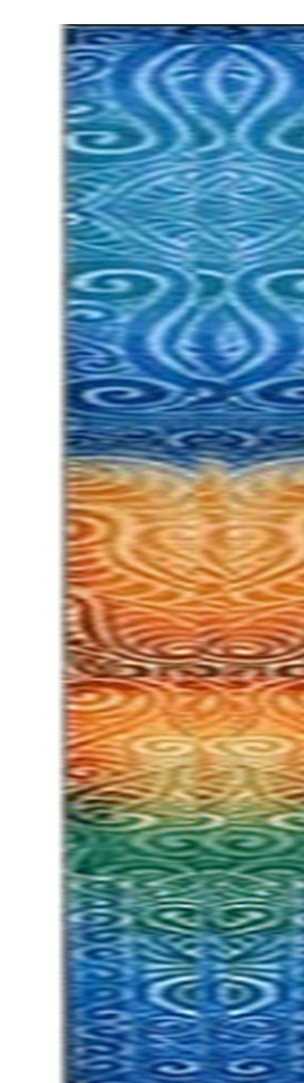


Ngati and Healthy

PREVENT DIABETES PROJECT

A collaboration between Ngati Porou Hauora and the Edgar National Centre for Diabetes Research



Background

Ngati Porou Hauora, in collaboration with the Edgar National Centre for Diabetes Research, is undertaking a community-based diabetes prevention project which aims to reduce the prevalence of diabetes and pre-diabetic states through lifestyle modification.

A key factor in evaluating the success of this intervention programme is determining the prevalence of diabetes and pre-diabetic states both before and after intervention. This presentation describes the pre-intervention prevalence survey conducted in 2003.

Aim

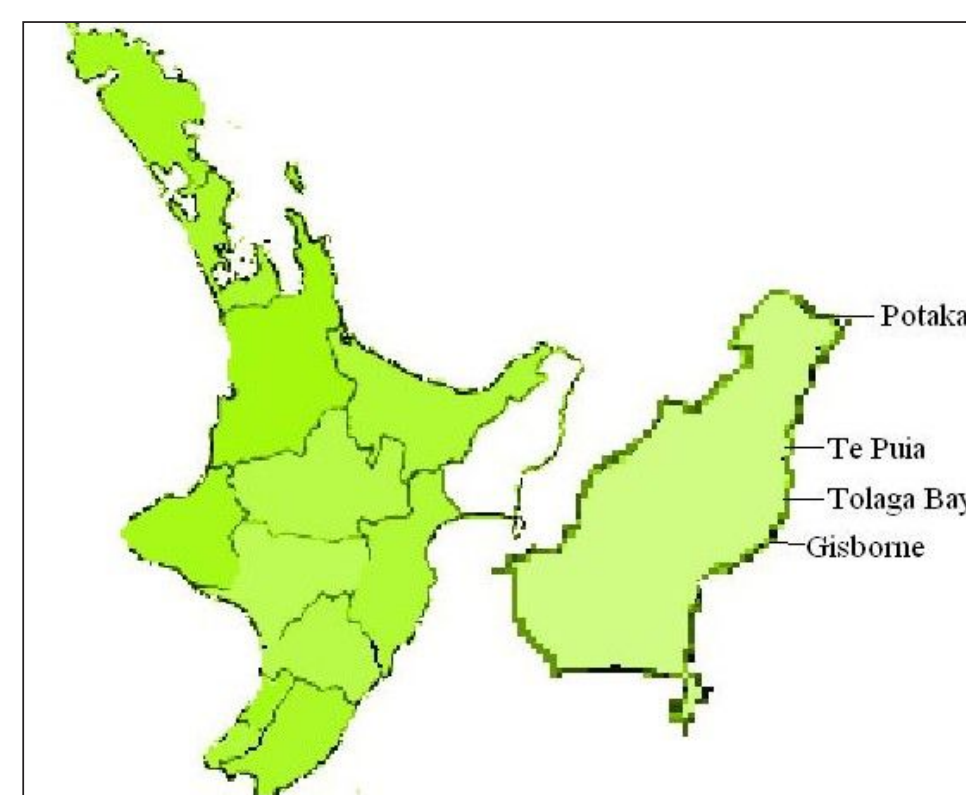
To evaluate the prevalence of diabetes, impaired glucose tolerance, impaired fasting glycaemia, and insulin resistance in a predominantly Maori rural community.

The Survey

Ngati Porou Hauora (NPH) provides comprehensive primary care health services for the sparsely populated East Coast area, north of Gisborne (see inset picture), which has a population of about 6000. The NPH register of its patient population was used to identify a random sample, stratified by sex and age, of people aged 25 years and over.

Individuals were contacted by letter, telephone, and in person on a number of occasions to encourage participation.

The project co-ordinator and NPH staff (nurses and kaiwhina) were responsible for individual follow up and conduct of interviews, clinical assessment and blood tests, based in East Coast sites.



A questionnaire including demographic information, relevant medical history and exercise and dietary history was administered. Height, weight and waist circumference were measured and blood pressure recorded. Duplicate measures were taken for all the above and the average of the two measures used in the analysis.

A 75g oral glucose tolerance test (OGTT) was performed with glucose measured at fasting and 120 minutes post

glucose load. Participants with documented diabetes did not have an OGTT. Blood was also taken for fasting insulin and lipids, urate and HbA1c and a urine sample for albumin:creatinine ratio.

Diagnoses

Diagnoses of diabetes, IGT and IFG were made using WHO criteria (1999). Diagnosis of insulin resistance was based on the formula of McAuley et al. (2001); values 6.3 were classified as insulin resistant.

$$\text{Insulin Sensitivity index} = e^{[3.29 - 0.25 \ln(\text{insulin}) - 0.22 \ln(\text{BMI}) - 0.8 \ln(\text{TAG})]}$$

*Those with type 2 diabetes, IFG and IGT were not included in the estimates of prevalence of IR

Results

From the random sample of 741 people, 152 individuals were excluded due to migration, sickness or death. Of the remaining 589 individuals, 170 females (response rate 59.0%) and 117 males (response rate 38.9%) participated in the study, giving an overall sample size of 287 (response rate 48.7%).

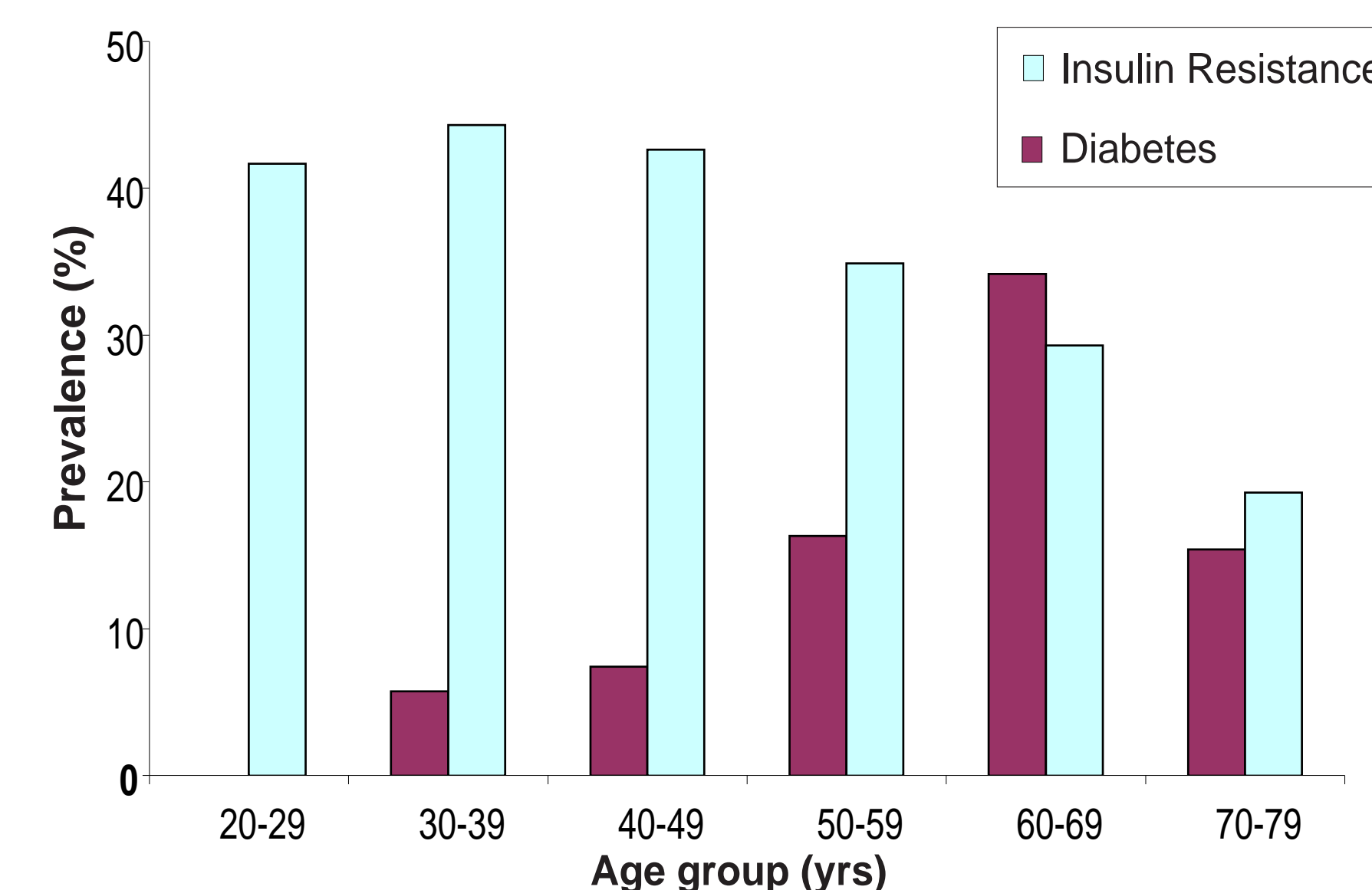
Of those in the random sample, 86% (247) identified as Maori, reflecting the predominantly Maori community. Results given below are for Maori participants only.

Characteristics of participants

	Female	Male	Total
Number	153	94	247
Age (yrs)	47.8 (±14.1)	51.8 (±14.2)	49.3 (±14.2)
Current smoker (%)	44.4	31.9	39.7
Family history of diabetes (%)	44.4	40.4	42.9
Weight (kg)	85.9 (±22.4)	92.4 (±16.1)	88.4 (±20.4)
BMI (kg/m ²)	33.9 (±8.2)	32.7 (±5.2)	33.4 (±7.2)
Waist (cm)	98.9 (±17.1)	101.8 (±11.7)	100.0 (±15.3)
Overweight (25 ≤ BMI < 30) (%)	26.1	21.3	24.3
Obese (BMI ≥ 30) (%)	64.7	71.3	67.2
Systolic BP (mmHg)	124.4 (±15.1)	125.0 (±11.8)	124.7 (±13.9)
Diastolic BP (mmHg)	82.5 (±13.3)	81.9 (±10.9)	82.2 (±12.4)
Total cholesterol (mmol/l)	5.34 (±0.98)	5.53 (±1.10)	5.41 (±1.03)



Age-specific prevalence of glucose metabolism disorders in Maori



Age-standardised* prevalence of diabetes, IGT or IFG and insulin resistance in adults aged 25 years and over.

	Female (n=153)	Male (n=94)	Total (n=247)
	% (95% CI)	% (95% CI)	% (95% CI)
Known diabetes	8.2 (3.5 - 12.9)	6.2 (1.2 - 11.2)	7.1 (4.0 - 10.2)
Newly diagnosed	3.4 (0.6 - 6.3)	3.5 (0.0 - 7.6)	3.6 (1.4 - 5.3)
Total diabetes	11.6 (6.1 - 17.1)	9.7 (3.5 - 15.8)	10.6 (6.8 - 14.4)
IGT or IFG	2.5 (0.2 - 4.7)	5.9 (0.9 - 10.9)	4.1 (1.6 - 6.6)
Insulin resistance	40.3 (29.6 - 50.9)	36.0 (19.1-52.9)	37.0 (28.6 - 45.5)

*Standardised to WHO world population.

Conclusions

- There was a high prevalence of overweight and obesity, with over 90% of participants having a BMI of 25 or more. Age-standardised prevalence of diabetes was 10.6%. In total, over half of the population was identified as having a glucose metabolism disorder (51.7%).
- There is a high prevalence of insulin resistance within the East Coast community, particularly amongst the younger age groups, suggesting that the future burden of diabetes is likely to be even greater than predicted unless effective intervention programmes are in place.
- Age-specific prevalence of insulin resistance declined with age, while age-specific prevalence of diabetes increased (see figure above), suggesting that conversion occurs in older age groups from the pre-diabetic insulin resistance state to diabetes.
- The high prevalence of cardiac risk factors associated with insulin resistance suggest that effective nutrition and lifestyle intervention will not only improve the risk of diabetes in this population, but will also offer benefits for risk of many other obesity-related health problems.

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