V, Turner N, Everingham C, Gwynn J. Methodology for adding glycemic index values to 24 hour recalls. *Nutrition*. 2009;27(1):59-64

18. Journal article: Revised and Resubmitted August 2011.

Louie JC, Gwynn JD, Turner N, Cochrane J, Wiggers JJ, Flood VM. Dietary glycemic index and glycemic load among Australian Indigenous and non-Indigenous children aged 10 – 12 years. *Nutrition*.

SYNOPSIS

Wide disparities in health between Aboriginal and Torres Strait Islander and non-Indigenous Australians persist, with chronic diseases responsible for much of this gap. Type 2 diabetes is one of the key chronic diseases suffered by Aboriginal and Torres Strait Islander peoples, at a rate of at least 3.4 times that of non-Indigenous Australians. It is also a growing health problem for the non-Indigenous population and is associated with the increasing rates of obesity seen internationally over the past 10 to 20 years. Poor food habits and physical inactivity are the modifiable lifestyle risk factors for both type 2 diabetes and obesity. Little, however, little is known about these in Australian Aboriginal and Torres Strait Islander children or in rural children from disadvantaged areas in general. It is recognised that these risk factors track from childhood into adulthood, and that childhood offers an important opportunity to implement appropriate preventative health strategies.

Appropriate programs to address poor food habits and physical inactivity cannot be developed without a thorough understanding of the risk factors pertinent to each population group. A search of the literature (Chapter 1) reveals that such information is very limited for Australian rural Aboriginal and Torres Strait Islander children and to a somewhat lesser extent for rural children in general, with evidence still very limited and little intervention research reported. Monitoring and evaluation of interventions to address risk factors require the use of validated population-level measurement tools. Currently, there are no such tools available for measuring Aboriginal and Torres Strait Islander children's dietary intake and only one for measuring their physical activity. This severely compromises the capacity of health professionals to monitor this population's health and to rigorously evaluate the effect of health strategies. There are urgent calls for research to evaluate the effect of interventions conducted in Aboriginal and Torres Strait Islander communities, with little evidence currently available in any field of health.

In response to the issues raised above, the series of studies which constitute this thesis explores the physical activity characteristics and the food and nutrient intake of rural Aboriginal and Torres Strait Islander and non-Indigenous primary school-aged children (Chapters 3 and 5). The studies also validate a 7-day self-report physical activity recall questionnaire and a short food frequency questionnaire with the same populations (Chapters 2 and 4).

Aboriginal and Torres Strait Islander children were found to provide self-report data regarding both physical activity and food intake that were at least as valid as those for non-Indigenous children, provided they received appropriate cultural support (detailed in the methods section of the relevant chapters). These results indicate that the measurement tools validated in this series of studies can be used with either group.

All children were found to more than meet Australian guidelines for daily physical activity levels, with Aboriginal and Torres Strait Islander children demonstrating a tendency for higher activity than their non-Indigenous counterparts.

All children who participated in this series of studies were found to possess excessive intakes of energy-dense nutrient-poor (EDNP) foods, with Aboriginal and Torres Strait Islander children demonstrating clinically important higher intakes than non-Indigenous children. Macro-nutrient and sodium intakes of Aboriginal and Torres Strait Islander children were significantly higher than those of their non-Indigenous counterparts.

Finally, in response to findings of the studies, further research and intervention strategies are suggested in the conclusions (Chapter 6). A description of the community-controlled governance structure that guided and supported this program of research is provided.