



Chronic Conditions Osteoporosis

Stage 3

Epidemiological Series Report # 2011 - 14

December 2011



Introduction

The following overview presents information about osteoporosis among the participants of the North West Adelaide Health Study, and the demographics, chronic conditions and risk factors associated with osteoporosis. Information about osteoporosis was first collected in Stage 2 which was conducted from 2004 to 2006 and again in Stage 3, conducted from 2008 to 2010.

Measurement and definition of osteoporosis

The proportion of participants with osteoporosis was based on data obtained from the telephone interview. Participants were asked if they had ever been told by a doctor that they have osteoporosis.

Proportion of those with osteoporosis – Stage 2 & Stage 3

The proportion of participants with osteoporosis for Stages 2 and 3 is shown in Table 1.

Overall, in Stage 2, **3.8%** (95% CI 3.2-4.5) and in Stage 3, **6.9%** (95% CI 5.8-8.2) of study participants reported that they had ever been told by a doctor that they have osteoporosis (Table 1).

Table 1: Proportion of those with osteoporosis

| | Stage 2 | | Stage 3 | |
|-----------------|---------|-------|---------|-------|
| | n | % | n | % |
| No osteoporosis | 3359 | 96.2 | 2484 | 93.1 |
| Osteoporosis | 133 | 3.8 | 184 | 6.9 |
| Total | 3492 | 100.0 | 2667 | 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.

Tables 2 and 3 present the incidence rate per 1000 person years among those participants who did not report osteoporosis when first asked in Stage 2 (84 incident cases).

Demographic profile of those with osteoporosis

The risk of developing osteoporosis among study participants without osteoporosis when first asked in Stage 2 was statistically significantly higher among females or those aged 50 years and over (Table 2).

Table 2: Hazard ratios for demographic variables associated with osteoporosis

| Variable | n | New Cases (N) [†] | Incidence rate (1000 person yrs) [†] | HR (95%CI)** | p value** |
|---|------|----------------------------|---|-------------------|------------------|
| Sex | | | | | |
| Male | 1091 | 28 | 6.0 | 1 | |
| Female | 1028 | 56 | 12.3 | 1.78 (1.13-2.82) | 0.013 |
| Age group | | | | | |
| Up to 49 years | 1142 | 15 | 3.0 | 1 | |
| 50 to 59 years | 432 | 26 | 13.6 | 5.29 (2.33-12.01) | <0.001 |
| 60 years and over | 546 | 43 | 18.6 | 6.70 (3.10-14.50) | <0.001 |
| Highest education level obtained* | | | | | |
| Secondary | 931 | 46 | 11.3 | 1 | |
| Trade/apprenticeship/cert/diploma | 809 | 29 | 8.0 | 0.83 (0.50-1.39) | 0.481 |
| Bachelor degree or higher | 344 | 7 | 4.7 | 0.80 (0.38-1.71) | 0.569 |
| Gross annual household income* | | | | | |
| Up to \$20,000 | 377 | 29 | 17.9 | 1 | |
| \$20,001- 40,000 | 487 | 18 | 8.5 | 0.61 (0.30-1.25) | 0.178 |
| \$40,001- 60,000 | 461 | 14 | 7.0 | 0.80 (0.31-2.07) | 0.650 |
| More than \$60,000 | 713 | 17 | 5.5 | 0.71 (0.25-2.07) | 0.536 |
| Family structure* | | | | | |
| Family & children, two biological/ adoptive parents | 813 | 16 | 4.5 | 1 | |
| Adult living with partner, no children | 619 | 35 | 13.1 | 1.53 (0.76-3.08) | 0.237 |
| Adult living alone | 252 | 16 | 14.7 | 1.11 (0.46-2.70) | 0.814 |
| Adults – related/unrelated, living together | 187 | 9 | 11.5 | 1.73 (0.46-6.44) | 0.415 |
| Step/sole/shared parenting & other | 218 | 6 | 6.6 | 1.25 (0.53-2.92) | 0.613 |
| Marital status* | | | | | |
| Married or living with partner | 1514 | 58 | 8.7 | 1 | |
| Separated/divorced | 183 | 14 | 17.3 | 2.03 (0.93-4.45) | 0.077 |
| Widowed | 123 | 11 | 21.3 | 0.82 (0.42-1.61) | 0.565 |
| Never married | 288 | 1 | # | # | # |
| Work status* | | | | | |
| Full time employed | 979 | 17 | 3.9 | 1 | |
| Part time/casual employed | 352 | 13 | 8.2 | 1.76 (0.86-3.63) | 0.124 |
| Unemployed | 48 | 4 | # | # | # |
| Home duties/retired | 639 | 45 | 16.4 | 1.45 (0.70-2.99) | 0.317 |
| Student/other | 87 | 5 | 13.0 | 3.77 (0.61-23.4) | 0.154 |

* 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 osteoporosis

The risk of developing osteoporosis among study participants without osteoporosis when first asked in Stage 2 was statistically significantly higher among those who undertook some exercise, and statistically significantly lower among those who were obese, than those without these risk factors (Table 3).

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

| Variable | n | New Cases (N) [†] | Incidence rate (1000 person yrs) [†] | HR (95%CI)** | p value** |
|---|------|----------------------------|---|------------------|--------------|
| Cardiovascular disease | | | | | |
| No | 1995 | 77 | 8.8 | 1 | |
| Yes | 124 | 7 | 13.1 | 0.66 (0.29-1.47) | 0.308 |
| Arthritis | | | | | |
| No | 1663 | 53 | 7.2 | 1 | |
| Yes | 439 | 30 | 16.0 | 1.32 (0.84-2.06) | 0.233 |
| Smoking* | | | | | |
| Non-smoker | 955 | 46 | 10.8 | 1 | |
| Ex-smoker | 760 | 29 | 8.8 | 0.83 (0.49-1.40) | 0.480 |
| Current smoker | 397 | 8 | 4.7 | 0.64 (0.31-1.33) | 0.229 |
| Alcohol risk | | | | | |
| Non-drinker/ No risk | 1041 | 38 | 8.3 | 1 | |
| Low Risk | 878 | 41 | 10.5 | 1.38 (0.89-2.14) | 0.148 |
| Intermediate to High Risk | 110 | 2 | 3.5 | 0.58 (0.14-2.45) | 0.462 |
| Physical activity | | | | | |
| Sedentary | 554 | 16 | 6.6 | 1 | |
| Undertakes some exercise | 1371 | 57 | 9.5 | 1.79 (1.04-3.09) | 0.035 |
| BMI[^] | | | | | |
| Underweight/Normal (under 25) | 661 | 34 | 11.9 | 1 | |
| Overweight (25 to 29.9) | 829 | 31 | 8.5 | 0.65 (0.38-1.12) | 0.124 |
| Obese (30 and over) | 628 | 19 | 6.8 | 0.51 (0.30-0.86) | 0.012 |
| High waist/hip ratio (>1.0 men, >0.85 women)[^] | | | | | |
| No | 1598 | 59 | 8.4 | 1 | |
| Yes | 501 | 24 | 11.0 | 0.89 (0.54-1.47) | 0.642 |

* 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

[^] 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/.

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