North West Adelaide Health Study

## Musculoskeletal Conditions

# Osteoporosis

**Stage 2**

**Epidemiological Series Report # 2007-15**

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University of South Australia

THE UNIVERSITY OF ADELAIDE AUSTRALIA

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Department of Health

## Introduction

The following overview presents the prevalence of osteoporosis among the participants of the North West Adelaide Health Study, and the demographic and risk factors associated with osteoporosis are presented. Stage 1 (baseline examination) of the study between 2000 and 2003, with Stage 2 (second examination) conducted from 2004 to 2006.

## Measurement of arthritis

The prevalence of osteoporosis was determined using data obtained from the self report telephone questionnaire. Participants were asked if they had ever been told by a doctor that they have osteoporosis. Participants aged 50 years and over were also offered the opportunity to undertake a Dual Energy X-ray Absorptiometry (DEXA) scan. Osteoporosis exists when a bone mineral (BMD) value is more than 2.5 standard deviations below the average BMD of young adult, Caucasian women. Osteopenia is present when the BMD value is between 1 and 2.5 standard deviations below the mean BMD of young adult, Caucasian women.

## Prevalence of osteoporosis – Stage 2 (self report)

The self reported prevalence of osteoporosis is shown in Table 1. Overall, in Stage 2, **3.8%** (95% CI 3.2-4.5) of study participants reported that they osteoporosis[1].

*The prevalence of self reported osteoporosis in Stage 2 was 3.8%.*

**Table 1: Prevalence of self reported osteoporosis**

| | Stage 2 | |
|---|---|---|
| | **n** | **%** |
| No osteoporosis | 3361 | 96.2 |
| Osteoporosis | 133 | 3.8 |
| Total | 3494 | 100.0 |

Note: (Stage 2) 8 participants did not provide a response to questions and were excluded

## Prevalence of osteoporosis – Stage 2 (clinic measurement)

The prevalence of osteoporosis among participants aged 50 years and over who had a DEXA scan is shown in Table 2. Overall, 15.0% (95% CI 13.0-17.3) of participants were classified as osteopenic and 3.6% (95% CI 2.6-4.9) were classified as osteoporotic. Among respondents who self reported that they did not have osteoporosis, 12.6% (95% CI 10.6-14.8) were classified as osteopenic by DEXA scan and 2.9% (95% CI 2.0-4.1) were classified as osteoporotic.

*The prevalence of osteoporosis determined by DEXA scan was 3.6%.*

**Table 2: Prevalence of osteoporosis (clinic assessment)**

| | Stage 2 | |
|---|---|---|
| | **n** | **%** |
| No osteoporosis | 868 | 81.4 |
| Osteopenia | 160 | 15.0 |
| Osteoporosis | 38 | 3.6 |
| Total | 1067 | 100.0 |

Note: (Stage 2) 282 participants aged 50 years and over did not undertake a DEXA scan and were excluded

[1] World Health Organization. (2003b). *Prevention and Management of Osteoporosis* (No. 921). Geneva: World Health Organization

## Demographic profile of respondents with self reported osteoporosis

The prevalence of osteoporosis was statistically significantly higher among females, in the older age groups, among those widowed, working part time, undertaking home duties or retired. Respondents with a higher than secondary level of education, earning above $40,000 or never married were significantly less likely to sate they had osteoporosis (Table 3).

*Those with osteoporosis were more likely to be:*
- *female;*
- *those in the older age groups;*
- *widowed;*
- *working part time, undertaking home duties or retired.*

**Table 3: Univariate Odds Ratios for demographic variables associated with self reported osteoporosis**

| Variable | n | % | OR | (95% CI) | p value |
|---|---|---|---|---|---|
| **Sex** | | | | | |
| Male | 17/1713 | 1.0 | 1.00 | | |
| Female | 116/1781 | 6.5 | 7.01 | (4.19-11.74) | **<0.001** |
| **Age group** | | | | | |
| 20 to 49 years | 4/2036 | 0.2 | 1.00 | | |
| 50 to 59 years | 21/576 | 3.6 | 21.56 | (6.96-66.73) | **<0.001** |
| 60 years and over | 108/882 | 12.3 | 80.18 | (27.74-231.73) | **<0.001** |
| **Highest education level obtained*** | | | | | |
| Secondary | 76/1412 | 5.4 | 1.00 | | |
| Trade/apprenticeship/cert/diploma | 34/1179 | 2.9 | 0.52 | (0.34-0.79) | **0.002** |
| Bachelor degree or higher | 3/559 | 0.5 | 0.09 | (0.03-0.30) | **<0.001** |
| **Gross annual household income*** | | | | | |
| Up to $20,000 | 46/587 | 7.9 | 1.00 | | |
| $20,001- 40,000 | 40/726 | 5.5 | 0.67 | (0.44-1.05) | 0.08 |
| $40,001- 60,000 | 11/693 | 1.6 | 0.19 | (0.10-0.37) | **<0.001** |
| More than $60,000 | 8/1064 | 0.7 | 0.09 | (0.04-0.19) | **<0.001** |
| **Marital status*** | | | | | |
| Married or living with partner | 70/2156 | 3.3 | 1.00 | | |
| Separated/divorced | 11/269 | 4.2 | 1.32 | (0.69-2.49) | 0.40 |
| Widowed | 30/197 | 15.1 | 5.29 | (3.35-8.35) | **<0.001** |
| Never married | 4/567 | 0.7 | 0.20 | (0.07-0.57) | **0.002** |
| **Work status*** | | | | | |
| Full time employed | 7/1467 | 0.5 | 1.00 | | |
| Part time/casual employed | 8/537 | 1.4 | 3.11 | (1.11-8.70) | **0.03** |
| Unemployed | 1/75 | 0.7 | 1.59 | (0.10-24.36) | 0.74 |
| Home duties/retired | 97/955 | 10.2 | 24.03 | (11.05-52.26) | **<0.001** |
| Student/other | 2/150 | 1.5 | 3.30 | (0.73-14.82) | 0.12 |

*Not stated category not reported

## Selected chronic condition profile of respondents with self reported osteoporosis

The prevalence of osteoporosis was statistically significantly higher among those with cardiovascular disease or arthritis (Table 4).

*Those with osteoporosis were more likely to have*
- *cardiovascular disease; or*
- *arthritis.*

**Table 4: Univariate Odds Ratios for chronic conditions associated with self reported osteoporosis**

| Variable | | | | | |
|---|---|---|---|---|---|
| **Cardiovascular disease** | | | | | |
| No | 111/3259 | 3.4 | 1.00 | | |
| Yes | 22/235 | 9.2 | 2.88 | (1.78-4.66) | **<0.001** |
| **Arthritis** | | | | | |
| No | 56/2731 | 2.1 | 1.00 | | |
| Yes | 76/740 | 10.3 | 5.48 | (3.84-7.81) | **<0.001** |

*Not stated category not reported

## Falls and osteoporosis

Overall, 41.2% (95% CI 33.2-49.7) of participants with self reported osteoporosis had had a fall in the past year. Among participants who had fallen, those without osteoporosis were less likely to have had a fracture (Table 4). In the past five years, the most common site of fracture among those with osteoporosis was the wrist (11.7%).

*Participants with osteoporosis were more likely to have had a fracture as a result of a fall in the past year and more likely to have had menopause.*

**Table 4: Univariate Odds Ratios for fractures associated with osteoporosis**

| Variable | n | % | OR | (95% CI) | p value |
|---|---|---|---|---|---|
| **Fracture as a result of fall*** | | | | | |
| Yes | 8/45 | 18.6 | 1.00 | | |
| No | 45/1131 | 4.0 | 0.18 | (0.08-0.41) | **<0.001** |

*Don't know category not reported

## Menopause and osteoporosis

Female participants aged 40 years and over were asked if they had experienced menopause. Of those who had experienced menopause, 14.4% (95% CI 12.1-17.1) reported that they osteoporosis. The prevalence of osteoporosis was statistically significantly higher among those who had experience menopause (Table 5).

**Table 5: Univariate Odds Ratios for menopause associated with osteoporosis**

| Variable | n | % | OR | (95% CI) | p value |
|---|---|---|---|---|---|
| **Menopause** | | | | | |
| No/ currently going through menopause | 2/320 | 0.7 | 1.00 | | |
| Yes | 109/754 | 14.4 | 23.35 | (6.27-87.02) | **<0.001** |

## Sunlight exposure and osteoporosis

During an average weekday in summer those with osteoporosis were statistically significantly less likely to have four or more hours of sunlight exposure. During winter, those with osteoporosis were more likely to have one to less than two hours exposure and less likely to have four or more hours exposure on weekdays. On weekends in summer, those with osteoporosis were less likely to have three or more hours of sunlight exposure and in winter are less likely to have two to less than three hours exposure or four or more hours exposure to sunlight.

## Quality of Life profile of osteoporosis

*People with osteoporosis have significantly lower quality of life scores on the physical domains (physical functioning, role physical, bodily pain and general health).*

Figure 1 shows the mean scores of the SF-36 subscales for those with and without osteoporosis. People with osteoporosis scored statistically significantly lower in the physical functioning, role physical, bodily pain and general health domains of the SF-36.

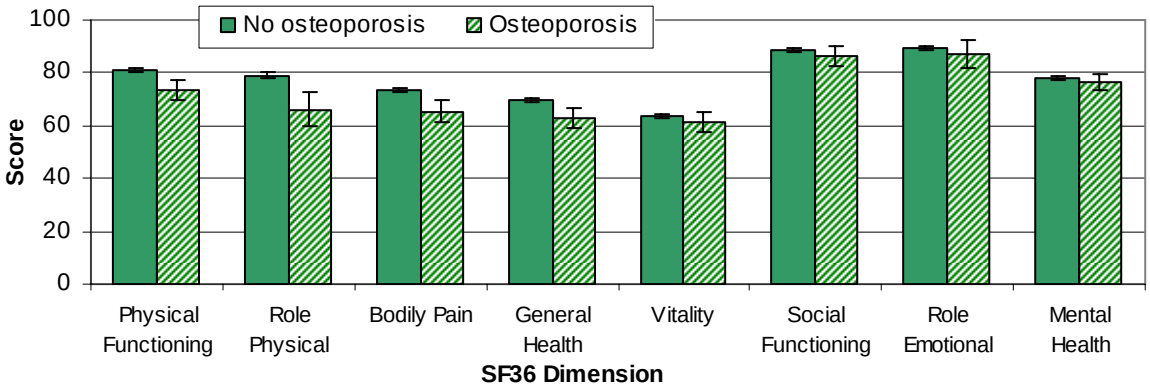


**Figure 1: SF-36 mean scores for participants with and without osteoporosis**

This document is one of a series of reports concerning Stage 2 of the North West Adelaide Health Study. Please see website for other reports in the series -www.health.sa.gov.au/pros

CONTACT DETAILS:
Population Research & Outcome Studies Unit – South Australian Department of Health
PO Box 287 Rundle Mall Level 8 CitiCentre, 11 Hindmarsh Square, Adelaide SA 5000
Telephone (08) 8226 7042 Facsimile (08) 8226 6244 Email: pros@health.sa.gov.au

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