Occupational Medicine & Health Affairs
ISSN: 2329-6879

Amaro, et al., Occup Med Health Aff 2018, 6:4
DOI: 10.4172/2329-6879.1000280

Research Article Open Access

Work Productivity and Activity Impairment in Rheumatoid Arthritis Patient

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Received date: October 8, 2018; **Accepted date:** October 20, 2018; **Published date:** October 25, 2018

Abstract

Introduction: Rheumatoid arthritis (RA) is a chronic progressive autoimmune disease associated with a decline in functional status. Previous studies have shown that RA patients have high rates of early retirement and work absenteeism and are more likely to be unemployed or with reduced earning potential.

Objective: Characterize work disability and identify factors associated with work incapacity in rheumatoid arthritis patients from a Rheumatology clinic.

Methods: A cross-sectional study was conducted in 116 patients with RA. Sociodemographic, clinical and occupational variables were collected and the validated Portuguese version of the Work Productivity and Activity Impairment Questionnaire-General Health (WPAI-GH) was applied to all patients currently employed. The following parameters were obtained: absenteeism, presenteeism, overall work impairment and global activity impairment.

Results: Correlation coefficients between DAS28 and WPAI-GH scores were moderate-good. A high correlation coefficient was obtained between HAQ and global activity impairment (0.647).

Conclusions: These findings support the usability of this version of WPAI-GH in a rheumatoid arthritis population and the value of associating specific work incapacity tools to clinical and functional assessment. There is a need for introduction of workplace productivity assessment in routine evaluation in patients with rheumatoid arthritis.

Keywords: Work productivity; Work disability; Absenteeism; Rheumatoid arthritis

Introduction

Rheumatoid arthritis (RA) is a chronic progressive autoimmune disease associated with flares of inflammation and progressive joint erosion, which often lead to a decline in functional status. The prevalence of RA is believed to range from 0.4%-3.0% in the general population of Europe and North America [1]. A North-American cohort estimated the incidence rate of RA in 41 per 100.000 people per year, rising with age and peaking at 65-74 years (54 per 100.000) [2], both prevalence and incidence being 2-4 folds higher in women than in men [1]. In Portugal the RA prevalence is estimated to be 0.7%, according to recent data from a national epidemiologic study [3]. It is known to have a high impact on the patients' daily lives, including their ability to work. Approximately 80% of working-age adults with RA experience disabling pain, joint stiffness and limitations in functional capacity and performance of social roles [4].

Previous studies have shown that these patients have high rates of early retirement and work absenteeism [5-7] and are more likely to be unemployed or with reduced earning potential [8]. Costs resulting from work disability account for a large part of total RA related costs [9-12]. When performing estimates on the economic impact of RA one should take into account the weight of the absenteeism and work productivity loss [12]. Traditionally health assessment questionnaires applied to RA patients focus on disease activity and functional capacity for regular daily activities. The Work Productivity and Activity Impairment-General Health version (WPAI-GH) is an instrument used to assess impairment in both paid and unpaid work; it measures absenteeism, presenteeism and the impairments in unpaid activity caused by health problems [13]. Clinical and functional evaluation of such patients should contemplate appropriate work incapacity quantification. The Disease Activity Score in 28 Joints (DAS28), measures the activity of the disease on joints, and is recommended as an auxiliary for clinical decisions for treatment initiation or alteration. It is also a valuable tool to assess the disease activity and the impact of therapy, after the correct determination of an accurate baseline, and ensuring regular re-evaluation. The Health Assessment Questionnaire (HAQ) is a self-report functional status measure, used in RA as a cornerstone to clinical evaluation. It measures diverse disability domains and is a tool clinically sensitive to changes and used widely as a disability predictor.

Objective

To characterize work disability and to identify factors associated with work incapacity in RA patients from a Rheumatology consult.

Methods

A cross-sectional study was conducted in a sample of 116 patients with RA attending the Rheumatology consult of a University Hospital. From January to March 2013 a questionnaire was applied, which included information on sociodemographic variables (age, marital status and school years), type of work regarding the last or current job: Blue-collar (jobs requiring manual activities or work with tools, ex.: Artisans, factory workers, maintenance assistants) or white-collar (administrative work was classified as white-collar). Patients were asked about age of diagnosis of RA and working years after RA diagnosis; currently employed patients were also inquired about the duration of sick leave in the previous year. The respondents were inquired about having benefited from any kind of work task modification due to RA and about the existence of formal recommendations by medical specialists regarding workplace modification. The questionnaires were individually conducted by a registered nurse and Rheumatology resident. Distribution of respondents per investigator was casual but not randomized. The interviews were conducted after the consultation period in the hospital facilities. Written consent was obtained before initiation of the interview process, which did not include personal identification data such as name or ID number. The validation study was approved by the hospital's ethics committee before collection of data. Patients with neurologic deficits such as dementia/cognitive impairment, speech disability (ex.: Aphasia) or psychiatric comorbidities that could disturb adequate response to the questionnaire were excluded.

A Portuguese version of the Work Productivity and Activity Impairment Questionnaire-General Health (WPAI-GH) was administered [14] in currently employed patients. Current employment was defined as regular paid work in the last year as a private or public company employee or as independent contractor; patients who were retired or unemployed throughout the year previous to the interview date did not complete the WPAI-GH questionnaire. The following indicators were derived from WPAI-GH results: work time missed due to health reasons (absenteeism), impairment while working (presenteeism), overall work impairment, global activity impairment. These outcomes are expressed in percentages by multiplying the following scores by 100: 1) percent work time missed due to health=Q2/(Q2+Q4) for those who were currently employed ("absenteeism"); 2) percent impairment while working due to health reasons=Q5/10 for those who were currently employed and actually worked in the past seven days ("presenteeism"); 3) percent overall work impairment due to health Q2/(Q2+Q4)+((1-Q2/(Q2+Q4))×(Q5/10)) for those who were currently employed; 4) percent global activity impairment due to health Q6/10 for all respondents [15,16]. Information on disease activity was assessed with DAS28- Disease Activity Score. The criteria for separating remission, low, moderate, and high disease activity based on the DAS28 score were of 2.4, 3.6, 5.5, respectively [17]. The portuguese version of the Health Assessment Questionnaire (HAQ) was also applied[18]; the normative value for the general population was established at 0,25 (CI 0,22-0,28) [19].

Descriptive analysis was conducted on sociodemographic variables, employment after diagnosis, current professional status, workplace restriction/adaptation, absenteeism and presenteeism. Mean retirement age was compared with the similar value for the general Portuguese population in 2013 with one sample t-test. Asymmetric variables were described with median values and percentile values at P25 and P75. Additionally, descriptive analysis of WPAI-GH included minimum and maximum values. Mann-Whitney test was used for comparison of differences in medians between asymmetric variables. Nonparametric correlation analysis was conducted with Spearman's test, between WPAI-GH results and both disease activity and disability scores (DAS28 and HAQ). The criteria for separating low, moderate, good and strong correlation levels were 0.3, 0.5 and 0.7, respectively. Statistical analysis was performed with SPSS (version 20.0); 0.05 was defined as the limit for statistical significance.

Results

The majority of participants were women (n=104; 89.7%) and mean age was 53.59 years (±11.62). Twenty patients (17.2%) had more than 9 years of education, with 47 (40.5%) having less than 4 (Table 1); most of the professions in the studied sample were classified as blue-collar workers-62.1%. Regarding current professional status only 41 patients were currently employed (35.3%), 17 unemployed (14.7%) and 37 patients (31.9%) were retired due to RA. Mean retirement age was 50.60 years (±9.72); in Portugal, in the same year mean retirement age was 63.4 years (p<0,001) and mean age for initial disability pension was 54.9 years (p=0,006) [20].

Gender, n (%)	
Female	104 (89.7)
Male	12 (10.3)
Age (years), mean (SD)	**53.59 (±11,62)**
Marital status, n (%)	
Single	9 (7.8)
Married	90 (77.6)
Divorced	10 (8.6)
Widowed	7 (6.0)
School years, n (%)	
Less than four	47 (40.5)

Between four and six	27 (23.3)
Between six and nine	22 (19.0)
More than nine	20 (17.2)
Type of work-last or current job, n (%)	
Blue collar	72 (62.1)
White collar	30 (25.9)
Missing	14 (12.1)
Current professional status, n (%)	
Employed	41 (35.3)
Unemployed	17 (14.7)
Retired by age or service years	6 (5.2)
Retired due to RA	37 (31.9)
Retired due to other reasons	1 (0.9)
Never had a paying job	14 (12.1)
Retirement age, mean (SD)	**50.60 (±9,72)**
Age at diagnosis of RA (years), mean (SD)	**44.00 (±13,76)**
Patients on biological therapy, n (%)	**33 (28.4%)**
Working years after RA diagnosis, median (P25-P75)	**4.0 (0.0-15.0)**
Work activity restriction, n (%)	
No restriction/limitation	53 (45.7)
Work restriction by occupational health specialist	4 (3.4)
Work restriction by other medical specialist (Rheumatologist or other)	18 (15.5)
Work restriction by self or employer's initiative	25 (21.6)
Missing	16 (13.8)
Absent working days in the last year, median (P25-P75)	**15.0 (0.0-90.0)**
DAS28, mean (SD)	**4.14 (1.38)**
HAQ, mean (SD)	**1.42 (0.84)**

Table 1: Sociodemographic characteristics of the studied sample (n=116).

Mean age of RA diagnosis was 44.00 (± 13.76) years. Median duration of employment after diagnosis of RA was 4.0 (0.0-15.0) years. Regarding medication, 33 patients (28.4%) were on biological therapy; only 12 of these patients were currently employed, which corresponded to 29.3% of the active RA population.

Most patients did not benefit from any kind of workplace adaptation or restriction (n=53; 45.7%). In those who did, some had their workstations/tasks were adapted or restricted by their own initiative (n=25; 21.6%) while few others (n=18; 15.5%) were formally restricted by MDs-Rheumatologists were responsible for restrictions in 11 patients, Family Medicine physicians in 6 patients and one case by Internal Medicine; Occupational Health physicians were responsible for workplace restrictions in only 3 cases. Median duration of work loss (absent working days due to medical reasons in currently employed patients) in the previous 12 months was 15.0 (0.0-90.0) days. In this patient sample the mean DAS28 value was 4.14 (1.38) which indicated global moderate disease activity; the mean value of HAQ was 1.42 (0.84).

WPAI-GH item and scoring results are depicted in Table 2. Median percent work time missed ("absenteeism") and percent impairment while working ("presenteeism") in the previous seven working days were 0.0 (0.0-10.8) and 20.0 (0.0-60.0), respectively. Higher values of overall work impairment and global activity impairment were obtained in this patient sample, with median scores of 50.0 (15.0-60.0) and 50.0 (17.5-60.0), respectively.

WPAI-GH Items	Median (P25-P75)	Min.-Max.
Q2 (hours)	0.0 (0.0-4.0)	0-35
Q3 (hours)	0.0 (0.0-0.0)	0-35
Q4 (hours)	40.0 (32.0-48.0)	0-60
Q5 (scale 0 to 10)	3.5 (1.0-6.0)	0-10
Q6 (scale 0 to 10)	5.0 (1.5-6.0)	0-10
WPAI-GH scores		
Work time missed (%)	0.0 (0.0-10.8)	0-100
Impairment while working (%)	20.0 (0.0-60.0)	0-100
Overall work impairment (%)	50.0 (15.0-60.0)	0-100
Global activity impairment (%)	50.0 (17.5-60.0)	0-100

Table 2: Descriptive analysis of WPAI-GH scores.

Correlation coefficients between the four WPAI-GH scores and DAS28 and HAQ are shown in Table 3. DAS28 and percent work time missed correlated poorly (0.275); correlation coefficients between DAS28 and the other WPAI-GH scores were moderate-good (0.514, 0.543 and 0.490 for impairment while working, overall work impairment and global activity impairment, respectively). Moderate-good correlation coefficients were obtained between HAQ and percent work time missed, impairment while working and overall work impairment (0.489, 0.495 and 0.509, respectively); the highest correlation coefficient was obtained between HAQ and percent global activity impairment (0.647).

	DAS28	HAQ	Work time missed (%)	Impairment while working (%)	Overall work impairment (%)	Global activity impairment (%)
DAS28	__	0,501**	0,275	0,514**	0,543**	0,490**
HAQ	0,501**	__	0,489**	0,495**	0,509**	0,647**
*p<0,05; **p<0,01						

Table 3: Spearman correlation coefficients-DAS28, HAQ, WPAI-GH scores.

Differences in WPAI-GH scores according to sociodemographic characteristics are depicted in Tables 4 and 5. Age showed low correlation with percent work time missed (0.120) and global activity impairment (0.125), moderate correlation with overall work impairment (0.420) and good correlation with impairment while working (0.518). The number of absent working days in the last year showed strong correlation with WPAI-GH work time missed (0.726), good correlation with overall work impairment (0.566) and moderate correlation with impairment while working and global activity impairment (0.382). Patients with higher number of school years (Table 4) revealed lower values of percent impairment while working (10.0 *vs.* 50.0, p=0.04); differences in overall work impairment percentages were found but without statistical significance (13.5 *vs.* 50.0, p=0.101); percent work time missed and global activity impairment did not show significant differences between categories of scholarity. Significantly lower values of percent impairment while working were also found in white-collar workers (10.0 *vs.* 50.0, p=0.02); overall work impairment percentages were lower in these workers (10.0 *vs.* 50.0, p=0.07) although no significant differences were found work time missed or global activity percentages (Table 5).

	Work time missed (%)	Impairment while working (%)	Overall work impairment (%)	Global activity impairment (%)
Age (years)	0,120	0,518**	0,420**	0,125
Sick leave duration in the last year	0,726**	0,437**	0,566**	0,382*
* p<0.05; ** p<0.01				

Table 4: Spearman correlation coefficients-WPAI-GH scores and sociodemographic characteristics.

		Percent WPAI-GH scores, median (P25-P75)			
		Work time missed	Impairment while working	Overall work impairment	Global activity impairment
School years	Under nine years (n=24)	0.0 (0.0-5.5)	50.0 (12.5-60.0)	50.0 (16.6-69.0)	50.0 (40.0-60.0)
	More than nine years (n=17)	0.0 (0.0-20.0)	10.0 (0.0-45.0)	13.5 (0.0-68.0)	35.0 (12.5-65.0)
	p-value	0.49	0.04	0.1	0.46

Type of work	Blue-collar (n=28)	0.0 (0.0-11.52)	50.0 (12.5-67.5)	50.0 (15.0-70.0)	50.0 (38.8-60.0)
	White-collar (n=13)	0.0 (0.0-11.92)	10.0 (0.0-42.5)	10.0 (0.0-57.5)	20.0 (5.0-55.0)
	p-value	0.86	0.02	0.07	0.11

Table 5: Comparison of WPAI-GH scores between sociodemographic categories.

Discussion

This work supports the findings of previous studies showing high rates of early retirement due to RA (31.9% in our study, compared to 34%-60.6% in other studies) [21,22]. Work absenteeism and presenteeism derived from WPAI-GH analysis were found to be similar than those previously reported in other studies: 0.0% median work time missed, similar to the median work time missed percentiles of other studies, and 20% median impairment while working in patients with RA compared to 20%-35% in other studies [13,23,24]. When compared to a previous validation study of WPAI-GH in RA patients median absenteeism and presenteeism measures were relatively lower.

Mean retirement age in our study sample (50.6 years) was found to be significantly lower than the country's general mean retirement age (63.4 years). The fact that mean retirement age due to RA was also significantly lower than mean initial disability pension age in the same year in Portugal (54.9 years) could suggest that these patients generally retire earlier than those with different medical conditions. Unemployment age was not studied or compared with the portuguese general rate due to low unemployment percentage in our sample (most patients were either working or retired due to RA). In our study the sample median duration of employment after diagnosis (4.0 years) was inferior than previous reports from survival cohort studies [5]. There was a high prevalence of impairment while working (presenteeism) and overall work impairment derived from WPAI-GH analysis (20.0% and 50.0%, respectively). Median duration of work loss in the previous twelve months (duration of sick leave) was 15.0 days; it should be noted that these sick leave numbers are not derived from analysis of formal medical prescriptions of temporary work incapacity, but only from questionnaire. It is reasonable to state that these results support the need for multilevel interventions for addressing the issues of work absenteeism and presenteeism in rheumatoid arthritis patients.

In our study only 33 patients (28.4%) were on biological therapy with only 12 cases having current active employment (36% of the patients on biologics) *vs.* 35% of the patients on other therapies. Recent data from biological therapy consistently shows a positive effect in patient productivity and in the reduction of patients' absenteeism, albeit the impact of these therapies on unemployment status is more conflicting, with most of the studies available failing to demonstrate a positive effect [25].

Our results showed that although diagnosed with RA and followed in a Rheumatology consult the vast majority of patients did not benefit from any kind or workplace adaptation or job restriction. Rheumatologists were responsible for the formal activity restriction in 11 cases and Occupational Health doctors in only 3 patients. This shows a flaw in occupational health intervention and suggests that Rheumatologists should work in proximity with Occupational Health doctors to improve workplace adaptation or job restriction when needed.

Disease activity (DAS28) scores correlated poorly with work time missed percentage ("absenteeism" from WPAI-GH; r=0,275) while showing moderate-good correlation coefficients with the other WPAI-GH scores. Regarding common general disability scores (HAQ) the best correlation coefficient was obtained with global activity impairment percentage derived from WPAI-GH (r=0,647). These findings could support the need for association of specific work incapacity evaluation tools to regular clinical and functional assessment.

In general our initial expectations of the influence of sociodemographic characteristics on WPAI-GH scores were supported by these results. Duration of sick leave in the last year showed strong correlation with work time missed and a good correlation with overall work impairment; patient age showed a good correlation with impairment while working and moderate correlation with overall work impairment. The influence of scholarity and type of work was also suggest by our results, since patients with higher education and "white-collar" work showed significantly lower levels of impairment while working. One possible limitation in this study is the criteria used for differentiation between white and blue collar work, in addition to the difficulty of evaluating the multiplicity of working tasks and job contexts. Another limitation of our study relates to the use of the Brazilian Portuguese version of WPAI-GH, instead of a native European Portuguese one. The authors decided to use this version, since there is no validated version of the questionnaire in European Portuguese, and the differences between the two dialects are minimal. It should also be noted that the employment percentage was lower than expected (35.3%)-current employment is a precondition for completing the WPAI-GH questionnaire.

Conclusions

These findings support the usability of this version of WPAI-GH in a RA patient population and the value of associating specific work incapacity tools to clinical and functional assessment. More studies should address this problem, in order to contribute to the general utilization of diverse tools to better characterize RA patients work abilities and the creation of specific tools that would allow the assessment of workplace productivity in routine evaluation and the impact of work on the patient's quality of life. The RA economic burden on absenteeism and presenteeism should be determined. It would be advisable to promote a multidisplinary approach to these patients' work ability, enrolling diverse parties to the necessity of conditioning the performed occupational tasks.

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