



# Chronic Conditions

# Diabetes

Stage 3

Epidemiological Series Report # 2011 - 04

December 2011



## Introduction

The following overview presents information about diabetes among the participants of the North West Adelaide Health Study, and the demographics, chronic conditions and risk factors associated with diabetes. Stage 1 of the study was conducted between 2000 and 2003, with Stage 2 conducted from 2004 to 2006 and Stage 3 conducted from 2008 to 2010.

## Measurement and definition of diabetes

People with diabetes were defined as those who had fasting plasma glucose (FPG) level of at least 7.0mmol/L as measured in the study clinic, or those who self-reported having been told by a doctor that they have diabetes in the questionnaire.

## Proportion of those with diabetes – Stage 1, Stage 2 & Stage 3

The proportion of participants with diabetes for Stages 1, 2 and 3 is shown in Table 1. Overall, in Stage 1, **6.6%** (95% CI 5.8-7.4), in Stage 2, **7.1%** (95% CI 6.3-8.1) and in Stage 3, **7.4%** (95% CI 6.5-8.5) of study participants were told by a doctor that they have diabetes.

**Table 1: Proportion of those with diabetes**

	Stage 1		Stage 2		Stage 3	
	n	%	n	%	n	%
No diabetes	3791	93.5	3022	92.9	2440	92.6
Diabetes	266	6.6	232	7.1	195	7.4
Total	4052	100.0	3254	100.0	2635	100.0

\* Note: The weighting of data can result in rounding discrepancies or totals not adding.

## Explanation of statistical terms used in this report

**Incident rate** is a measure of risk of developing a condition or risk factor within a specified period of time, often one year but in this report per 1000 person years. This allows for different amounts of observation times among participants between the baseline and Stage 3 results (ranging from 2000-2003 to 2008-2010). The incident rates were calculated without adjusting for age in this report. *For example, in a population of 1000 people, if 28 people develop a disease over two years, this would be expressed as 14 incident cases over 1000 person years (28 cases per 1000 divided by 2 years).*

**Hazard ratio (HR)** is the ratio of the hazard rates corresponding to a chronic condition or risk factor developing in the different groups over time – in this case, the time since the baseline examination (between 2000 and 2003). This allows for different amounts of observation times among participants between the baseline and Stage 3 results (ranging from 2000-2003 to 2008-2010). *For example, looking at cardiovascular disease, a hazard ratio of 2 for overweight or obese people implies that twice as many people with this risk factor have developed cardiovascular disease in this time compared to the reference group (those who are underweight or who have a healthy weight with a hazard ratio of 1).*

**Adjusting for age** is a technique used to better allow populations to be compared when the age profiles of the populations are quite different.

Tables 2 and 3 present the incidence rate per 1000 person years among those participants who did not report having diabetes at baseline Stage 1 (138 incident cases).

## Demographic profile of those with diabetes

The risk of developing diabetes among study participants without diabetes at baseline was statistically significantly higher among those who were over 50 years of age and over (Table 2).

**Table 2: Hazard ratios for demographic variables associated with diabetes**

Variable	n	New Cases (N) <sup>†</sup>	Incidence rate (1000 person yrs) <sup>†</sup>	HR (95%CI)**	p value**
<b>Sex</b>					
Male	1505	69	6.9	1	
Female	1585	69	6.3	0.83 (0.58-1.17)	0.286
<b>Age group</b>					
Up to 49 years	1861	55	4.3	1	
50 to 59 years	490	34	9.8	2.43 (1.55-3.81)	<0.001
60 years and over	739	49	10.4	2.50 (1.67-3.74)	<0.001
<b>Highest education level obtained*</b>					
Secondary	1319	60	6.7	1	
Trade/apprenticeship/cert/diploma	1274	61	7.0	1.10 (0.75-1.60)	0.631
Bachelor degree or higher	375	11	4.1	0.81 (0.39-1.70)	0.581
<b>Gross annual household income*</b>					
Up to \$20,000	653	46	10.9	1	
\$20,001- 40,000	754	34	6.5	0.88 (0.56-1.39)	0.579
\$40,001- 60,000	708	23	4.6	0.73 (0.40-1.31)	0.287
More than \$60,000	813	29	5.3	0.89 (0.50-1.59)	0.693
<b>Family structure*</b>					
Family & children, two biological/ adoptive parents	1049	41	5.7	1	
Adult living with partner, no children	786	42	7.5	0.77 (0.45-1.33)	0.351
Adult living alone	392	24	9.4	0.80 (0.43-1.47)	0.468
Adults – related/unrelated, living together	287	14	7.4	0.93 (0.46-1.87)	0.837
Step/sole/shared parenting & other	283	10	5.0	0.80 (0.39-1.64)	0.548
<b>Marital status*</b>					
Married or living with partner	2035	104	7.5	1	
Separated/divorced	240	13	8.1	1.05 (0.64-1.72)	0.856
Widowed	187	10	8.6	0.64 (0.34-1.18)	0.149
Never married	613	9	2.3	0.50 (0.24-1.06)	0.070
<b>Work status*</b>					
Full time employed	1235	53	6.2	1	
Part time/casual employed	530	17	4.7	0.72 (0.40-1.28)	0.261
Unemployed	118	5	6.3	1.26 (0.49-3.24)	0.633
Home duties/retired	957	58	9.3	0.69 (0.40-1.18)	0.175
Student/other	220	3	#	#	#

\* Don't know/ refused/ not stated category not reported

\*\* All variables adjusted for age (except for age group) to calculate hazard ratio

† Not adjusted for age

# Insufficient new cases (N<5) for statistical analysis

## Chronic condition and risk factor profile of those with diabetes

The risk of developing diabetes among study participants without diabetes at baseline was statistically significantly higher among those who had cardiovascular disease or a current mental health condition, those who were overweight or obese, or those with a high waist circumference or high blood pressure, and significantly lower among those who had a low alcohol risk or who were undertaking some exercise, than those without these risk factors (Table 3).

**Table 3: Hazard ratios for chronic conditions and risk factors associated with diabetes**

Variable	n	New Cases (N) <sup>†</sup>	Incidence rate (1000 person yrs) <sup>†</sup>	HR (95%CI)**	p value**
<b>Cardiovascular disease</b>					
No	2918	118	5.9	1	
Yes	169	20	19.5	1.97 (1.19-3.27)	<b>0.008</b>
<b>Current mental health condition</b>					
No	2691	112	6.2	1	
Yes	382	25	9.7	1.57 (1.03-2.40)	<b>0.036</b>
<b>Smoking*</b>					
Non-smoker	1468	59	6.0	1	
Ex-smoker	917	51	8.3	1.33 (0.90-1.95)	0.148
Current smoker	697	27	5.7	1.20 (0.71-2.01)	0.497
<b>Alcohol risk</b>					
Non-drinker/ No risk	1601	87	8.2	1	
Low Risk	1285	44	4.9	0.62 (0.43-0.91)	<b>0.014</b>
Intermediate to High Risk	189	7	5.6	0.83 (0.37-1.86)	0.644
<b>Physical activity</b>					
Sedentary	797	49	9.1	1	
Undertakes some exercise	2040	73	5.3	0.63 (0.43-0.92)	<b>0.017</b>
<b>BMI<sup>^</sup></b>					
Underweight/Normal (under 25)	1119	20	2.6	1	
Overweight (25 to 29.9)	1177	52	6.5	2.09 (1.23-3.53)	<b>0.006</b>
Obese (30 and over)	792	66	12.5	4.30 (2.61-7.09)	<b>&lt;0.001</b>
<b>High waist circumference (≥95cm men, ≥80cm women)<sup>^</sup></b>					
No	1374	24	2.5	1	
Yes	1715	114	8.2	3.16 (1.92-5.19)	<b>&lt;0.001</b>
<b>High blood pressure (≥140/90mmHg)<sup>^</sup></b>					
No	2199	64	4.3	1	
Yes	891	74	12.4	2.10 (1.40-3.15)	<b>&lt;0.001</b>
<b>High total cholesterol (≥5.5mmol/L)<sup>^</sup></b>					
No	1894	78	6.1	1	
Yes	1154	58	7.3	0.99 (0.69-1.42)	0.960

\* Don't know/ refused/ not stated category not reported

\*\* All variables adjusted for age (except for age group) to calculate hazard ratio

† Not adjusted for age

<sup>^</sup> Biomedical measurement

This document is one of a series of reports concerning Stage 3 of the North West Adelaide Health Study. Please see the website for other reports in the series - [www.health.adelaide.edu.au/pros/data/nwahs/](http://www.health.adelaide.edu.au/pros/data/nwahs/).

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Acknowledgment is made of the contribution to the success of the study by research, clinic and recruiting staff, and for the generosity of the NWAHS participants in the giving of their time and effort.