Differences in Health Status of Older Adults with Pain in the Hip or Knee Only and with Additional Mobility Restricting Conditions

MARIJKE HOPMAN-ROCK, ELSE ODDING, ALBERT HOFMAN, FLORIS W. KRAAIMAAT, and JOHANNES W.J. BIJLSMA

ABSTRACT. Objective. To determine differences in health status of people aged 55 to 74 years with pain in the hip or knee only and with additional mobility restricting conditions.

Methods. A subsample from a community based study on pain, disability, comorbidity, and radiological osteoarthritis (OA) was used to identify a group with current pain in the hip or knee only (n = 62), a group with additional mobility restricting conditions (n = 124), and a reference group without pain and radiological OA (n = 72). Health status was measured with the IRGL instrument (Impact of Rheumatic diseases on General health and Lifestyle). Additional mobility restricting conditions were self-reported.

Results. The most reported additional conditions were more widespread joint pain and stiffness, and cardiovascular and respiratory problems. The group with pain in the hip or knee only had less mobility than the reference group (p < 0.05), but had higher mobility (p < 0.05), less pain (p < 0.001), less psychological distress (p < 0.01), and less effect of symptoms on daily life (p < 0.001) than the group with additional conditions. No differences were found in background variables or comorbidity. Multivariate logistic regression analysis showed that the group with additional conditions differed from the group with knee or hip pain only with respect to joint pain (OR 1.18), cheerfulness (OR 0.9), and effect on daily life (OR 1.1).

Conclusion. The health status of people with pain in the hip or knee only is comparable to that of a reference group without pain. Health status is lower when pain in the hip or knee is present in combination with additional mobility restricting conditions. This last group is at greater risk of psychological distress and physical dysfunctioning.

Key Indexing Terms:
- Pain
- Disability
- Comorbidity
- Osteoarthritis
- Aged

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Pain in the hip or knee is a frequently occurring complaint of elderly people living independently in the community. This pain is often caused by osteoarthritis (OA), a joint disorder characterized by pain, stiffness, disability, and radiological deviations. OA of the joints is most prevalent in the hands, knees, hips, and spine and is less prevalent in the wrist, elbow, shoulder, and ankle. OA may occur as a joint-specific disorder or as a generalized one. In the literature the consequences of OA are described as physical and psychosocial disability, decreased quality of life, and decreased well being. According to other investigators, pain and decreased mobility caused by OA can lead to alterations of psychological status and social functioning. All these terms can be regarded as aspects of health.

The incidence and the effect of OA and other musculoskeletal disorders (MSD) are expected to increase rapidly in the coming years, because of the aging of the population in Western countries. Only a few of the studies involving older populations that investigated the relationship between OA of the hip or knee and aspects of health controlled for MSD or other comorbidity. Ettinger, et al found that arthritis and other MSD, in particular followed by heart disease, were given as the primary causes of difficulty in performing physical tasks by older people living in the community. From our own research, we know that the existence of other current mobility problems besides pain in the hip or knee is associated with more physical and psychosocial disability.

Knowledge about the effect of OA of the
hip or knee on health status when there are additional disab-
ing conditions is important for health professionals who
counsel and treat patients with these complaints. Ac-
Additionally, specific knowledge is needed for the inter-
pretation of study results.

In accord with the statement by Guralnik about the
effect of co-occurring conditions on the relationship
tween disease and disability, the purpose of this study is
to explore the differences in health status and comorbid-
y (other than MSD) between a group of older adults with pain
in the hip or knee only and a group of older adults with self-
reported additional mobility restricting conditions.

Health status, functional status, and quality of life are
often used interchangeably to refer to “health.” We used a
specific health status instrument (an adapted Dutch version
of the Arthritis Impact Measurement Scale, AIMS) with
questions in the domains of physical functioning, psycho-
logical distress, social support, and effect of joint impair-
ments on daily life, to assess health status. We also assessed
a reference group without pain in the hip or knee and with-
out radiological signs of OA. For all respondents the most
important comorbidity (besides mobility restricting con-
tions) was known.

MATERIALS AND METHODS
This study was part of a large epidemiologic study of the general popu-
lation aged 55 years and older living in the Ommoord district in Rotterdam,
known as the Rotterdam Study. The aim of the Rotterdam Study is to
investigate determinants of disease occurrence and progression in people
older than 55 years (total N = 10,275; response n = 7813; response
83%) (Table I). In

January 1993

February 1993

Without any pain since 1991

With pain on at least one occasion

Response present study

Current pain in hip or knee (in month of interview)

Table 1. The sampling scheme.

Population aged 55+, Ommoord, Rotterdam

Rotterdam Study 1991*
(2 times asked for self-reported pain in hip or knee)

Population aged 55+

10,275
7983 (78% response) 1991–93
2895
2000 radiographs classified
831 (according to inclusion criteria**)
(response n = 691)
415 → reference group n = 94 (response n = 72)
276
234 (including reference group: n = 306)
186 (124 with additional conditions)

*Age and sex representative subsample: the first 2895 respondents.
**See Materials and Methods.

In February 1993, a subsample (N = 831) from the last mentioned sub-
study was formed (see below). These people received a short questionnaire
with questions about pain in their hips and knees in the last week and in the
last month. Inclusion criteria for this subsample were the availability of a
radiograph of the hips and knees, age between 55 and 75 years, and partici-
pation in 1991 in the interview at home and the medical examination.
Criteria for exclusion were participation in one of the 2 other substudies of
the Rotterdam Study (these studies were unrelated to musculoskeletal com-
plaints), the presence of cognitive conditions, and living in a home for the
elderly.

On the basis of scores for “self-reported pain in the hip or knee during
the last month” at 3 different time points (twice in 1991 and once in
February 1993), we classified the respondents (n = 691, response 83%) into
groups with chronic pain (pain on 3 occasions, n = 72), episodic pain (pain
on 2 occasions, n = 86; 15 subjects had pain on the first and second occa-
sions, 32 on the first and third occasions, and 27 on the second and third
occasions), sporadic pain (pain on one occasion, n = 118; 15 subjects had pain on the first occasion, 12 on the second, and 74 on the third occasion),
and no pain (n = 415). All subjects with pain on at least one occasion (total
n = 275) were asked to participate in the present study. The responders were
compatible with the nonresponders with respect to age, sex, and pain
chronicity. In the spring and summer of 1993 all respondents (n = 234,
response 85%) received a written questionnaire and were interviewed at
home 2 weeks later. Of these respondents, 186 people had current pain
(pain in the hip or knee during the month before the interview), 124 of
whom reported additional mobility restricting conditions. In addition, a
sample without pain and without radiological OA (n = 94) was taken in pro-
portion to the age and sex of the groups with episodic and chronic pain; 72
of these subjects participated in the study (the reference group). The
responders of the total group of 306 (234 with pain and reference group of
72) were comparable with the nonresponders (total n = 64) with respect to
age group (< or ≥ 65 years; chi-squared = 0.30, df = 1, p > 0.05) and sex
(chi-squared = 0.36, df = 1, p > 0.05).
Background and illness related variables. Age is given in years. Education was recoded in 3 categories: 1 = primary education, 2 = secondary education, and 3 = higher education (college/university). Marital status was recoded in 2 categories: 1 = living together, 2 = living alone. The classification of radiographs of the hips and knees was based on the standard Kellgren26 criteria (0 = no signs, 1 = doubtful, 2 = mild, 3 = moderate, 4 = severe). The body mass index [BMI = weight/(height)^2] was used to assess overweight, which is a known risk factor for OA of the knee. BMI was estimated for all respondents in the Rotterdam Study in 1991. According to standard norms, "acceptable ratios" are in the range 20-25, with a ratio of 26-29 considered to reflect overweight, and a ratio higher than 30 considered to reflect obesity.

Assessment of health status. The IRGL instrument27 (Impact of Rheumatic diseases on General health and Lifestyle) was developed for measuring the effect of rheumatic diseases, especially in the Dutch situation, and is based on the theoretical construct of the AIMS28. The IRGL consists of 68 items. The reliability in a population of patients with rheumatoid arthritis (RA) is good (Cronbach's alpha > 0.85). There are also significant correlations between clinical and laboratory findings and physical status measured by the IRGL, indicating good validity for use in patients with RA.

Physical functioning is measured by the mobility scale (especially problems involving the lower extremities; 7 items: score ranging from 7 to 28), self-care scale (especially dexterity in hand functions; 8 items: 8-32), and the pain scale (6 items: 6-25). The pain scale includes the existence of swollen joints, the frequency of pain, the severity of pain in the last month, the frequency of severe pain in the last month, the improvement of pain in the last month, and the duration of morning stiffness. If few or no problems with mobility or self-care are present, the scores on these subscales are relatively high. Psychological distress is measured by the anxiety scale (10 items: 10-40) and the depressive (6 items: 0-24) and cheerful mood (6 items: 0-24) scales. Social support is measured by scales that reflect the perceived quality of the social network: potential confidentiality 5 items (5-20), actual confidentiality 3 items (3-12), and mutual visits 2 items (2-8). The effect scale assesses the perceived influence ("almost never, sometimes, often, or almost always") of joint complaints on various domains of daily life (work, household, hobbies, holidays, leisure, sexuality, eating, sleep, friends and family), 12 items in total (10-40). Ten items were included in the scale; effect on relationship with spouse/partner and relationship with children were excluded in accordance with the IRGL manual29.

The pain scale of the IRGL was only completed by respondents with current pain (pain in the hip or knee in the month before completion of the questionnaire).

Additional mobility restricting conditions and comorbidity. Respondents with current pain (pain in the hip and/or knee during the last month, n = 186) were asked in an open question during the interview: "Do you have any other disease or disorder besides your knee or hip pain that restricts your daily movements or your daily functioning?" (responses yes or no). If the respondents answered "yes," they were asked: "Which diseases or disorders?" Respondents were also asked which disease or disorder (including pain in the hip or knee) had the most influence on daily life.

We used the prevalences of co morbidity collected for all subjects with and without additional self-reported mobility restricting conditions and comorbidity (the reference group without pain and radiological OA) to analyze the differences in the groups with and without additional mobility restricting conditions. Differences in nominal or ordinal variables were analyzed with chi-squared tests. To test the best discriminating variables between the groups with and without additional conditions in a multivariate way, stepwise logistic regression analysis was used with p-in 0.05 and p-out 0.10. Odds ratios (OR) and 95% confidence intervals (CI) are given. Data analysis was performed with SPSS20. The power (alpha = 0.05) to detect differences between the groups with and without additional mobility restricting conditions was 0.81. To determine the reliability of the different IRGL scales in our sample, we used Cronbach's alpha (measure for internal consistence of the items).

RESULTS
Characteristics of groups. Table 2 presents the characteristics (demographic and illness related variables and comorbidity) of the groups with and without self-reported additional mobility restricting conditions and the reference group without pain and radiological OA. The group with additional mobility restricting conditions seemed relatively young (mean 64.5 years), with a higher percentage of men (37%), and had less sporadic pain than the group with pain in the hip or knee only, although these differences were not statistically significant (age t = 1.83, p = 0.07; sex chi-squared = 3.1, df = 1, p = 0.08; pain chronicity chi-squared = 5.3, df = 2, p = 0.07, respectively). Figure 1 shows the age distribution (4 categories) of the respondents in the 2 groups with pain in the hip or knee. Chi-squared statistics showed that most people with pain in the hip or knee only were aged 65 to 69 years and 70 to 74 years and that most people with additional mobility restricting conditions were aged 60 to 64 years (chi-squared = 7.9, df = 3, p = 0.048). People in this last age category had a higher education level than people in the other age groups (chi-squared = 22.4, df = 6, p = 0.001). No differences between the age groups were found for other background variables (sex, marital status, pain chronicity).

Most people lived together (Table 2), had secondary school education, and were slightly overweight. The data...
Table 2. Characteristics of people aged 55 to 74 years with current pain in the hip or knee with and without additional mobility restricting conditions (n = 186) and a reference group without pain and radiological evidence of OA (n = 72). Current pain = reported pain in last month; comorbidity scores were measured 2 years before the start of this study. No statistically significant differences were found between the groups (p < 0.05).

<table>
<thead>
<tr>
<th></th>
<th>Pain in the Hip or Knee Only</th>
<th>Additional Mobility Restricting Conditions</th>
<th>Reference Group without Pain and OA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>62</td>
<td>124</td>
<td>72</td>
</tr>
<tr>
<td>Age, yrs, mean (SD)</td>
<td>66.1 (5.8)</td>
<td>64.5 (5.5)</td>
<td>64.1 (5.5)</td>
</tr>
<tr>
<td>Sex, (% women)</td>
<td>76</td>
<td>63</td>
<td>72</td>
</tr>
<tr>
<td>Marital status, % living together (married)</td>
<td>73</td>
<td>68</td>
<td>75</td>
</tr>
<tr>
<td>Education, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>19</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>Secondary</td>
<td>69</td>
<td>70</td>
<td>79</td>
</tr>
<tr>
<td>College/university</td>
<td>11</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Body mass index, mean (SD)</td>
<td>27.2 (4.0)</td>
<td>26.7 (3.4)</td>
<td>25.6 (3.4)</td>
</tr>
<tr>
<td>Comorbidity, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower extremity arterial disease</td>
<td>13</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Hypertension</td>
<td>23</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Thrombosis</td>
<td>6</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>6</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Stroke</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chronic respiratory disease</td>
<td>18</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>8</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Parkinson's disease</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Poor vision</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total comorbidity conditions, mean (SD)</td>
<td>0.74 (1.02)</td>
<td>0.89 (1.02)</td>
<td>0.76 (0.85)</td>
</tr>
<tr>
<td>Pain chronicity in hip/knee, %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sporadic pain</td>
<td>47</td>
<td>30</td>
<td>—</td>
</tr>
<tr>
<td>Episodic pain</td>
<td>29</td>
<td>35</td>
<td>—</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>24</td>
<td>35</td>
<td>—</td>
</tr>
<tr>
<td>Kellgren score in the hip ≥ 2, %</td>
<td>21</td>
<td>19</td>
<td>—</td>
</tr>
<tr>
<td>Kellgren score in the knee ≥ 2, %</td>
<td>36</td>
<td>31</td>
<td>—</td>
</tr>
</tbody>
</table>

Figure 1. Distribution of current pain in the hip or knee only and additional mobility restricting conditions in 4 age groups (aged 55 to 74 years, n = 186).

showed that hypertension was the most prevalent comorbidity, followed by chronic respiratory disease and lower extremity artery disease. No differences in comorbidity between the 2 groups and the reference group were found. Three subjects had a comorbidity score higher than 3 (6 was a maximum), one in the group with knee or hip pain only, and 2 in the group with additional mobility restricting conditions. No statistically significant differences were found in the chronicity of pain and the prevalence of radiological OA (Kellgren score ≥ 2) between the 2 groups.

Table 3 gives an overview of all reported additional mobility restricting conditions in the group with current pain in the hip or knee (n = 124), divided into additional MSD (n = 91) and other conditions (n = 33). More widespread joint pain and stiffness was the most mentioned MSD (n = 46). Also, low back pain and hernia nuclei pulposi were frequently reported. Other relatively frequently reported mobility restricting conditions concerned the cardiovascular (there were as many men as women in this specific group) and the respiratory systems. Twenty-six respondents reported more than one additional condition (3 maximum). Self-reported cardiovascular and respiratory conditions as mobil-
ity restricting problems were all confirmed by the comorbid-
ity restricting problems were all confirmed by the comorbid-
by scores in 1991. Poor vision was not detected in the peo-
people who complained of eye problems; current pain = reported pain in last month; 26 respondents reported more than one additional condition; the second or third conditions are not mentioned here.

Table 3. Summary of self-reported additional mobility restricting conditions in people aged 55 to 74 years with current pain in the hip or knee. The reported cardiovascular and respiratory problems were all confirmed by the comorbidity scores in 1991. Poor vision was not detected in the people who complained of eye problems; current pain = reported pain in last month; 26 respondents reported more than one additional condition; the second or third conditions are not mentioned here.

<table>
<thead>
<tr>
<th>Reported Conditions</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal conditions</td>
<td>(total n = 91)</td>
</tr>
<tr>
<td>More widespread joint pain and stiffness</td>
<td>46</td>
</tr>
<tr>
<td>(Low) back pain</td>
<td>10</td>
</tr>
<tr>
<td>Hernia nucleus pulposi</td>
<td>8</td>
</tr>
<tr>
<td>Dislocated vertebra</td>
<td>4</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>2</td>
</tr>
<tr>
<td>Inflammation of muscles</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
</tr>
<tr>
<td>Other conditions</td>
<td>(total n = 33)</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>17</td>
</tr>
<tr>
<td>Respiratory</td>
<td>5</td>
</tr>
<tr>
<td>Eye</td>
<td>3</td>
</tr>
<tr>
<td>Bladder/Bowel</td>
<td>2</td>
</tr>
<tr>
<td>Ear problems</td>
<td>1</td>
</tr>
<tr>
<td>Stomach</td>
<td>1</td>
</tr>
<tr>
<td>Chronic fatigue</td>
<td>1</td>
</tr>
<tr>
<td>Impotence/kidney insufficiency</td>
<td>1</td>
</tr>
<tr>
<td>Ménière’s disease</td>
<td>1</td>
</tr>
<tr>
<td>Sickly</td>
<td>1</td>
</tr>
</tbody>
</table>

Five people (7%) in the reference group reported mobili-
ity restricting problems [caused by cold, stiffness (3x) and
and legs of unequal lengths].

Reliability of the IRGL scales. In our study, the alpha for the
mobility scale was 0.89, for the self-care scale 0.92, for the
pain scale 0.81, for depression 0.93, cheerfulness 0.91, anxi-
ety 0.86, potential confidentiality 0.87, actual confidential-
ety 0.72, mutual visits 0.78, and the effect scale 0.76. These
results indicated reasonable-to-good reliability of this health
measure.

Differences in health status. Table 4 shows the results of
MANOVA on the several subscales of the IRGL. Physical func-
tioning and psychological distress were different in the
groups with pain in the hip or knee with and without addi-
tional mobility restricting conditions. Physical functioning
(especially mobility and the presence of pain symptoms)
was relatively higher in the group with pain in the hip or
knee only, and psychological distress (especially anxiety
and cheerfulness) was lower in this group. Although the 2
groups did not differ with regard to social support, the actu-
al confidentiality was higher in people with pain in the hip
or knee only than in the group with additional conditions.
The effect of the joint problems on several aspects of daily
life was far less in people with pain in the hip or knee only.
When we compared the group with reported more wide-
spread joint pain and stiffness (n = 46) with the group with
pain in the hip or knee only (n = 62), similar results as
reported above were found. There were also no differences
in IRGL variables between the subgroups with additional
MSD (n = 91) and with additional other conditions (n = 33).
The mean scores on the self-care, anxiety, cheerfulness, and
social support scales of the group with pain in the hip or

Table 4. Health status variables (IRGL, mean and SD) of 2 groups of people aged 55 to 74 years with current pain in the hip or knee and a reference group without pain and radiological evidence of OA. If few or no problems with mobility or self-care are present, the scores on these subscales are relatively high.

<table>
<thead>
<tr>
<th>Maximum</th>
<th>Pain in the Hip or Knee Only (n = 62), Mean (SD)</th>
<th>Additional Mobility Restricting Conditions (n = 124), Mean (SD)</th>
<th>Test statistics (MANOVA and t test) between groups with and without additional conditions F or t (p)</th>
<th>Reference group without pain and OA (n = 72), comparison with group with pain in the hip or knee only; mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Functioning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>28</td>
<td>21.6 (5.8)</td>
<td>19.1 (6.0)</td>
<td>F = 6.3 (&lt; 0.001)</td>
</tr>
<tr>
<td>Self-care</td>
<td>32</td>
<td>30.0 (5.5)</td>
<td>29.2 (4.8)</td>
<td>F = 0.52 (0.47)</td>
</tr>
<tr>
<td>Pain IRGL</td>
<td>25</td>
<td>10.4 (4.3)</td>
<td>13.7 (4.9)</td>
<td>F = 17.4 (&lt; 0.001)</td>
</tr>
<tr>
<td><strong>Psychological distress</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>40</td>
<td>16.9 (5.2)</td>
<td>19.2 (5.3)</td>
<td>F = 5.2 (0.002)</td>
</tr>
<tr>
<td>Depression</td>
<td>24</td>
<td>2.6 (3.5)</td>
<td>3.0 (3.9)</td>
<td>F = 7.5 (0.007)</td>
</tr>
<tr>
<td>Cheerfulness</td>
<td>24</td>
<td>12.9 (4.9)</td>
<td>10.6 (4.4)</td>
<td>F = 0.42 (0.52)</td>
</tr>
<tr>
<td><strong>Social support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential confid.</td>
<td>20</td>
<td>13.5 (3.8)</td>
<td>12.5 (4.1)</td>
<td>F = 10.1 (0.002)</td>
</tr>
<tr>
<td>Mutual visits</td>
<td>8</td>
<td>5.5 (1.4)</td>
<td>5.1 (1.5)</td>
<td>F = 1.7 (0.16)</td>
</tr>
<tr>
<td>Actual confid.</td>
<td>12</td>
<td>6.6 (1.7)</td>
<td>6.0 (1.9)</td>
<td>F = 2.3 (0.13)</td>
</tr>
<tr>
<td><strong>Effect</strong></td>
<td>40</td>
<td>12.3 (4.0)</td>
<td>15.4 (4.9)</td>
<td>t = -3.93 (&lt; 0.001)</td>
</tr>
</tbody>
</table>

*Reference group different from group with pain in hip or knee only (t = -1.99, p = 0.047). Boldface type indicates multivariate cluster.
knee only were comparable to those of the reference group without pain in the hip or knee, with the exception of a significant difference in mobility (p < 0.05).

Figure 2 shows the cumulative percentage of respondents who reported that their joint symptoms "often" and "almost always" had an effect on several aspects of daily life. Significant differences were found in the areas of work, household, leisure time activities, and sleep, with the group with pain in the hip or knee only being clearly less affected in their daily life functioning than the group with additional conditions.

**Logistic regression.** The results of the stepwise multivariate logistic regression analysis are shown in Table 5. As potential discriminating (independent) variables we used background variables and the IRGL variables that were significantly different between the 2 groups. The dependent variable (grouping) was 0 if only pain in the hip or knee was present, and 1 if additional conditions were present. The pain scale of the IRGL was included in the model after step 1, followed by cheerfulness, and effect. No variables could be removed. If the OR does not include 1 in the 95% reliability interval (= a significant dependent variable), it means that this variable contributes to the change that the respondent belongs to the group with additional mobility restricting conditions.

Table 5. Results of stepwise logistic regression analysis (after 3 steps forward). Group with pain in hip or knee only versus group with additional mobility restricting conditions. Dependent variable: 0 = group hip/knee pain only, 1 = group with additional conditions.

<table>
<thead>
<tr>
<th>Variables in the Model</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Age in years</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Pain chronicity</td>
<td></td>
</tr>
<tr>
<td>Pain IRGL</td>
<td>1.18 (1.11-1.24)</td>
</tr>
<tr>
<td>Mobility</td>
<td>0.89 (0.86-0.94)</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
</tr>
<tr>
<td>Cheerfulness</td>
<td></td>
</tr>
<tr>
<td>Actual confidentiality</td>
<td>1.11 (1.05-1.17)</td>
</tr>
<tr>
<td>Effect</td>
<td></td>
</tr>
</tbody>
</table>

Sex 1 = male, 2 = female; education 1 = primary, 2 = secondary, 3 = college/university; marital status 1 = living together, 2 = alone; pain chronicity 1 = sporadic pain, 2 = episodic pain, 3 = chronic pain; pain IRGL = pain scale of the IRGL. No variables could be removed from the model.

Figure 2. Cumulative percentage of respondents reporting that their joint problems "often" or "almost always" had an affect on specific aspects of daily life. Groups had current pain in the hip or knee only and additional mobility restricting conditions (n = 186). *p < 0.05; **p < 0.01.
DISCUSSION

We investigated the differences in health status between a group of elderly community living people with current pain in the hip or knee only and a group with additional mobility restricting conditions. The group with current pain in the hip or knee only had significantly better physical functioning, including better mobility and less pain, less psychological distress, and less effect of their joint symptoms on daily life, than the group with additional conditions. No differences were found in comorbidity, measured 2 years before the start of this study. The health problems of people with pain in the hip or knee only were very much comparable to those of a reference group without pain and OA, with the same amount of comorbidity. In multivariate analysis, we found that — after correction for all other variables in the model — pain, cheerfulness, and effect were the best independent discriminators between the group with pain in the hip or knee only and the group with additional mobility restricting conditions.

These findings suggest that pain in the hip or knee, which is a common complaint of elderly people, does not affect health more than the above described conditions do. The health status is lower, however, when pain in the hip or knee occurs in combination with other mobility restricting conditions. These conditions were usually pain in other joints and other musculoskeletal problems, such as back pain. Other prevalent causes of mobility restriction were the presence of problems with the cardiovascular and respiratory systems. We emphasize that the presence of comorbidity did not have to be congruent with the reporting of a certain disease as a cause of mobility restriction.

We intentionally used the statement “other mobility restricting conditions” in the interview, because we were interested in conditions that cause health problems similar to those caused by pain in the hip and knee. Because it would have been impossible to include all conditions that could cause mobility problems in one printed list, we used an “open answer” question. In this way we avoided the problem faced by Ettinger, et al, the majority of whose respondents chose “other” as an answer to the question which disease or disorder was a cause of their disability. In the same study, Ettinger, et al found good agreement (85% in men and 71% in women) between self-reported disease and an independent confirmation of the diagnosis. In this study, additional mobility restricting conditions were self-reported and not confirmed by a doctor. However, Hughes, et al reported that older people (especially up to age 75 years and those with joint pain) give accurate self-report information about their musculoskeletal conditions. Besides the self-reported mobility restricting conditions, we used the comorbidity scores sampled in the Rotterdam Study for all respondents 2 years before the start of our study. These scores were more objective and most were confirmed by a doctor. Unfortunately, these comorbidity scores did not include any MSD.

A problem we encountered was that the participants with other mobility restricting conditions besides pain in the hip or knee were slightly younger than the other participants. It is possible that, because of the stepwise sampling of our population, bias was introduced against the inclusion of older and more disabled persons in our study. Another possibility is that the group with additional mobility restricting conditions had a higher mortality rate, perhaps because of the presence of a life threatening disease. However, we found no signs that this group had higher comorbidity. Dexter and Brandt reported a negative correlation between age and effect of OA, which remains unexplained. Indeed, we found that the relatively younger respondents reported greater effect of joint pain on activities of daily life than did the older respondents. An explanation is that older people regard their diminished physical functioning as normal for their age and are less likely to attribute these problems to their joint pain. As an alternative explanation, we can think of a cohort effect. This means that a certain age cohort is more vulnerable to mobility restricting conditions due to certain events in the past, such as poor health status in the Second World War, when members of a cohort were of an age when cartilage was still growing (personal communication of P. Okma-Keulen and J. te Koppele, 1996).

Krick, et al found that social functioning in patients with OA is very stable, even in a group with more pain and limitations in activities of daily living. We found the same phenomenon. However, we also found more psychological distress in the group with relatively more pain and lower physical functioning (the group with additional problems), as have other authors. In their study using the AIMS in women with symptomatic knee OA, Salaffi, et al hypothesized that psychological status is of utmost relevance to the effect of OA on physical performance and the experience of pain. However, it is difficult to say how the disablement process develops because available data are derived from cross sectional studies. As our study was also cross sectional, we cannot draw conclusions about causal relationships between variables such as pain, disability, and anxiety.

We were in the unique position of having radiographic scores available for the hips and knees of every respondent. Only a minority of the people with current pain symptoms actually had cartilage damage of one or more of the hip or knee joints, and there was no difference in the presence of radiological OA between the group with pain in the hip or knee only and the group with additional conditions. It is recognized that radiological OA is one of the predictors of physical disability, pain, and psychological distress, even though the diagnosis of symptomatic OA does not depend on the presence of radiological OA. We chose pain as the most important symptom of OA and contrasted data with a reference group without pain and radiological OA.

In research on knee or hip pain and disability and moni-
toring for public health purposes, it would be wise to correct for the self-reported presence of other mobility restricting conditions that can affect the health status of people with signs and symptoms of OA. For the clinician, the implication of our findings is that older people with self-reported additional mobility restricting conditions in addition to arthritic pain in the hip or knee are at greater risk of psychological distress and physical dysfunction. The group under 65 years is especially at risk of diminished health status, because people in this age group are relatively active in society (paid employment, household duties, etc.) and are unlikely to think of their complaints as a normal phenomenon of aging. These people require extra care and guidance.

REFERENCES