Working status among Dutch patients with rheumatoid arthritis: work disability and working conditions


Objectives. To assess work disability and variables associated with work disability among Dutch patients with rheumatoid arthritis (RA).

Methods. A questionnaire on working status was filled out by 296 patients of working age. Employment and work disability rates adjusted for age and sex from the Dutch population were determined using indirect standardization. Cox proportional hazard analysis was used to assess baseline predictors of work disability in a subgroup of patients (n = 195).

Results. After a mean disease duration of 4.3 yr, patients had a 0.78 (95% CI 0.67–0.88) chance of being employed and a 2.14 (95% CI 1.75–2.54) risk of being work disabled when compared with the Dutch population. Functional disability and job type at the start of the disease were predictors of future work disability. In total, 48 (37%) currently employed patients had changed their working conditions, of which reduced working hours (46%), reduced pacing of work (42%) and help from colleagues (49%) were the most important alterations. Of the 60 work disabled patients without a paid job, only 11 patients (18%) would be willing to work again.

Conclusion. This study shows that the adjusted employment rates were lower and that work disability rates were higher in patients with RA when compared with the general Dutch population. In addition, a substantial number of employed patients had to change their working conditions due to RA. Only a minority of work disabled RA patients was willing to return to the paid labour force.

KEY WORDS: Rheumatoid arthritis, Employment, Disability.

Within the recently proposed framework of the World Health Organization (WHO) to classify function (ICF-WHO) [1], participation in the labour force is an important issue. Among patients of working age with rheumatoid arthritis (RA), high work disability rates have been reported [2–6]. Only a few studies have assessed the differences in employment or work disability from the general population taking into account differences in age and gender between patients and the general population of working age.

Several factors have been identified to be associated with or to be predictive of work disability, especially older age [7, 8], increased functional disability [4, 6, 7, 9, 10] and physically demanding jobs [5, 8, 11]. A clear insight into variables that can predict work disability, especially modifiable ones, is very important.

The aims of the present study were to estimate work disability and employment rates in Dutch patients with RA compared with the general population. In addition, we identified demographic, clinical, psychological and work-related variables associated with or predictive of work disability. Among patients who still had paid employment, specific working conditions were assessed; in addition willingness to return to paid work was explored in patients with RA-related work disability.

Patients and methods

Patients

Patients attending one of the seven out-patient clinics for rheumatology in the region of Utrecht, The Netherlands, collaborating in the Utrecht Rheumatoid Arthritis Cohort Study Group, were asked to participate. At disease onset (disease duration <1 yr), these patients had been included in one of two consecutively performed inception cohorts. The first inception cohort started in 1990 and early RA patients were randomly assigned to one of the four therapeutic strategies: pyramid strategy, intramuscular gold strategy, methotrexate (MTX) strategy or the hydroxychloroquine strategy [12, 13]. The inclusion of RA patients in this cohort ended in 1998 and the second inception cohort was started, into which inclusion was still going on at the time of the present study. In the second cohort, patients were randomly allocated to...
of the two MTX strategies, both strategies with a starting dosage of 7.5 mg/wk, which could be increased to 30 mg/wk—either intensive treatment tailored to the individual patient or conventional treatment. Patients of both inception cohorts fulfilled the 1987 ACR criteria [14] for RA and similar inclusion and exclusion criteria were applied.

Clinical assessments
At baseline and on predetermined assessment points the following variables were assessed: the Visual Analogue Scale (VAS) for pain (range 0–100 mm where 100 is the most severe pain), VAS for general well-being (0–100 mm where 100 is the worst general well-being), duration of morning stiffness (0–720 min), Thompson joint score (a weighted score including both tender and swollen joint count; range 0–534) [15, 16], erythrocyte sedimentation rate (ESR) (mm/1st h), serum rheumatoid factor (RF) (positive versus negative), functional disability (HAQ, Dutch version [17]), and radiological joint damage (modified Sharp/van der Heijde method [18]). The scales for mobility, self-care, pain, depressed mood, cheerful mood and anxiety were evaluated from the Dutch IRQLG questionnaire (Impact of Rheumatic Diseases on General Health and Lifestyle [19]).

Questionnaire on working status
To adjust for possible seasonal influences, a random sample of half of the patients received a self-reporting questionnaire on demographic characteristics and working status in October 1999 and the other half in April 2000. Educational level was dichotomized (higher vocational or university education, i.e. more than 12 yr versus less than 12 yr of education). Jobs were dichotomized into manual jobs (agricultural workers, production workers, transport equipment operators and labourers, military personnel, nursing personnel, home help, warehouse employees) and non-manual jobs (professional and technical workers, administrative and managerial workers, clerical workers and sales and service workers).

Definition of working status
Present working status was classified as (i) having a paid job, (ii) being partially work disabled due to RA and working for pay, (iii) being work disabled and not working for pay, (iv) not working for pay or stopped working due to reasons unrelated to RA. In The Netherlands a person who is judged to be impaired by 80% or more is entitled to full work disability pension, while those who are impaired by 15–80% are entitled to partial work disability.

Statistical analyses
Data on employment and work disability rates among patients with RA (25–65 yr of age) were adjusted for age and sex from the general Dutch population (Dutch Bureau of Statistics, Voorburg, The Netherlands, 1999), using indirect standardization. Four age categories were considered for men, women and the total population, separately. For each of the distinguished categories the observed (O) and expected (E) number of patients with work disability and similarly for patients in the paid labour force were calculated. Expected levels of work disability and labour force participation were computed using reference data for the general Dutch population relating to age- and gender-specific levels for work disability and participation in the labour force. To calculate the adjusted work disability rate or employment rate of the patients, the O/E ratio is multiplied by the rate of the reference group, i.e. in this study the general population.

The adjusted ratios can be interpreted as the relative chances of patients with RA of being work disabled or employed compared with the general population, adjusted for age and sex. A ratio of 1.0 indicates an equal chance, a rate ratio below 1.0 a decreased chance and a rate ratio above 1.0 an increased chance of work disability or labour force participation. To test for statistically significant differences between the RA patient group and the general population, we obtained the variances of the adjusted ratios, and the estimated 95% confidence interval (O/E±1.96×\sqrt{\text{var}[O(N−O)/(N×E)]}), i.e. corrected for the small sample size [20]. If 1.0 is included in the interval the estimate is statistically not significant at the alpha level of 0.05.

To compare characteristics of patients with a paid job and no work disability and patients with (partial) work disability at the time of filling out the questionnaire, values of clinical variables that were assessed at one of the predefined assessment points closest to the time the questionnaire was filled out, with a maximum of 6 months, were used for this analysis. The unpaired t-test or the Mann–Whitney U-test were used for continuous data, and the $\chi^2$ test for categorical data, where appropriate. $P<0.05$ was considered statistically significant. In addition, a multiple logistic regression was performed to estimate the probability of receiving work disability payments according to each variable, controlling for other variables.

Kaplan–Meier curves for patients with a paid job at the onset of disease were computed to assess time until (partial) work disability since disease onset. A Cox proportional hazard analysis was performed to determine possible predictors at disease onset of work disability due to RA.

This study was approved by the Medical Ethics Review Committee and patients gave written consent.

Results
Patients
Of the 363 questionnaires sent out to RA patients of working age (<65 yr), 296 (82%) were returned and filled out completely. The mean age ($±$ S.D.) of these 296 patients was 50±10 yr and the mean disease duration ($±$ S.D.) 4.3±2.6 yr (median 4.2, range 0.1–10 yr); 73% of the study population was female. Demographic characteristics of patients who did not fill out the questionnaire were not significantly different from those of who did. Except for disease duration, no differences were found between patients who replied to the October mailing and those who replied to the April mailing.

Working status
For the total study population of 296 patients (216 females and 80 males), 107 (36%) patients [70 (32%) females and 37 (46%) males] had a paid job, 22 (7.4%) patients [12 (6%) females and 10 (13%) males] were (partially) work disabled due to RA and working for pay, 60 (20%) patients [44 (20%) females and 16 (20%) males] were work disabled and did not work for pay anymore and 107 (36%) patients [90 (42%) females and 17 (21%) males] had never had a paid job, or stopped working due to reasons unrelated to RA. Of work disabled patients due to RA, full work disability pension (for those with $\geq 80$% impairment due to RA) was allocated to 60 patients (73%).

Table 1 shows the crude and adjusted data on employment and work disability among patients with RA and the general Dutch population. The adjusted employment rate for RA patients was 16% lower when compared with the employment rate of the general Dutch population. The adjusted work disability rate was 11% higher when compared with the work disability rate of the general population.
Table 1. Crude and adjusted rates and ratios for work disability and paid employment among 293 patients with RA of working age (25–65 yr), and rates of the general Dutch population for men, women and the total populations, separately

<table>
<thead>
<tr>
<th></th>
<th>Men with RA</th>
<th>Dutch men</th>
<th>Women with RA</th>
<th>Dutch women</th>
<th>Total study population</th>
<th>Total Dutch population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work disability</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Crude rate</td>
<td>32.5</td>
<td>11.4</td>
<td>25.8</td>
<td>8.2</td>
<td>27.6</td>
<td>9.8</td>
</tr>
<tr>
<td>Adjusted rate by age and sex</td>
<td>18.6</td>
<td>31.7</td>
<td>14.1</td>
<td>7.1</td>
<td>16.4</td>
<td>10.7</td>
</tr>
<tr>
<td>Adjusted ratio (95% CI)</td>
<td>1.64 (1.12–2.15)</td>
<td>2.51 (1.94–3.08)</td>
<td>2.14 (1.75–2.54)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In paid labour force</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude rates</td>
<td>58.8</td>
<td>83.4</td>
<td>37.1</td>
<td>60.7</td>
<td>43.0</td>
<td>72.2</td>
</tr>
<tr>
<td>Adjusted rate by age and sex</td>
<td>70.6</td>
<td>44.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted ratio (95% CI)</td>
<td>0.85 (0.69–1.00)</td>
<td>0.74 (0.61–0.87)</td>
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</tbody>
</table>

Employment and work disability rates were adjusted by age and sex with the Dutch population using indirect standardization. Three female patients aged less than 25 yr were left out of these analyses.

Table 2. Comparison of demographic, clinical, psychological and job related variables for patients with a paid job and no work disability and for patients with work disability due to RA (patients who were not working or who had stopped working due to reasons other than RA were excluded from this comparison)

<table>
<thead>
<tr>
<th>Paid job and no work disability (n = 107)</th>
<th>(Partially) work disabled due to RA (n = 82)</th>
<th>Univariate P</th>
<th>Multivariate P (n = 163)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic characteristics:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (yr) (n = 189)</td>
<td>47 ± 9</td>
<td>49 ± 11</td>
<td>0.135</td>
</tr>
<tr>
<td>Gender, female (n = 189)</td>
<td>70 (65)</td>
<td>56 (68)</td>
<td>0.678</td>
</tr>
<tr>
<td>Married and/or cohabiting (n = 189)</td>
<td>88 (82)</td>
<td>63 (77)</td>
<td>0.357</td>
</tr>
<tr>
<td>Education &gt;12yr (n = 187)</td>
<td>29 (27)</td>
<td>8 (10)</td>
<td>0.003</td>
</tr>
<tr>
<td>Co-morbidities, yes (n = 189)</td>
<td>35 (33)</td>
<td>46 (56)</td>
<td>0.001</td>
</tr>
<tr>
<td>Clinical variables:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease duration (yr) (n = 189)</td>
<td>3.7 ± 2.6</td>
<td>4.8 ± 2.7</td>
<td>0.007</td>
</tr>
<tr>
<td>VAS impact of RA (mm) (n = 188)</td>
<td>31 ± 25</td>
<td>50 ± 23</td>
<td>0.000</td>
</tr>
<tr>
<td>Morning stiffness (min) (n = 189)</td>
<td>2 (0–30)</td>
<td>30 (0–60)</td>
<td>0.001</td>
</tr>
<tr>
<td>VAS general well-being (mm) (n = 188)</td>
<td>27 ± 24</td>
<td>42 ± 28</td>
<td>0.000</td>
</tr>
<tr>
<td>VAS pain (mm) (n = 188)</td>
<td>18 ± 23</td>
<td>35 ± 30</td>
<td>0.000</td>
</tr>
<tr>
<td>Joint score: Thompson joint score (n = 188)</td>
<td>0 (0–43)</td>
<td>32 (0–80)</td>
<td>0.006</td>
</tr>
<tr>
<td>ESR (mm/1st h) (n = 185)</td>
<td>12 (5–21)</td>
<td>15 (8–23)</td>
<td>0.064</td>
</tr>
<tr>
<td>Functional disability, HAQ (n = 178)</td>
<td>0.6 ± 0.6</td>
<td>1.4 ± 0.6</td>
<td>0.000</td>
</tr>
<tr>
<td>RF, positive (n = 152)</td>
<td>50 (59)</td>
<td>44 (66)</td>
<td>0.388</td>
</tr>
<tr>
<td>Radiological damage: Sharp/van der Heijde (n = 182)</td>
<td>9 (3.8–21.3)</td>
<td>20 (5–55)</td>
<td>0.004</td>
</tr>
<tr>
<td>IRGL questionnaire:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility (n = 175)</td>
<td>23 ± 5</td>
<td>18 ± 6</td>
<td>0.000</td>
</tr>
<tr>
<td>Self-care (n = 173)</td>
<td>28 ± 5</td>
<td>24 ± 7</td>
<td>0.000</td>
</tr>
<tr>
<td>Pain (n = 174)</td>
<td>13 ± 6</td>
<td>16 ± 5</td>
<td>0.000</td>
</tr>
<tr>
<td>Depressed mood (n = 174)</td>
<td>2 (9–15)</td>
<td>3 (7–14)</td>
<td>0.018</td>
</tr>
<tr>
<td>Cheerful mood (n = 173)</td>
<td>11.8 ± 4.9</td>
<td>10.8 ± 5.0</td>
<td>0.168</td>
</tr>
<tr>
<td>Anxiety (n = 174)</td>
<td>17.5 ± 5.1</td>
<td>20.0 ± 3.7</td>
<td>0.003</td>
</tr>
<tr>
<td>Job characteristics:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous job type, blue collar (n = 189)</td>
<td>23 (22)</td>
<td>37 (45)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

After each variable, number of patients (n) evaluated is shown.

Clinical variables were assessed at one of the predefined assessment points closest to the time the questionnaire was filled out, with a maximum of 6 months. Values are mean ± s.d. for continuous data with normal distribution, median (IQ0.25–0.75) for data with non-normal distribution, and numbers (%) for categorical data.

Univariate analyses were performed to test differences between the two working status groups, using an independent t-test for continuous variables, and the chi² test for categorical data, where appropriate (level of significance, P < 0.05).

Multiple logistic regression was performed including all variables except for items obtained from the IRGL questionnaire and RF because of too many missing data on these variables.

Theoretical ranges for clinical variables are as follows: functional disability, HAQ (0–3 = worst score); ESR (2–140 mm/1st h); joint score, Thompson (0–534); all three VAS scales (0–100 mm = worst score); morning stiffness (0–720 mm); radiological damage, modified Sharp/van der Heijde (0–448).

High values on the IRGL questionnaire scales indicate a greater impact of that specific scale. Scale ranges as follows: IRGL questionnaire, mobility (7–28 = best score); self-care (8–32 = best score); pain (6–25 = worst score); depressed mood (0–24 = worst score); cheerful mood (0–24 = best score); anxiety (10–40 = worst score).

Variables associated with work disability

Table 2 shows differences in characteristics between two groups of patients with different working status at the time of filling out the questionnaire. The percentage of patients with lower educational level, with manual jobs or at least one co-morbidity was significantly higher in the work disabled group compared with the group of employed patients without work disability. Except for ESR and RF, values of clinical variables were significantly worse for patients who were work disabled versus those who were not. After controlling for other variables, functional disability, radiographic damage and job type remained related to work disability.
Survival analysis of work disability

At onset of RA, 208 of the 296 RA patients had a paid job. Of these 208 patients, 32% would become (partially) work disabled within the first year after diagnosis and 45% within 5 yr. Median time at work without official (partial) work disability was 7 yr (mean 5.5 yr, 95% CI 4.84–6.09 yr).

Predictors of work disability at diagnosis of disease

For patients with a paid job at disease onset and complete clinical baseline data (n = 195), baseline predictors of RA-related work disability were determined. The only statistically significant predictors of work disability were functional disability (HAQ) ($\beta = 0.79$, s.e. = 0.17 and HR = 2.2; 95% CI 1.6–3.1) and job type ($\beta = 0.60$, s.e. = 0.24 and HR = 1.8; 95% CI 1.1–2.9).

Difficulties in the present job

Of the 129 employed RA patients either with or without work disability, 48 (37%) patients reported that they had changed their working conditions. Reduced working hours (46%), pacing of work (42%) and help from colleagues (49%) were the most often mentioned alterations. Thirty one (24%) RA patients would like to (further) adapt their working environment. These adaptations then would consist of reduced working hours (29%), change in work pace (29%) and vocational training (26%).

Willingness to return to work

Of patients with work disability and no paid job (n = 60), 7 (12%) patients reported that they did not want a job, 40 (67%) patients reported that they would not be able to work again due to RA and 11 (18%) patients would like to work again under certain working conditions; data were missing for 2 (2%) patients. Flexible working hours and no (heavy) physically demanding occupation was the conditions most often reported for willingness to return to paid work.

Discussion

After a mean disease duration of 4.3 yr, among Dutch patients with RA the adjusted employment rate was 16% lower and the adjusted work disability rate 11% higher when compared with the rates of the general Dutch population. A limitation of the study was that these data were self-reported and were not confirmed by official work disability records. We expect that this could have led to some misjudgements of the amount of work disability and the exact moment of becoming work disabled, but not to a misreporting of the fact of work disability itself leading to recall bias. In The Netherlands, patients may for example become partially work disabled but after re-examination are entitled full work disability. It is thus possible that patients reported the last date of examination while they had already temporarily been work disabled. Longitudinal data collection is required to evaluate whether patients become initially partially work disabled and are then entitled full work disability later on in the course of the disease, or vice versa.

To estimate the impact of work disability, population-based studies in which work disability rates in RA patients are compared with work disability rates of the general population are preferable [10, 21, 22]. To reliably interpret the impact of the disease on participation in the labour force, comparison with a general population is necessary, taking into account possible differences in age and gender between populations studied. Not many clinical studies have compared work disability in RA population with that of the general population, and only a few data have been adjusted for age and sex [23, 24]. Non-adjusted work disability rates in the literature range between 13% after 6 months and 60% after 11 yr of disease [9, 25–28] among RA patients with a paid job at disease onset, whereas we determined rates for the total population of working age. By analysing in our study only those patients with a paid job at disease onset, (partial) work disability would be 39% after a mean disease duration of 4.2 yr.

The differences in demographic, clinical and job-related characteristics between patients with paid employment and no work disability and those with work disability were similar to those found in other cross-sectional surveys [7, 11, 29]. Given the retrospective design of our study, the associations may not necessarily implicate a causal relation. Although for some patients clinical variables were assessed for a maximum of 6 months before filling out the questionnaire, we do not think that this has caused any bias because this was done both for patients with and patients without sick leave.

One of the strengths of our study was the availability of demographic and clinical data at diagnosis, which therefore could be used in a predictive model. In agreement with other studies [5, 10, 27, 30], worse functional ability at disease onset predicted work disability in our study. It is likely that measures of disease activity did not independently predict work disability because such measures contribute to the variance in HAQ, because the HAQ score is associated with high disease activity in early RA [31]. The decline of the survival curve of work ability was most pronounced for patients having worse functional disability at baseline (data not shown); thus early improvement of functional status by aggressive treatment is likely to decrease the chance of becoming work disabled. In accordance with some other studies, type of job (i.e. blue-collar job) at baseline was also a predictor of future work disability in our study [26, 32]. It should be noted that the cross-sectional design of our study precluded assessment of job type at onset of the disease and therefore the type of the last job was imputed as the baseline job. Since 37% of the employed patients reported that they had changed their job for health reasons, it would have been interesting to know whether these patients had changed from manual jobs to non-manual jobs, for instance.

Interestingly, only 18% of the patients with work disability would be willing to work again. Further research is necessary to evaluate which patients would like to return to work and the impact of social security systems on the willingness to return to work.

Conclusion

The age- and gender-adjusted work disability rate of RA patients was 11% higher than that observed in the general population, and a high rate of work disability was already noticeable within the first years after disease onset. Functional status and job type at the start of the disease were predictors of work disability. Of the RA population in employment, 37% changed their working conditions due to their RA. Only 18% of the work disabled patients without a paid job were willing to return to the paid labour force.

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References


