

# THE BURDEN OF ILLNESS OF RHEUMATOID ARTHRITIS

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## ABSTRACT

**Background:** Rheumatoid arthritis (RA) is a chronic and debilitating condition. While the impact of RA on health-related quality of life (HRQOL), and overall work disability have been addressed extensively in literature, less attention has been focused on quantifying the impact on individual aspects of work productivity and activity impairment<sup>1,2</sup>.

**Objective:** To determine the effect of RA on HRQOL, work productivity, and activity impairment.

**Methods:** Data were obtained from the 2006 European National Health and Wellness Survey (NHWS), conducted in France, Germany, Italy, Spain and UK. The NHWS is a nationally representative, annual, Internet-based survey of adults 18 and older. It gathers information regarding demographics, health, healthcare attitudes, HRQOL, resource utilization, work productivity, and activity impairment. Diagnosed RA patients (n=280) were compared to a random sample of 1,000 patients with no arthritis. Linear regression models were developed to assess the association between RA and the following outcome variables: physical and mental HRQOL (measured by the SF-8), absenteeism (work time missed), presenteeism (impairment while working), work productivity loss and activity impairment (measured by the WPAI). All work productivity related analyses were limited to individuals employed full-time. The variables included in the models to control for potential confounding include gender, age, marital status, number of comorbid physical conditions, number of comorbid mental conditions, and country (reference=UK).

**Results:** After controlling for possible confounders, RA sufferers had significantly lower physical HRQOL scores (B= -9.077, p<0.001) compared to those without arthritis. RA Sufferers who were employed full-time reported increased levels of absenteeism (B=11.450, p<0.001), presenteeism (B=12.138, p<0.001), and overall work productivity loss (B=18.339, p<0.001). Respondents with RA also reported significantly higher levels of activity impairment (B=18.900, p<0.001).

**Conclusions:** RA affects multiple dimensions of work productivity. Sufferers of RA had greater absenteeism, presenteeism, overall work productivity loss and activity impairment compared to non-sufferers.

## INTRODUCTION

- Rheumatoid arthritis is an autoimmune disorder which can cause chronic inflammation of the joints and other parts of the body. While onset can occur at any age, it typically occurs between the ages of 30 and 60.<sup>3</sup>
- Literature suggests the prevalence rates for rheumatoid arthritis in Europe is fairly low (for example: 1.16% in UK<sup>4</sup>, 0.5% in Spain<sup>5</sup>, and 0.5% in France<sup>6</sup>).
- Although osteoarthritis is the more prevalent type of arthritis, rheumatoid arthritis can still be a debilitating condition which impacts a patient's quality of life and daily functioning.
- While the impact of RA on quality of life, and overall work disability have been addressed extensively in literature, less attention has been focused on quantifying the impact on individual aspects of work productivity and activity impairment.<sup>1,2</sup>

## OBJECTIVE

- To determine the effect of RA on health-related quality of life (HRQOL), work productivity, and activity impairment in five European countries (France, Germany, Italy, Spain and UK).

## METHODS

### Study Sampling Design and Data Collection

- Data were obtained from the Consumer Health Sciences 2006 European National Health and Wellness Survey (NHWS).
- NHWS is an annual cross-sectional study of healthcare attitudes, behaviors, and treatment choices of adults (≥18 years of age).
- Data were collected through self-administered Internet-based questionnaires in June 2006 from a nationally representative, community-based sample of adults in France, Germany, Italy, Spain and UK.

### Inclusion Criteria for Analysis

- Diagnosed by a physician with rheumatoid arthritis or not experiencing any arthritis and randomly selected for inclusion.

## METHODS (cont'd)

### Operational Definitions Rheumatoid Arthritis

- Respondents to the NHWS were asked:
  - "Which of the following conditions have you ever experienced?" ('Arthritis' was a prompted choice)
  - "Has your arthritis been diagnosed by a physician?"
  - "What type of arthritis do you have?" (Choices were: 'Osteoarthritis' / 'Rheumatoid arthritis' / 'Not sure')
  - "Have you had a blood test done for rheumatoid factor which came back positive?"
  - "Does your arthritis show symmetrical symptoms, that is, are the symptoms appearing very similar on both sides of the body?"
  - "Do you have arthritis as a result of an injury?"
  - "Please indicate which of the following prescription medications you currently use to treat your arthritis."
- Respondents answering "yes" to ever experiencing arthritis, being diagnosed with arthritis, and having rheumatoid arthritis were classified as having rheumatoid arthritis.
- Since a number of respondents selected "Not sure", further consideration was given to the responses to the questions pertaining to blood test, symmetrical symptoms, arthritis due to injury, and medications used in order to correctly classify respondents as rheumatoid arthritis patients.

### Health-Related Quality of Life (HRQOL)

- HRQOL in the past four weeks was assessed using the Medical Outcomes Study (MOS) 8-item Short-Form Health Survey (SF-8).<sup>7</sup>
- The SF-8 is a generic 8-item health-related quality of life measure designed to assess physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health.<sup>7</sup>
- The SF-8 yields physical and mental component summary scores that are normative to the U.S. population. The mean score for the U.S. population is 50 with a standard deviation of 10.<sup>7</sup>

### Work Productivity and Activity Impairment (WPAI)

- Work productivity was evaluated using the Work Productivity and Activity Impairment (WPAI) Questionnaire.<sup>8</sup>
- The WPAI questionnaire is a validated scale used to measure lost work productivity and impairment in daily activities.
- The WPAI yields four types of scores:
  - Absenteeism (work time missed)
  - Presenteeism (impairment at work / reduced on-the-job effectiveness)
  - Work productivity loss (overall work impairment / absenteeism plus presenteeism)
  - Activity Impairment
- WPAI outcomes are expressed as impairment percentages, with higher numbers indicating greater impairment and less productivity, i.e., worse outcomes.

### Statistical Analyses

- Bivariate analyses were performed to compare respondents who have rheumatoid arthritis to a random sample of adults without arthritis.
  - Chi-square was used to test for significant differences in categorical variables.
  - T-tests were used to test for significant differences in continuous variables.
- Regression models were used to control for potential confounding factors, including gender, age, marital status, number of comorbid physical conditions, if comorbid mental conditions were present, and country.

## RESULTS

### Patient Demographics and Comorbid Conditions (Table 1)

- In the EU NHWS 2006, n=280 respondents qualified as having rheumatoid arthritis.
- Compared to the random sample of non-arthritis respondents, rheumatoid arthritis patients were more likely to be older (50.4 years v. 45.2 years) and female (60.7% vs. 48.9%).
- Patients with rheumatoid arthritis were also more likely to be afflicted with a greater number of physical comorbid conditions and any mental comorbid condition.

## RESULTS (cont'd)

Table 1: Demographics and Comorbid Conditions

	RA (n=280)	No RA (n=1,000)
% Women*	60.7%	48.9%
Mean Age*	50.4 years	45.2 years
% Married	69.3%	64.3%
Mean # of Comorbid Physical Conditions*	3.35	1.60
% with Psychiatric Comorbid Conditions*	45.7%	23.2%

\* p<0.05

### Health-Related Quality of Life and Work Productivity (Figures 2 and 3)

- In bivariate analyses, patients with rheumatoid arthritis experience significantly worse physical and mental HRQOL.
- RA sufferers also experienced greater loss of work productivity and activity impairment.

Figure 2: SF-8 Scores (HRQOL)

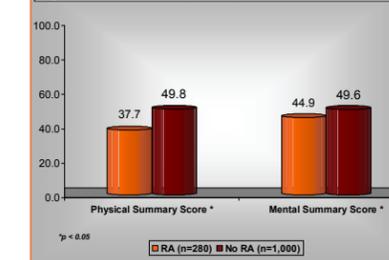
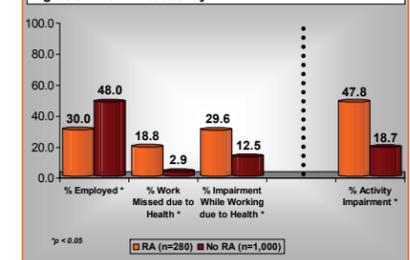


Figure 3: Work Productivity



### Regression Models (Table 4)

- After controlling for gender, age, marital status, and comorbid conditions, rheumatoid arthritis patients still had significantly greater work impairment than adults without arthritis.
  - RA sufferers experienced 18 percent greater work productivity loss, which is significantly attributable to both absenteeism and presenteeism.
  - RA sufferers experienced 19 percent greater activity impairment.
- In addition, rheumatoid arthritis patients had SF-8 physical summary scores that were 9 points less than adults without arthritis.
- Mental HRQOL did not significantly vary by RA status after controlling for demographics and comorbid conditions.

Table 4: Summary of Linear Regression Results for Effects of Rheumatoid Arthritis on Work Productivity Loss, and HRQOL

RA (1) v. No RA (0)	Unstandardized Coefficients		Standardized Beta	Sig.
	β	Std. Error		
Absenteeism (work time missed)	11.450	2.385	0.210	.000
Presenteeism (impairment while working)	12.138	2.903	0.180	.000
Work Productivity Loss	18.339	3.238	0.236	.000
Activity Impairment	18.900	1.837	0.267	.000
SF-8 Mental Summary Score	-0.854	0.608	-0.036	.160
SF-8 Physical Summary Score	-9.077	0.651	-0.356	.000

Control Variables: Gender, Age, Marital Status (Married v. Not Married), Number of Comorbid Physical Conditions, Number of Mental Conditions, Country (reference=UK).

## DISCUSSION AND CONCLUSIONS

- The limitations of RA extend to poorer physical HRQOL compared to non-sufferers. This is consistent with the current literature.
- The burden of illness of rheumatoid arthritis further extends to lost work productivity and activity impairment.
- Further exploration is needed to determine the extent to which medical treatments can alleviate some of the day-to-day physical and work-related impairments rheumatoid arthritis patients are experiencing.

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