



## Chronic Conditions

# Depression

As measured by the  
Centre for Epidemiological Studies  
Depression Scale (CES-D)

Stage 3

Epidemiological Series Report # 2011 - 06

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## Introduction

The following overview presents information about depression, as measured by the Centre for Epidemiologic Studies Depression (CES-D) scale, among the participants of the North West Adelaide Health Study, and demographics, chronic conditions and risk factors associated with depression. Depression using the CES-D was firstly measured in Stage 2 which was conducted from 2004 to 2006 and again in Stage 3, conducted from 2008 to 2010.

## Measurement and definition of depression

The proportion of participants with depression was based on data obtained from the self-completed questionnaire in Stage 2 and by telephone interview in Stage 3, using the Centre for Epidemiologic Studies Depression Scale (CES-D)<sup>1</sup>. Participants were asked 20 items which were scored together to identify depression in this population. A score of 16 or higher classified persons as having “depressive symptoms”.

## Proportion of those with depression (CES-D) – Stage 2 & Stage 3

The proportion of participants with depression as measured by the CES-D for Stages 2 and 3 is shown in Table 1. Overall, in Stage 2, **12.4%** (95% CI 10.9-14.0) and in Stage 3, **20.0%** (95% CI 17.4-22.8) of study participants had depression.

**Table 1: Proportion of those with depression (CES-D)**

	Stage 2		Stage 3	
	n	%	n	%
No depression	3056	87.6	1912	80.1
Depression	431	12.4	477	20.0
Total	3486	100.0	2388	100.0

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

The depression status of participants, assessing mild, moderate or severe depression, is shown in Table 2. In Stage 2, **8.5%** (95% CI 7.2-9.9) and in stage 3, **11.3%** (95% CI 9.4-13.6) of participants experienced mild depression. In Stage 2, **3.9%** (95% CI 3.1-4.8) and in Stage 3, **8.6%** (95% CI 6.8-10.8) of participants experienced moderate to severe depression<sup>2</sup>.

**Table 2: Proportion of those with mild, moderate or severe depression (CES-D)**

	Stage 2		Stage 3	
	n	%	n	%
No depression	3056	87.7	1912	80.1
Mild depression	296	8.5	271	11.3
Moderate to severe depression	135	3.9	206	8.6
Total	3486	100.0	3490	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 2004-2006 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 2004 and 2006). This allows for different amounts of observation times among participants between the baseline and Stage 3 results (ranging from 2004-2006 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.

<sup>1</sup> Radloff LS. The CES-D Scale: a self report depression scale for research in the general population. *Applied Psychological Measurement* 1977; 1: 385 - 401.

<sup>2</sup> Blumenthal JA, Lett HS, Babyak MA, et al. Depression as a risk factor for mortality after coronary artery bypass surgery. *Lancet* 2003; 362: 604-609.

Tables 3 and 4 present the incidence rate per 1000 person years among those participants who did not report having depression at baseline Stage 2 (238 incident cases).

### Demographic profile of those with depression (CES-D)

The risk of developing depression among study participants without depression at baseline (as measured by the CES-D) was statistically significantly higher among those separated or divorced, or those who were unemployed, and significantly lower among those with a higher than secondary level of education, a gross annual household income of more than \$60,000, or those who were living with a partner and no children (Table 3).

**Table 3: Hazard ratios for demographic variables associated with depression**

Variable	n	New Cases (N) <sup>†</sup>	Incidence rate (1000 person yrs) <sup>†</sup>	HR (95%CI)**	p value**
<b>Sex</b>					
Male	1006	108	24.6	1	
Female	948	130	31.0	1.16 (0.83-1.64)	0.379
<b>Age group</b>					
Up to 49 years	997	140	31.2	1	
50 to 59 years	400	46	26.0	1.00 (0.69-1.47)	0.988
60 years and over	557	53	22.4	0.77 (0.54-1.10)	0.146
<b>Highest education level obtained*</b>					
Secondary	854	126	33.9	1	
Trade/apprenticeship/cert/diploma	742	69	21.0	0.55 (0.37-0.81)	<b>0.002</b>
Bachelor degree or higher	325	33	22.9	0.55 (0.30-0.99)	<b>0.045</b>
<b>Gross annual household income*</b>					
Up to \$20,000	344	51	34.8	1	
\$20,001- 40,000	455	62	30.7	0.79 (0.47-1.31)	0.353
\$40,001- 60,000	429	50	26.6	0.64 (0.35-1.15)	0.137
More than \$60,000	653	62	21.3	0.48 (0.27-0.87)	<b>0.016</b>
<b>Family structure*</b>					
Family & children, 2 biological/ adoptive parents	743	105	31.9	1	
Adult living with partner, no children	596	44	17.0	0.59 (0.37-0.94)	<b>0.026</b>
Adult living alone	255	34	30.0	0.98 (0.63-1.53)	0.928
Adults – related/unrelated, living together	158	23	32.7	1.14 (0.67-1.92)	0.632
Step/sole/shared parenting & other	177	28	36.3	1.23 (0.77-1.96)	0.381
<b>Marital status*</b>					
Married or living with partner	1409	152	24.4	1	
Separated/divorced	156	23	33.3	1.58 (1.05-2.36)	<b>0.026</b>
Widowed	134	13	23.3	0.82 (0.44-1.54)	0.532
Never married	245	49	44.5	1.73 (0.97-3.07)	0.064
<b>Work status*</b>					
Full time employed	898	105	26.3	1	
Part time/casual employed	306	44	32.3	1.18 (0.74-1.88)	0.496
Unemployed	36	10	65.2	4.24 (1.31-13.7)	<b>0.016</b>
Home duties/retired	640	75	27.1	1.39 (0.86-2.25)	0.182
Student/other	64	2	#	#	#

\* 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 depression (CES-D)

The risk of developing depression among study participants without depression at baseline (as measured by the CES-D) was statistically significantly higher among those who had reported a current mental health condition (including anxiety and stress-related problem), and significantly lower among those who were undertaking some exercise, than those without these risk factors (Table 4).

**Table 4: Hazard ratios for chronic conditions and risk factors associated with depression**

Variable	n	New Cases (N) <sup>†</sup>	Incidence rate (1000 person yrs) <sup>†</sup>	HR (95%CI)**	p value**
<b>Cardiovascular disease</b>					
No	1832	223	27.6	1	
Yes	117	15	29.3	1.20 (0.66-2.17)	0.552
<b>Diabetes</b>					
No	1796	216	27.3	1	
Yes	150	18	28.3	0.99 (0.60-1.63)	0.977
<b>Current mental health condition</b>					
No	1739	174	22.7	1	
Yes	211	65	70.1	2.89 (1.97-4.23)	<b>&lt;0.001</b>
<b>Smoking*</b>					
Non-smoker	932	103	24.9	1	
Ex-smoker	697	72	23.7	1.01 (0.68-1.50)	0.948
Current smoker	320	62	43.6	1.49 (0.97-2.30)	0.070
<b>Alcohol risk</b>					
Non-drinker/ No risk	976	98	22.9	1	
Low Risk	802	115	32.1	1.23 (0.87-1.77)	0.263
Intermediate to High Risk	97	13	29.6	1.40 (0.64-3.05)	0.404
<b>Physical activity</b>					
Sedentary	480	82	39.3	1	
Undertakes some exercise	1295	140	24.4	0.63 (0.43-0.91)	<b>0.014</b>
<b>BMI<sup>^</sup></b>					
Underweight/Normal (under 25)	616	68	25.3	1	
Overweight (25 to 29.9)	790	86	24.5	1.01 (0.66-1.55)	0.946
Obese (30 and over)	546	85	35.2	1.44 (0.92-2.26)	0.113
<b>High waist circumference (≥95cm men, ≥80cm women)<sup>^</sup></b>					
No	693	76	24.8	1	
Yes	1244	162	29.7	1.35 (0.92-1.98)	0.131

\* 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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