



Maori Type 2 Diabetes:

A Critical Review of its Prevalence and Contemporary Disease Management Discourse

Bryce Kihirini

Third Year Medical Student
Auckland School of Medicine
University of Auckland

Bryce Kihirini (Tapuika/Tuhourangi/Ngati Whakaue) is a third year medical student at the University of Auckland. He is married to Nicola and has four daughters, Ariana, April, Teina and Hannah. He has a varied working background ranging from charitable work to operating his own consultancy company. He would like to extend his gratitude to all of the organisations and individuals who have assisted him in his medical pursuits.

ABSTRACT

Diabetes Mellitus presents a serious health challenge for New Zealand. It is a significant cause of ill health and premature death. Current research has shown that the prevalence of type 2 diabetes is increasing as well as it being disproportionate in some sectors of society. Maori in particular, have been highlighted in the literature as waging a losing war against diabetes. Type 2 diabetes rates in Maori have risen to levels where it is one of the leading causes of morbidity and mortality amongst whanau, hapu and iwi. In addition there are a high number of people who have diabetes but may not be aware of their condition. Robust screening and management strategies are required in order to tackle diabetes and its debilitating consequences. Appropriate targeted health promotion strategies and education will also assist in the prevention of diabetes or in the delay of onset.

INTRODUCTION

Diabetes mellitus is characterised by chronically elevated blood glucose levels, which is associated with long-term complications including diabetic peripheral neuropathy and diabetic nephropathy. These consequences are reflected in the high rates of limb amputation and chronic renal disease in New Zealand (Scott et al, 2006). Moreover, the prevalence of Type 2 diabetes is increasing in New Zealand and this increase is disproportionately higher for Maori than for other ethnic groups living in New Zealand (Joshy and Simmons, 2006).

A confounding factor of type 2 diabetes is the insidious nature with the onset of the disease in some patients going undetected for long periods of time. Type 2 diabetes is often referred to as being 'silent' with patients only presenting to their Health Professional with late-stage complications. Without a robust diabetes screening program a large number of patients may develop type 2 diabetes and remain unaware of their condition.

MAJOR RESEARCH FINDINGS

Prevalence of Type 2 Diabetes

In line with the fact that the prevalence of type 2 diabetes is increasing, the National Health Information Service (2003) estimate that the number of people with diagnosed diabetes is predicted to increase substantially in the next 20 years from 115,000 to over 160,000. These numbers are believed to only represent half of those who actually have diabetes. Simmons, Thompson and Engelgau (2005) stated that of all the prospective tools for identifying people with diabetes, most clinicians start with risk factor identification leading to fasting blood glucose screening. The drawback of this approach is that, there are a number of people with diabetes who are asymptomatic and may not have 'visible' risk factors. Subsequently, these people may remain unaware of their diabetic status for a significant period of time. The lag in detection may allow for the progression of what could have been preventable complications to the patient.

Maori and Pacific People appear to be disproportionately affected by type 2 diabetes. The New Zealand Health Information Service 2006 Diabetes Research showed that the prevalence was: European 2.9 %; Maori 8 %, Pacific 10.1 %, Asian 8.4 %. Moore and Lunt (2000) demonstrated that the incidence and prevalence of type 2 diabetes in Maori and Pacific People was disproportionately high with respect to the general population and that this health disparity was increasing. The study also found that there was an increasing prevalence of obesity amongst Maori and Pacific People. Similar findings were made more recently where the prevalence of diagnosed diabetes was found to be higher amongst Maori and Pacific People as well as diabetic complications being more common and more severe (Simmons et al, 2005). This study also suggested that Maori and Pacific People were more likely to have at least one major risk factor prevalent, namely a high body mass index.

Potentiating Factors

There are several possible explanations for the severity of diabetes and the consequences in the Maori population. Maori and Pacific People tend to have a higher prevalence risk factors for diabetes, such as obesity, physical inactivity, insulin resistance and metabolic syndrome when compared with Europeans (Joshy and Simmons, 2006). Maori have a very high rate of diabetic nephropathy and develop renal failure at a more rapid rate than European patients with similar conditions (Moore and Lunt, 2000). The propensity for Maori patients with type 2 diabetes to develop diabetic renal failure and diabetic neuropathies may relate to a younger age at the onset of diabetes, a genetic susceptibility to nephropathy, and socio-economic or cultural factors leading to less adequate medical care (Scott et al, 2006). Jeffreys et al (2006) demonstrated that Māori with diabetes

experienced excessive mortality, which was likely to be related to disease severity. The main recommendation from this study was that the association between diabetes in Māori and excess mortality needs further investigation as the mortality may be 'amenable to intervention'.

Screening and Management Strategies

In the above studies, Maori have been identified as a sector within society that requires significant diabetic screening and management strategies. The link between type 2 diabetes and obesity in particular supports the current approach to diabetic screening, whereby overweight Maori and Pacific People are targeted (Lawrenson, 1993). This approach may be limiting as Maori and Pacific People who have diabetes may look 'thin' and remain undiagnosed for a long time, thus increasing the chance of developing preventable complications. Ellison, Elliott and Moyes (2004) published a research article that focused specifically on the identification of prospective screening tools for undiagnosed diabetes. Their findings showed that rates of elevated HbA1c levels in non-Europeans in New Zealand were very high, particularly in Maori, Pacific People and Indians. These findings reflected the possibility of undiagnosed diabetes as well as increased risk of vascular disease. The authors suggested that HbA1c levels could be used as an opportunistic screening test for diabetes and glucose intolerance but noted that diagnosis of diabetes can only be made on the basis of an oral glucose tolerance test. Thus, a potentially useful diabetes screening strategy for Maori could incorporate risk factor identification, HbA1c level analysis as well as an oral glucose tolerance testing.

A type 2 diabetes management study was recently carried out in a predominantly Maori community situated on the East Coast of New Zealand (Mann et al, 2005). The study identified that regular physical activity and a diet characterized by a high intake of dietary fibre reduced health risks such as progressive glucose intolerance and diabetic complications in newly diagnosed patients with type 2 diabetes. In the same study, one of the researchers by the name of Kirsten McAuley proposed a formula that identified high-risk individuals based on their fasting insulin rates, triglyceride levels and BMI. This study suggested that Maori who have been diagnosed with type 2 diabetes can improve their quality of life by changing their diet and increasing their physical activity levels. The authors suggested that the McAuley formula was helpful in predicting high risk individuals and may be a useful addition to any diabetes screening strategy.

The Ministry of Health (2003) published a booklet on type 2 diabetes management. The major recommendations in this booklet included the following:

- Lifestyle change is central to the management of all people with diabetes and this can be aided by providing advice on reducing energy intake, regulating dietary patterns, increasing physical activity and smoking cessation where appropriate;
- Involving families in diabetes management planning is of particular importance to Maori and Pacific People with diabetes; and
- Regular screening for renal, retinal and foot complications should occur from diagnosis of type 2 diabetes.

Mann et al (2005) supported the Ministry of Health's recommendations in regards to diet and exercise. However, the Ministry's suggestions of whanau involvement for disease management did not appear to be addressed. This point is pivotal as Poa et al (2003) state that there is evidence showing that diabetes has a strong genetic link. A change in lifestyle made at the whanau level would likely lead to the reduction in the incidence and severity of type 2 diabetes amongst Maori.

The prevalence and severity of type 2 diabetes amongst Maori reinforces the need for efficacious education and prevention strategies to be developed and implemented at the community level. Simmons and Voyle (2003) undertook research that proposed that diabetes educational strategies would be more effective if they were delivered by skilled Maori in a marae setting. They proposed that if people were aware of the risks they could then be encouraged to improve their health behaviours. The effectiveness of this community based approach is contingent to reflective policy being

formulated at the Ministry of Health level. Although not conclusive, Governmental support of diabetes initiatives will increase the chance of reducing diabetes prevalence or delaying its onset. Overseas lifestyle intervention studies have successfully used a collaborative approach between schools, school nurses, clinicians, students and families to combat diabetes (Buchanan, 2007; Kaufman and Schantz). These studies demonstrated that targeting young people with high risk levels such as being overweight and under-exercising, could prevent diabetes or at least slow down disease progression. Similar strategies may have potential for combating Type 2 diabetes in Maori.

CONCLUSION

The prevalence of type 2 diabetes in New Zealand is increasing. Several studies have demonstrated that Maori are one of the most affected ethnic groups, which may be associated with disproportionately high rates of risk factors. Many diabetics remain undiagnosed, which highlights the need for a robust diabetes screening program in New Zealand. The studies presented in this critical review propose several strategies for screening, including the McAuley formula for the identification of high risk individuals, HbA1c level analysis and oral glucose tolerance testing. The combination of these strategies would need to be investigated to determine their effectiveness in improving the early identification of Maori with type 2 diabetes.

The disparity between Maori and Europeans suffering from diabetes is complex. Maori display an excess in severity of complications and mortality from diabetes, a proportion of which may have been prevented if the disease had been identified earlier. There are competing social, cultural, educational and medical factors that all need to be addressed in order for the individuals to effectively manage their disease with the support of their whanau and health professional. The Ministry of Health has given recommendations for targeted management of diabetes in Maori. Whanau should be involved at all stages of the disease process in order to facilitate positive changes in dietary habits and physical exercise and set-up robust follow-up programs to monitor diabetic complications. Diabetes is a debilitating disease that affects the lives of all whanau members and this has prompted Maori throughout New Zealand to become more proactive about preventing or at least delaying its onset. With continued support of the Government and health researchers, Maori are becoming more educated as to the risks and outcomes associated with diabetes. There still is, however, a long way to go before Maori start to win this war against diabetes.

REFERENCES

- Buchanan, T.A. (2007).
How can we prevent type 2 diabetes?
Diabetes 56(6): 1502-1507.
- Ellison, T., R. Elliott, et al. (2004).
HbA1c screening for undiagnosed diabetes in New Zealand.
Diabetes/Metabolism Research and Reviews 21: 65-70.
- Jeffreys, M., C. Wright, et al. (2005).
Ethnic differences in cause specific mortality among hospitalised patients with diabetes: a linkage study in New Zealand.
J. Epidemiol. Community Health 59: 961-966.
- Joshy, G. and D. Simmons (2006).
Epidemiology of diabetes in New Zealand: revisit to a changing landscape.
New Zealand Medical Journal 119: 199-203.
- Kaufman, F. R., & Schantz, S. (2007).
Current clinical research on type 2 diabetes and its prevention in youth.
School Nurse News 24(3): 13-16.
- Lawrenson, R. A., Dunn, P.J., Jury, D., & Sceats, J. (1993).
Discover diabetes: screening for diabetes mellitus in the Waikato.
New Zealand Medical Journal 106: 522-524.
- Mann, J., D. Tipene-Leach, et al. (2005).
Insulin resistance and impaired glucose metabolism in a predominantly

Maori community.

Diabetes Research and Clinical Practice 72: 68-74.

Ministry of Health (2003).

Management of Type 2 Diabetes.

Wellington, Ministry of Health.

Moore, P. and H. Lunt (2000).

Diabetes in New Zealand.

Diabetes Research and Clinical Practice 50: 65-71.

Poa, N. R., Cooper, G. J. S., & Edgar, P. F. (2003).

Amylin gene promoter mutations predispose to Type 2 diabetes in New Zealand Maori.

Diabetologia 46(4): 574-578.

Scott A, Toomath R, Bouchier D, Bruce R, Crook N, Carroll D, et al (2006).

First national audit of the outcomes of care in young people with diabetes in New Zealand: high prevalence of nephropathy in Maori and Pacific Islanders.

New Zealand Medical Journal. 119: U2015.

Simmons, D., C. F. Thompson, et al. (2005).

Controlling the diabetes epidemic: how should we screen for undiagnosed diabetes and dysglycaemia?

Diabetic Medicine 22: 207-212.

FEATURE : CONFERENCE REPORT

Clinicians Medical Education Convention Aotearoa

Jared Kilday

Fourth Year Medical Student
Christchurch School of Medicine
University of Otago

Jared was the convenor of the 2006 Clinicians Medical Education Convention Aotearoa. James is currently studying in Christchurch.

Convention Report : The first annual CLINICIANS Medical Education Convention Aotearoa (MECA'06) was held in Dunedin over the weekend of 15th-17th September last year. I am pleased to announce that this inaugural medical students' convention was a huge success and the precedent has been set for this to continue on as an annual event in the years to come.

Over the course of the weekend more than 150 clinical and pre-clinical medical students from around Australasia attended lectures and special presentations, participated in a series of practical and ethical workshops and, celebrated together at two social events designed to encourage collegiality in medicine. This was just the third time that a full convention had been held for New Zealand medical students with the previous events being held in 1975 and 1991.

The special topic for last year's event was 'Baa Baa Black Sheep - Rural Health The Forgotten Realm'. As part of this special topic Drs Pat Farry and Stuart Gowland presented on the current poor state of rural health in New Zealand which included a live video link up to a rural general practitioner in southern New Zealand via technology provided by Mobile Surgical Services Ltd. Also as part of this event, the Matagouri Rural Health Club hosted rural secondary school students from around the greater Otago region to promote the benefits of pursuing careers as rural health professionals.

Other Highlights of the event included a presentation on the 'Health Workforce Crisis' by Professor Des Gorman, Dean of the Auckland Medical School, an after dinner speech by surgeon scientist and author, the Emeritus Professor Graham Hill, and an entertaining semi-formal debate that featured the Honourable Pete Hodgson, Minister of Health.



The feedback I received both at and after the event has all been extremely positive and I sincerely hope that this groundswell of support will carry over to this year's event which has the potential to be even bigger and better.

Organising an event such as this was no small task, but what made the event such an outstanding success was the enthusiasm and commitment for medicine that was brought to the event by delegates, speakers, sponsors and other invited guests alike. The MECA'06 organising committee would like acknowledge the support of all those people that made this event possible and invite you all to make the journey to MECA in 2007.

MECA'07 will again be held in Dunedin at the Dunedin Town Hall over the weekend 28-30 September. The catch phrase is "Here's to the Future..." Distinguished key note speakers include: Professor Mike Ardagh (Emergency Medicine), Professor Des Gorman (Submarine and Diving Medicine) and, special guest, Shawn Riley from the Mayo clinic in America, who will be speaking on patient medication verification initiatives. Delegates will also be able to learn and master their suturing skills in one of the 4 clinical workshops offered. The Convention will include 2 social functions, a highlight being the Medical Challenge, featuring the Honourable David Benson-Pope.

For further information and registration go to www.otago.ac.nz or, any queries please contact Kerry Harlow (Convenor MECA'07) harke742@student.otago.ac.nz