



## Musculoskeletal Conditions

# Knee pain

Stage 2

Epidemiological Series Report # 2007-14

April 2007

## Introduction

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

## Measurement of knee pain

Information relating to knee pain and arthritis has only been collected in Stage 2 and was obtained through the self report telephone interview. Respondents were asked whether they have knee pain and whether they have doctor diagnosed knee arthritis. Respondents who reported knee pain or stiffness either at rest or when moving, on most days for at least a month, were also asked the Western Ontario McMaster University (WOMAC©) Osteoarthritis Index, which is a series of questions examining knee pain stiffness and functioning<sup>1</sup>.

## Prevalence of knee joint damage – Stage 2 (self report)

The self reported prevalence of knee joint damage (serious joint strain or sprain lasting two or more weeks, cartilage or meniscus damage, a fracture or a dislocation) is shown in Table 1. Overall, in Stage 2, **22.0%** (95% CI 20.7-23.5) of study participants reported that they had previously had knee joint damage. Of those with knee joint damage, **53.6%** (95% CI 50.1-57.2) stated that they had been treated by an operation.

**Table 1: Prevalence of self reported knee joint damage**

	Stage 2	
	n	%
Knee joint damage	766	22.0
No knee joint damage	2709	78.0
Total	3475	100.0

Note: (Stage 2) 27 participants did not know and were excluded.

## Prevalence of knee joint replacement – Stage 2

Participants were asked if they had undergone a knee joint replacement. Overall, 2.3% (95% CI 1.8-2.8) of respondents had at least one knee joint replaced (Table 2).

**Table 2: Prevalence of knee joint replacement**

	Stage 2	
	n	%
Yes, one knee	47	1.4
Yes, two knees	33	0.9
No	3415	97.7
Total	3496	100.0

Note: (Stage 2) 6 participants did not provide a response and were excluded.

*The prevalence of knee joint damage in Stage 2 was 22.0%.*

*The prevalence of having a total knee replacement was 2.3%.*

<sup>1</sup> Bellamy N (2003): WOMAC Osteoarthritis Index. User Guide VI. Queensland.

## Prevalence of knee pain

Respondents who had not had both knees replaced were asked whether they experienced pain, aching or stiffness in their knees either at rest or moving, on most days for at least a month. Overall, **16.0%** (95% CI 14.8-17.3) reported that they had pain in their knees (Table 3). Of the respondents who had knee pain, 43.9% (95% CI 39.9-48.1) reported that the pain was due to a sprain, strain, cartilage/meniscus damage, fracture, or dislocation.

**Table 3: Prevalence of knee pain**

	Stage 2	
	n	%
Yes	554	16.0
No	2903	84.0
Total	3458	100.0

Note: (Stage 2) 11 participants did not provide a response and were excluded.

## Demographic profile of respondents with knee pain

The prevalence of knee pain was statistically significantly higher among those aged 50 to 59 years, and those who were separated or divorced. Respondents with a bachelor degree level of education, earning above \$60,000, or never married were significantly less likely to state they had knee pain (Table 4).

**Table 4: Univariate Odds Ratios for demographic variables associated with self reported knee pain**

Variable	n	%	OR	(95% CI)	p value
<b>Sex</b>					
Male	294/1703	17.3	1.00		
Female	260/1755	14.8	0.83	(0.70-1.00)	0.05
<b>Age group</b>					
20 to 49 years	298/2027	14.7	1.00		
50 to 59 years	110/576	19.2	1.38	(1.08-1.75)	<b>0.009</b>
60 years and over	146/855	17.1	1.20	(0.97-1.49)	0.10
<b>Highest education level obtained*</b>					
Secondary	240/1398	17.2	1.00		
Trade/apprenticeship/cert/diploma	199/1172	17.0	0.99	(0.80-1.21)	0.91
Bachelor degree or higher	73/558	13.2	0.73	(0.55-0.97)	<b>0.03</b>
<b>Gross annual household income*</b>					
Up to \$20,000	104/577	18.1	1.00		
\$20,001- 40,000	132/723	18.3	1.01	(0.76-1.34)	0.93
\$40,001- 60,000	113/689	16.5	0.89	(0.67-1.19)	0.44
More than \$60,000	148/1063	13.9	0.73	(0.56-0.96)	<b>0.02</b>
<b>Marital status*</b>					
Married or living with partner	355/2143	16.6	1.00		
Separated/divorced	62/267	23.1	1.52	(1.11-2.06)	<b>0.008</b>
Widowed	28/190	14.8	0.88	(0.58-1.33)	0.53
Never married	72/566	12.7	0.73	(0.56-0.96)	<b>0.03</b>
<b>Work status*</b>					
Full time employed	231/1464	15.8	1.00		
Part time/casual employed	95/537	17.7	1.15	(0.88-1.49)	0.30
Unemployed	16/75	21.2	1.44	(0.81-2.54)	0.21
Home duties/retired	152/936	16.2	1.03	(0.83-1.29)	0.78
Student/other	23/150	15.4	0.98	(0.61-1.55)	0.91

\*Not stated category not reported.

Overall, 16.0% had knee pain or stiffness.

Those with knee pain more likely to be:

- aged 50 to 59 years; or
- separated or divorced.

## Knee pain and WOMAC scores

All respondents with knee pain were asked the WOMAC Osteoarthritis Index. The WOMAC has three scoring dimensions including pain, stiffness and physical functioning. For each WOMAC scale the minimum score of 0 indicates no pain, stiffness or limitations of physical functioning, while the maximum score (20 for pain, 8 for stiffness and 68 for physical functioning) indicates high or extreme levels in pain, stiffness or physical functioning limitations.. The average Osteoarthritis Index scores are reported in Table 5.

**Table 5: Mean WOMAC scores for pain, stiffness and physical functioning**

	N	Min	Max	Mean	SD
Pain	552	0	18	4.0	3.9
Stiffness	554	0	8	1.7	1.8
Physical functioning	552	0	59	12.1	12.5

## Knee pain and arthritis

Participants with knee pain were asked if they had ever been told by a doctor that they have arthritis in their knee (Table 6). The overall prevalence of knee arthritis among participants was 5.6% (95% CI 4.9-6.4).

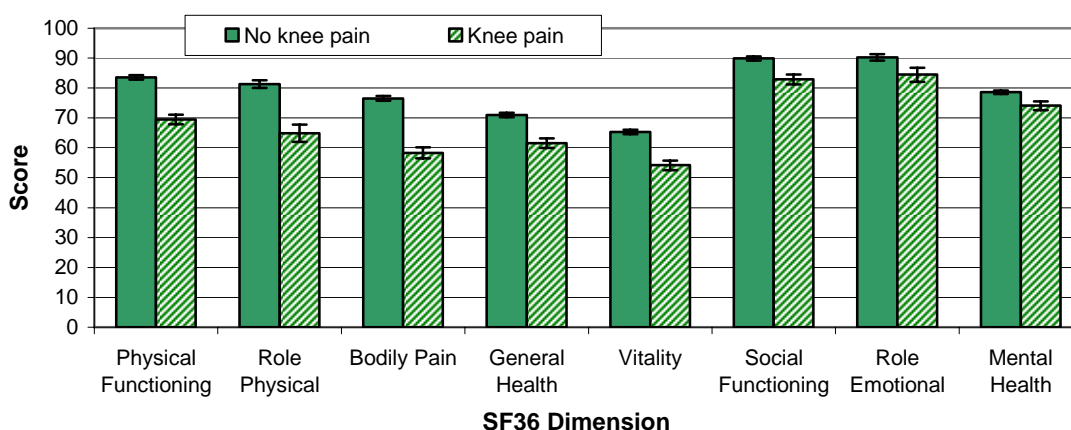
**Table 6: Prevalence of self reported knee arthritis among those with knee pain**

	n	%
Yes - osteoarthritis	72	13.5
Yes - Rheumatoid arthritis	22	4.0
Yes - don't know type	98	18.3
No	343	64.1
Total	535	100.0

Note: (Stage 2) 20 participants did not provide a response and were excluded.

## Quality of Life profile of participants with knee pain

Figure 1 shows the mean scores of the SF-36 subscales for those with and without knee pain. People with knee pain scored statistically significantly lower in all domains of the SF-36.



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

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/](http://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](mailto:pros@health.sa.gov.au)

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The overall prevalence of knee arthritis was 5.6%.

Participants with knee pain scored significantly lower on all dimensions of the SF-36.