Disease burden measured by patient-reported outcomes: does psoriatic arthritis feel worse than rheumatoid arthritis? A cross-sectional nationwide study

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Abstract

Objective

To study the subjective disease burden of patients with psoriatic arthritis (PsA) and rheumatoid arthritis (RA), using patient-reported outcomes (PROs) cross-sectionally.

Methods

Data of 3598 patients with PsA and 13913 with RA were extracted from the database. Measures included the VAS-values of pain, fatigue and patient global assessment (PGA), HAQ, and disease activity at the most recent visit/remote contact in the period 1.2020 to 9.2021. Values were compared between patients with PsA and RA overall, and by sex and age (<50, 50-59, 60-69 and ≥70 years). Regression analyses were applied.

Results

The overall median (IQR)-values for pain were 29 (10, 56) for PsA and 26 (10, 51) for RA, 29 (9, 60) and 28 (8, 54) for fatigue, 28 (10, 52) and 29 (11, 51) for PGA, 0.4 (0, 0.9) and 0.5 (0, 1.0) for HAQ ($p<0.001$ for all comparisons; adjusted for sex and age). The median (IQR)-values for pain, fatigue, PGA and HAQ were higher for PsA vs. RA in most age groups for males and females. All PROs were higher in older patients with both diagnoses. The median values for DAS28, doctor global assessment, ESR and CRP were 1.9 vs. 2.0, 8 vs. 8, 7 vs. 8 and 2 vs. 3 in PsA and RA, respectively.

Conclusion

Overall, both PsA and RA groups showed moderate disease control by patients' perspective, but the burden of disease was higher especially in women with PsA compared to RA. Disease activity was similar and low in both diseases.

Key words

rheumatoid arthritis, psoriatic arthritis, patient-reported outcomes

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Introduction

Patient-reported outcomes (PROs) are valuable and valid measures to study the disease burden experienced by individuals in everyday life. PROs are especially useful to compare the health status of patients with psoriatic arthritis (PsA) and rheumatoid arthritis (RA), due to a lack of common validated disease activity measures for these diseases (1). The most often used PROs include pain, fatigue, patient's global assessment (PGA), and functions in everyday life.

Pain is the most common reason for patients with inflammatory rheumatic diseases (IRDs) to seek medical care (2). A recent study from the US has shown that approximately 16% of patients with PsA and 19% of patients with RA report chronic pain, with most patients rating it as their most burdensome symptom. (3, 4).

Comparative research between PsA and RA remains scarce with few studies conducted recently (5, 6). Therefore, our aim was to compare PROs in patients with PsA and RA overall and by categorising according to age and sex, in a cross-sectional setting in the Finnish nationwide quality register database, in 2020-2021.

Patients and methods

Patients and data

A total of 3598 adult patients with PsA and 13913 with RA from all 20 Finnish health care districts were identified in the Finnish Rheumatology Quality Register. Data from the most recent outpatient clinic visit or remote control between 1st January 2020 to 30th September 2021 was used in this study. We included demographic data such as age, sex, disease duration, diagnostic delay, and smoking status. In this study we focused on PROs, of which the following were included:

The values of pain, fatigue and PGA were self-assessed by the patients, by reporting their symptoms on the 0-100 mm visual analogue scale (VAS) with 0 for no symptoms and 100 for maximal discomfort.

Patient functional capacity was reported according to the Stanford Health Assessment Questionnaire (HAQ), scored from 0 to 3, without counting "aids and devices", with a score of ≥0.5 for deteriorated functional status.

In addition, we included:

Disease activity: DAS28-ESR (DAS28), ranging from 0 to 9.4, was used to measure disease activity, and the doctor's global assessment of disease activity (Dr.global) on a VAS of 0–100 mm.

Medications: this included self-administered methotrexate (MTX); biologic DMARDs (bDMARDs) as one group; Janus kinase inhibitors (JAK inhibitors) as one group; and a phosphodiesterase-4 (PDE4) inhibitor.

Methods

The PRO values were compared in patients with PsA and RA. Patients were also divided into groups by sex and by age (<50, 50–59, 60–69 and ≥70 years old). Median (IQR) values of pain, fatigue, PGA, and HAQ were compared between patients with PsA and RA in each sex and age group, due to different age and sex distribution of PsA and RA patient populations.

Statistical analysis

A value of p=0.05 was set as a threshold for statistical significance. Categorical variables were described using frequency counts and percentages. Continuous variables were described using means and standard deviations or medians and interquartile range (IQR) depending on the way the variable is distributed. Regression models were used to compare the median values of PROs between patients with PsA and RA overall, and by sex and by age. Continuous variables with skewed distributions were dichotomised at the median value and were analysed using logistic regression models. The analyses were made using the R Statistical language (v. 4.2.1; R Core Team, 2022) on Ubuntu 20.04.5 LTS.

Ethical issues

This study was conducted as a register-based study using data from the Finnish Rheumatology Quality Register, which is kept by the Finnish Institute for Health and Welfare (THL) and granted approval for the study. In a register-based study, patient consent is not required.

Table I. Demographic variables and current medications of patients with PsA and RA.

Variable	Data available, PsA, n %	PsA	Data available, RA, n %	RA	*p*-value
n		3598		13913	
Female n, %	3598 (100%)	1843 (51%)	13913 (100%)	10038 (72%)	<0.001
Age in years, mean (SD)	3598 (100%)	54 (14)	13913 (100%)	62 (14)	<0.001
Duration of symptoms before diagnosis in months, median (IQR)	950 (26%)	11 (4, 36)	4923 (35%)	5 (3, 12)	<0.001
Disease duration in years, median (IQR)	2457 (68%)	7 (2, 15)	10777 (77%)	9 (3, 20)	<0.001
ACPA-positive n, %	1834 (51%)	90 (5%)	10284 (74%)	7648 (74%)	<0.001
Smoking status n, %					
Current smokers	3267 (91%)	515 (16%)	12443 (89%)	1839 (15%)	0.169
Previous smokers		1278 (39%)		4286 (34%)	<0.001
Current use of medications					
Any DMARD		83%		86%	<0.001
Methotrexate		49%		57%	<0.001
bDMARDs (self-administered)		37%		21%	<0.001
JAK inhibitors		1.9%		4.6%	<0.001
PDE4 inhibitor		3.4%		–	

ACPA: anti-citrullinated protein antibody; DMARD: disease-modifying anti-rheumatic drug; JAK: Janus Kinase; PDE4: phosphodiesterase-4.

Table II. Comparison of PROs and disease activity in patients with PsA and RA.

Variable	Data available, PsA, n %	PsA	Data available, RA, n %	RA	*p*-value *
VAS-value for pain, median (IQR)	3323 (92%)	29 (10, 56)	12651 (91%)	26 (10, 51)	<0.001
VAS-value for pain, mean (SD)		34 (27)		32 (26)	<0.001
VAS-value for fatigue, median (IQR)	3297 (92%)	29 (9, 60)	12507 (90%)	28 (8, 54)	<0.001
VAS-value for fatigue, mean (SD)		35 (29)		33 (28)	0.001
VAS-value for PGA, median (IQR)	3287 (91%)	28 (10, 52)	12538 (90%)	29 (11, 51)	<0.001
VAS-value for PGA, mean (SD)		33 (26)		33 (25)	0.496
HAQ, median (IQR)	3064 (85%)	0.4 (0, 0.9)	11156 (80%)	0.5 (0, 1)	<0.001
HAQ, mean (SD)		0.6 (0.6)		0.7 (0.7)	<0.001
Proportion of patients with a HAQ of <0.5 n, %		1557 (51%)		5320 (48%)	<0.001
CRP, median (IQR)	2865 (80%)	2 (1, 5)	11281 (81%)	3 (1, 6)	0.032
ESR, median (IQR)	2647 (74%)	7 (3, 14)	10770 (77%)	8 (5, 18)	0.821
Dr. Global, median (IQR)	2585 (72%)	8 (0, 18)	9614 (69%)	8 (0, 19)	0.003
DAS28, median (IQR)	2569 (71%)	1.9 (1.4, 2.6)	10060 (72%)	2.0 (1.6, 2.7)	0.934

*Comparisons adjusted for age and sex. VAS: Visual Analogue Scale; IQR: interquartile range; SD: standard deviation; HAQ: Stanford Health Assessment Questionnaire; CRP: C-reactive protein; ESR: erythrocyte sedimentation rate; DAS28: Disease Activity Score 28

Results

Demographics

A total of 3598 (51% female) patients with PsA and 13913 (72% female, 74% ACPA-positive) patients with RA were identified, whose demographic variables and current self-administered medications are presented in Table I.

Patient-reported outcomes and disease activity

The values for pain and fatigue were slightly higher in patients with PsA *versus* RA, values for PGA were similar, and values for HAQ were slightly higher in patients with RA *versus* PSA. Disease activity was similar and low in both diseases. The comparisons were adjusted for age and sex (Table II).

Comparison of PROs between PsA and RA by sex and by age

In different age and sex groups, patients with PsA and RA reported similar values. However, the median values for pain and fatigue were statistically significantly higher in PsA *vs*. RA in women in all age groups. The differences in the median values were most noticeable for pain in women <50 years old (28 *vs*. 18 in PsA *vs*. RA), in women >70 years old (48 *vs*. 38 in PsA *vs*. RA), for fatigue in women 50–59 years old (41 *vs*. 31 in PsA *vs*. RA) and in women >70 years old (46 *vs*. 36 in PsA *vs*. RA) (Fig. 1).

Discussion

Our data suggest that the subjective disease burden was slightly higher in PsA, compared to RA. Especially, women with PsA reported higher values for pain and fatigue than women with RA in all age groups.

Pain: A recent Norwegian study showed mean values of 36 for PsA and 31 for RA (7). The corresponding mean values were 39 for PsA and 40 for RA in a study from the US in 2019 (5), indicating similar levels of pain in PsA and RA. The overall mean values of pain in our study were 34 for PsA and 32 for RA (Table II)

Fatigue: A recent Danish study showed mean VAS-values of 32 for PsA and 35 for RA for fatigue (6). In our study, the VAS-scores for fatigue were slightly higher for PsA (mean 35 for PsA and 33 for RA, Table II).

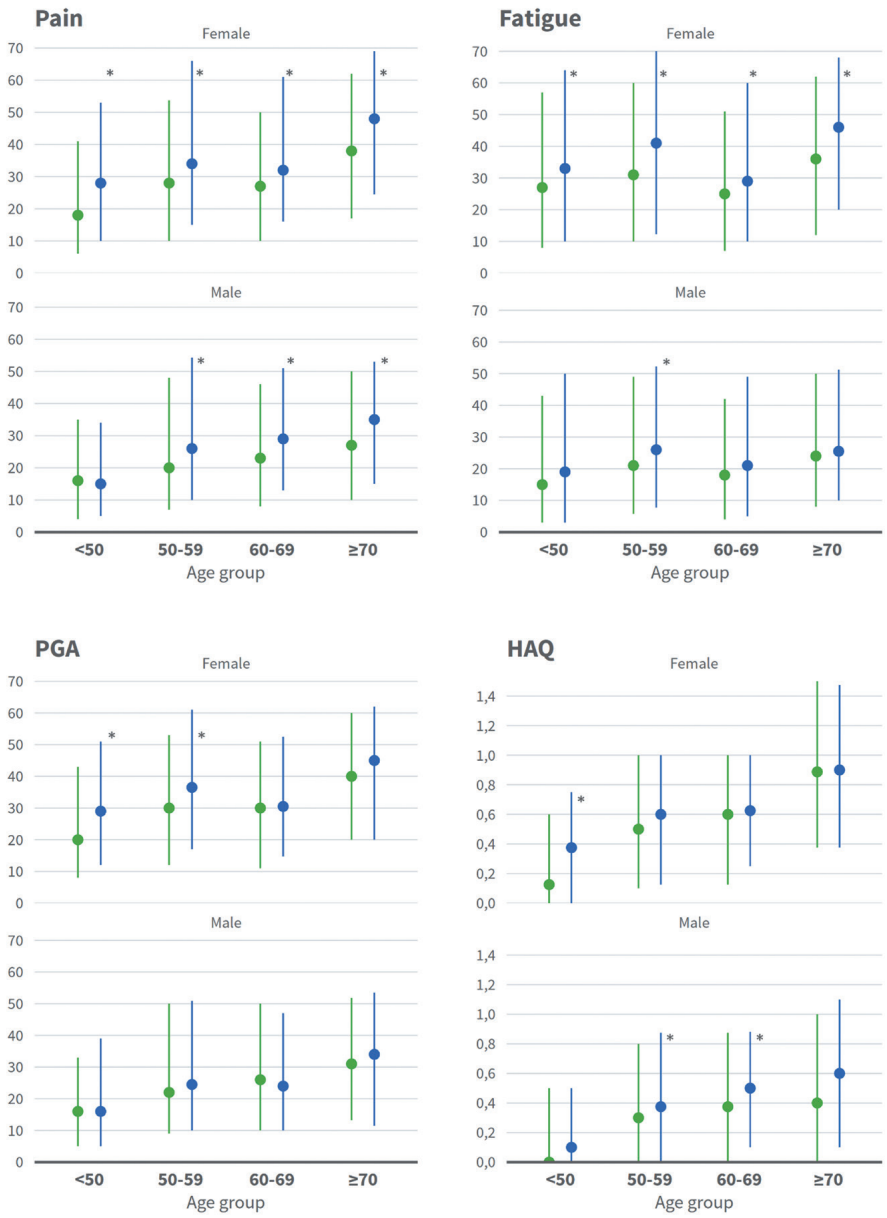

Fig. 1. Comparison of PROs, median (IQR), between patients with PsA and with RA, by sex and age. (* for $p<0.05$). Green indicates RA; Blue indicates PsA.

PGA. In terms of PGA, our results were somewhat contradictory (overall mean 33 for patients with PsA *versus* 33 for patients with RA) compared to previous research, as several studies have shown that PGA tends to be approximately 7 mean VAS-units higher overall for patients with PsA *versus* RA in cross-sectional settings (5, 7). Though, PGA, as well as possibly other PROs may be influenced by non-arthritis related factors such as cultural background, amount of social support, work status, personal relationships and level of education, which might explain these differences (8-10).

HAQ: The age- and sex-specific analyses showed higher values for PsA *versus* RA. Although not a focus of the present study, the influence of age and sex on PROs can be clearly seen in the results. Especially, the HAQ-scores were notably worse in women >70 years (0.9 for PsA and 0.9 for RA) than in women <50 years (0.38 and 0.13) and worse also in men >70 years (0.6 and 0.4) compared to younger male patients (0.1 and 0 in males <50 years old). Our observations are in line with previous research for both PsA and RA and for the general population (11, 12). The age-specific HAQ was similar in women with RA, compared to a Swedish study from 2021, as it showed a median HAQ of 0.4–0.6 for women younger than 70 and 0.9 for women over 70, whereas the scores were 0.4-0.6 and 0.9 for women in the same age groups in our study. For men in our study, the median HAQ-scores were also similar, 0 in men <50 years old and 0.4 for over 50 years old *versus* 0.0–0.4 in men <70 years old and 0.5 in men over 70 in the Swedish study (13).

Strengths and limitations

The main strength of this study was its large patient population from almost all hospital districts in Finland. However, typical of observational studies, the data were not complete for all variables, although available for the majority of patients concerning demographic variables, being >70% of the patients, except for duration of symptoms before the diagnosis (26% for PsA and 35% for RA), and the measurement of ACPA in PsA (51 %) (Table I). For PROs, the completeness of data was ≥90% for pain, fatigue and PGA and 85% for HAQ.

There were some limitations related to the variables used in this study. PROs may be affected by many non-arthritis related factors, such as cultural background, and psychological factors (8) and comorbidities. Nevertheless, our data represent a large patient population with PsA and RA in Finland, with similar backgrounds. Furthermore, we were able to analyse PROs in different age and sex groups with a large number of patients in each of them. Therefore, we assume that our observations of the differences of PROs reflect the real difference of the disease burden between these diseases.

More specific questionnaires might have been valuable to analyse similarities or differences in fatigue, *e.g.* (14). However, our data reflects everyday clinical work, where feasibility to use and clinical value in decision making are the criteria for PROs.

Conclusions

The burden of disease is slightly higher in patients with PsA compared to RA, especially in women. The median values of all PROs were higher in older patients compared to younger patients in both diseases.

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