Clinical Specialty Setting as Determinant of Management of Psoriatic Arthritis

A Cross-Sectional Brazilian Study

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Objective: The aim of this study was to examine the effect of clinical specialty setting on the management of psoriatic arthritis (PsA) as well as disease activity/burden in Brazil.

Methods: This study is a post hoc analysis of the Brazilian population in a cross-sectional, observational study conducted in 17 countries. Patients were 18 years or older with suspected or confirmed PsA attending routine visits at participating sites. Primary end points were time from symptom onset to PsA diagnosis, from diagnosis to first conventional systemic disease-modifying antirheumatic drug (DMARD) or first biologic DMARD, and from first conventional systemic DMARD to first biologic DMARD. Potential associations were assessed using the Student t test or the Mann-Whitney U nonparametric test. Normality was tested using the Shapiro-Wilk and Kolmogorov-Smirnov tests. For qualitative variables, the χ^2 test was adopted.

Results: Patients (n = 130) visited dermatology (n = 75) or rheumatology (n = 55) sites. All primary end points were similar between the 2 settings; however, dermatology patients had significantly greater enthesitis counts (2.1 vs 0.6; p = 0.002), absenteeism at work (Work Productivity and Activity Impairment, 19.7% vs 5.2%; p = 0.03), and pain (Health Assessment Questionnaire–Disability Index pain scale, 1.39 vs 1.01; p = 0.032), as well as worse quality of life related to psoriasis (Dermatology Life Quality Index total score, 8.5 vs 5.0; p = 0.019) and mental health (12-item Short-Form Health Survey, version 2.0 subscale, 42.4 vs 47.4; p = 0.029).

Conclusions: In Brazil, PsA disease burden and disease activity were influenced by clinical specialty. Irrespective of setting, patients experienced a delay in being diagnosed with PsA, reinforcing the need for collaborative management of PsA by rheumatologists and dermatologists for better outcomes in these patients.

Key Words: arthritis, psoriatic, dermatology, quality of life, rheumatology, time-to-treatment

P soriatic arthritis (PsA) is a chronic systemic inflammatory disease mediated by the immune system and characterized by the combination of arthritis and/or enthesial inflammation with psoriasis.[1,2] Patients with PsA often present with dactylitis and psoriatic nail dystrophy.[1–4] Prevalence estimates indicate that approximately 30% to 40% of patients with psoriasis also present with PsA, whereas among the general population, PsA prevalence ranges from 0.1% to 0.5% worldwide.[5–8] Clinical features of PsA are heterogeneous and vary not only among individuals but even in the same patient over time, making an adequate and prompt diagnosis of PsA a challenging task for nonrheumatologists.[4,9]

Timely diagnosis and appropriate therapeutic management of PsA seem to improve long-term outcomes, preventing disabilities. One study observed that patients who delayed obtaining consultation with a rheumatologist for >6 months from symptom onset had worse structural damage and physical function than those who visited a rheumatologist within 6 months.[10] Two other studies found similar findings: a delay in PsA diagnosis of >1 year increased the risk of worse physical function,[11] and patients obtaining adequate health care within the first 2 years of PsA symptom onset had less severe disease and less radiographic progression than those seen ≥2 years after symptom onset.[12]

International guidelines for the management of PsA have been published in the past few years for the rheumatology and dermatology therapeutic areas,[13–18] recommending that joints, skin, extra-articular manifestations, and comorbidities should be addressed simultaneously in patients with PsA.[17,18]

Psoriatic arthritis is a complex disease that is often challenging to diagnose, and there are few studies investigating its epidemiology and clinical features in Brazil.[8,19,20] Real-world data about the influence of clinical specialty setting on treatment management for patients with PsA are scarce worldwide and lacking in Brazil. Thus, the objective of this analysis was to examine the effect of clinical specialty setting on the diagnosis and management of PsA as well as on disease activity and disease burden in Brazil.

MATERIALS AND METHODS

Study Design

This analysis presents the Brazilian data set of LOOP, a cross-sectional, observational study evaluating the clinical specialty setting as determinant of management of patients with PsA conducted in 17 countries across different geographic regions. The results

of the LOOP study have been previously published,[21–24] with a focus on patient data both within[21,23] and outside of the United States.[22,24] The study population consisted of patients 18 years or older with suspected or confirmed PsA who attended a routine visit with a rheumatologist or dermatologist at a participating clinical site. Suspected PsA was based on clinical judgment of the recruiting physician; PsA was confirmed when the Classification of Psoriatic Arthritis (CASPAR) criteria were fulfilled.[25] To describe the overall PsA population, the LOOP study included all specialties providing medical care to patients with PsA, such as rheumatology, dermatology, primary care, and other practices (eg, orthopedists, ophthalmologists, physiatrists, and podiatrists) according to the standard practice in each country.[17] In Brazil, the study was limited to rheumatology and dermatology specialties.

A convenience sample strategy was adopted, and patients were recruited on a consecutive basis. Patient characteristics, relevant comorbidities, and medical history along with disease, diagnostic, and treatment data were documented in the data recording form based on data available in the medical charts. To ensure the most accurate and standardized assessments of joint and skin scores, the recruiting physician advised a consulting visit with a dermatologist or rheumatologist (ie, patients recruited in a rheumatology center had a consulting visit with a dermatologist and vice versa). This study was reviewed by the appropriate ethics committee and was performed in accordance with the ethical standards laid down in the Declaration of Helsinki, and that all patients gave their informed consent.

End Points and Measures

Primary end points were defined as (1) time from inflammatory musculoskeletal symptom onset to PsA diagnosis, (2) time from PsA diagnosis to use of first conventional systemic disease-modifying antirheumatic drug (csDMARD), (3) time from PsA diagnosis to use of first biologic disease-modifying antirheumatic drug (bDMARD), and (4) time from use of first csDMARD to use of first bDMARD, all measured in months.

Secondary end points were (1) PsA disease activity assessed by joint count (swollen joint count in 66 joints; tender joint count in 68 joints), enthesitis and dactylitis counts, axial involvement (Ankylosing Spondylitis Disease Activity Score), and skin disease activity (Physician Global Assessment scale, body surface area, and psoriatic nails count); and (2) disease burden assessed by physical function (Health Assessment Questionnaire–Disability Index [HAQ-DI] score), quality of life (12-item Short-Form Health Survey, version 2.0 [SF-12] and the Dermatology Life Quality Index [DLQI]), and work productivity (Work Productivity and Activity Impairment [WPAI] questionnaire).

Validated patient-reported outcomes were used to evaluate disease burden: WPAI questionnaire for productivity losses, HAQ-DI for disability, and DLQI and SF-12 for quality of life.[26–30]

Statistical Analysis

Data were initially explored based on a descriptive approach using measures of central tendency (mean and median) and dispersion (standard deviation and percentiles) for quantitative variables and frequency or proportion for qualitative variables. Potential associations between outcome variables and selected exposure variables were assessed using the Student t test (for normally distributed variables) or the Mann-Whitney U nonparametric test (for nonnormally distributed variables). Normality was tested using the Shapiro-Wilk and Kolmogorov-Smirnov tests. For qualitative variables, the χ^2 test was adopted. All data analysis was performed using the Stata/MP 12 (StatCorp, College Station,

TABLE 1. Sociodemographic Characteristics of Patients With PsA in Dermatology and Rheumatology Clinical Settings

Sociodemographic Variables, n (%)	Dermatology (n = 75)	Rheumatology (n = 55)	Total (N = 130)
Sex			
Male	35 (46.7)	24 (43.6)	59 (45.4)
Female	40 (53.3)	31 (56.4)	71 (54.6)
Occupation			
Employed/ self-employed	43 (57.3)	18 (32.7)	61 (46.9)
Retired	12 (16.0)	20 (36.4)	32 (24.6)
Unemployed; no paid work currently	20 (26.7)	17 (30.9)	37 (28.5)
Educational			
No formal education	0 (0.0)	1 (1.8)	1 (0.8)
Elementary school: 1–5 y	14 (18.7)	17 (30.9)	31 (23.8)
Middle to high school: 6–12 y	48 (64.0)	33 (60.0)	81 (62.3)
University: 13–17 y	9 (12.0)	4 (7.3)	13 (10.0)
Postgraduate: >17 y	4 (5.3)	0 (0.0)	4 (3.1)

No statistically significant differences were observed between subgroups ($p > 0.05$).

TX) and R-3.4.2 (R Project, Vienna, Austria) statistical software, with a significance level of $p \leq 0.05$.
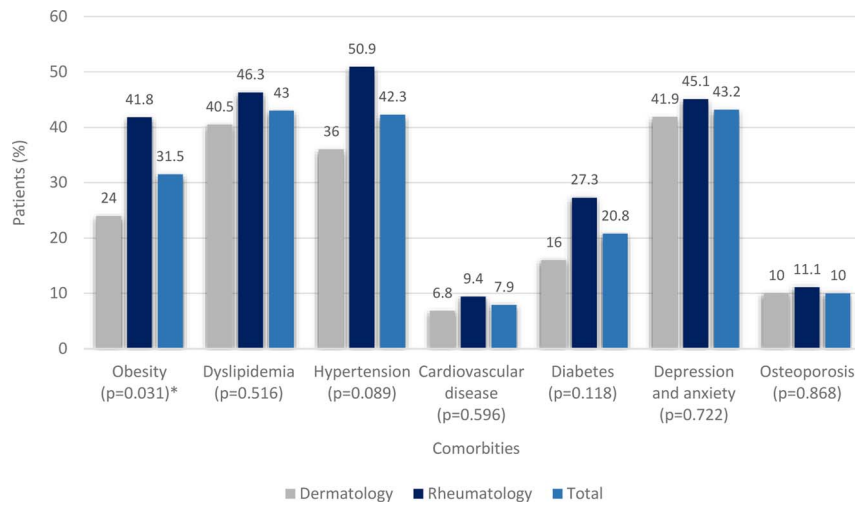
RESULTS

The study enrolled 130 Brazilian patients with PsA, of whom 75 originally attended dermatology sites, 55 originally attended rheumatology sites, 54.6% were women, 46.9% were employed/self-employed, and 62.3% had from 6 to 12 years of education (ie, middle school or high school educations; Table 1). In numeric terms, patients attending dermatology sites were more often employed/self-employed and had a greater probability of having an education beyond elementary school than those attending rheumatology centers, although these differences did not reach statistical significance (Table 1). Demographics were similar across clinical specialty settings ($p > 0.05$).

Overall, the most frequent comorbidities among these patients were depression/anxiety, dyslipidemia, and hypertension (Fig. 1). Patients enrolled in the study by a rheumatologist versus dermatologist had a higher probability of having comorbidities, but only obesity was significantly more frequent (41.8% vs 24.0%, $p = 0.03$).

In the total sample, methotrexate was the most frequently used therapy (58.5%), followed by tumor necrosis factor inhibitors (TNFi's, 40.8%). In absolute terms, rheumatology patients were using methotrexate and TNFi's in a higher proportion than dermatology patients (Table 2).

The timing of disease management steps by clinical specialty setting was also explored. There was no difference in the mean time between symptom onset and PsA diagnosis among patients enrolled by dermatologists and rheumatologists (146.1 vs 173.6 months; $p = 0.556$). Time between the PsA diagnosis and the first use of csDMARD (20.4 vs 10.4; $p = 0.116$), time between the PsA diagnosis and the first use of bDMARD (32.2 vs 40.4; $p = 0.991$), and time between the first csDMARD and the first bDMARD (23.6 vs 43.2; $p = 0.671$) were similar between groups (Fig. 2).

FIGURE 1. Proportion of patients with comorbidities in the dermatology and rheumatology clinical settings. *Statistically significant difference (*p* < 0.05). Color online-figure is available at http://www.jclinrheum.com.

Results for patient-reported outcomes and disease activity measures were compared between the 2 clinical specialties (Table 3). Dermatology patients had a significantly higher mean enthesitis count than rheumatology patients had (2.1 vs 0.6; *p* = 0.002) but were similar in all other disease activity measures (*p* > 0.05). The DLQI total mean score was significantly higher in the dermatology versus rheumatology setting (8.5 vs 5.0; *p* = 0.019) as were the following DLQI subscales: symptoms and feelings (2.4 vs 1.7; *p* = 0.014), daily activities (1.9 vs 1.1; *p* = 0.029), work and school (0.7 vs 0.3; *p* = 0.015), and personal relationships (1.3 vs 0.5; *p* = 0.003). All SF-12 subscales presented mean scores with similar values, without significant differences between the 2 clinical specialties. The only scale showing a statistically significant difference between dermatology and rheumatology patients was mental health (42.4 vs 47.4; *p* = 0.029).

Dermatology patients had significantly higher absenteeism than did rheumatology patients (19.7% vs 5.2%; *p* = 0.030) according to the WPAI, and the HAQ-DI pain scale score was also

significantly higher in dermatology versus rheumatology patients (1.39 vs 1.01; *p* = 0.032).

DISCUSSION

This post hoc study provides a comprehensive overview of the demographic and clinical characteristics of Brazilian patients with PsA, including comorbidities, treatment patterns, quality of life, productivity loss, disability, and disease activity. In addition, the relationship between clinical specialty setting and these variables was explored, as well as some significant differences between groups when they were compared, particularly with clinical disease activity and disease burden. To our knowledge, this is the first study assessing the effect of clinical specialty setting on disease management and patient-reported outcomes in Brazilian patients with PsA.

LOOP is a cross-sectional, observational study that included data from 17 countries across different geographic regions. Data were previously described for the entire sample and also in subsamples from United States, Japan, and Italy. In summary, significant differences were observed for the time elapsed from diagnosis and DMARD use.[21–24] These findings suggest that PsA patients should be evaluated by a rheumatologist. Timing of disease management steps by clinical specialty setting was similar between the dermatology and rheumatology groups in this study. It is worth noting, however, that the average time from symptom onset to PsA diagnosis was markedly high in the total sample. Mease et al[23] observed a diagnosis delay in a sample of US patients with PsA, with a median time from symptom onset to established diagnosis of 1.2 years and approximately one third of patients experiencing a >4-year delay. However, these differences were much lower than those observed in our Brazilian sample: 12.2 years for dermatology patients and 14.6 years for rheumatology patients. Differences in the availability of specialized centers and specialist physicians as well as overall access to health care within the health care system may explain these observations. Another key factor that may have influenced these findings is the small sample size. However, delay in diagnosis is a recognized factor influencing both clinical and patient-reported outcomes[10]; thus, this observation requires further evaluation in larger samples in Brazil.

One important finding was that, in absolute terms, patients from the rheumatology setting were using methotrexate and TNFi

TABLE 2. Patients Receiving Different Therapies by Clinical Specialty Setting

Treatment,* n (%)	Dermatology (n = 75)	Rheumatology (n = 55)	Total (N = 130)
Methotrexate	32 (42.7)	44 (80.0)	76 (58.5)
TNFi	24 (32.0)	29 (52.7)	53 (40.8)
Leflunomide	3 (4.0)	9 (16.4)	12 (9.2)
Anti–IL-12/23	4 (5.3)	4 (7.3)	8 (6.2)
Sulfasalazine	1 (1.3)	7 (12.7)	8 (6.2)
Systemic steroids	4 (5.3)	4 (7.3)	8 (6.2)
Cyclosporine	1 (1.3)	4 (7.3)	5 (3.8)
Hydroxychloroquine	0 (0.0)	3 (5.5)	3 (2.3)
Azathioprine	0 (0.0)	1 (1.8)	1 (0.8)
Anti–IL-17	1 (1.3)	0 (0.0)	1 (0.8)

Statistical comparisons between subgroups were not feasible owing to the small sample size in each subgroup.

*Patients were asked about therapies they had received for their underlying condition, and they could choose >1 option (thus, the total value sums >100%).
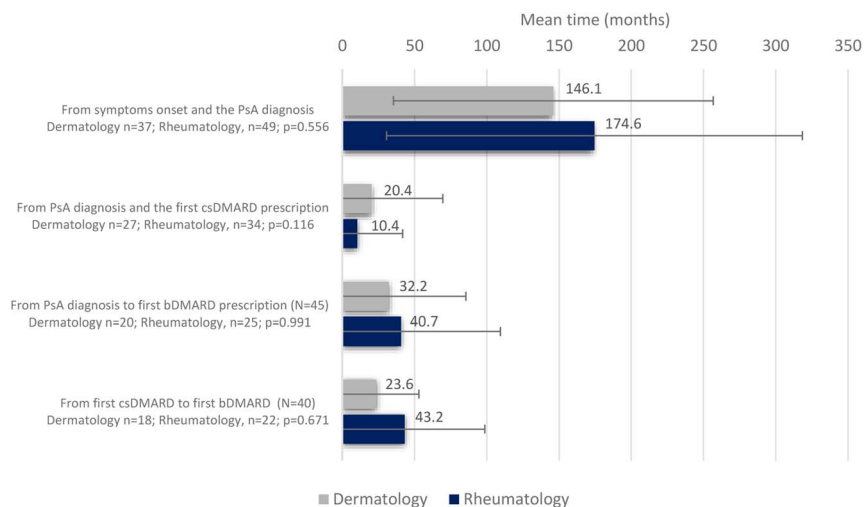
FIGURE 2. Timing of disease management in the dermatology and rheumatology clinical settings ($p > 0.05$). Color online-figure is available at http://www.jclinrheum.com.

in a higher proportion than were dermatology patients. A previous Spanish study[31] explored potential differences in PsA management by rheumatologists and dermatologists in a retrospective cohort of 266 patients and found that practices related to ancillary test requests, clinical evaluation measures performed in consultations, and prescribing behaviors within these clinical specialties were significantly different. Most notably, csDMARDs were more often prescribed by rheumatologists (77.6%) than dermatologists (46.2%; $p < 0.001$). In our sample, all drug classes were more frequently prescribed in the rheumatology versus dermatology group, probably reflecting particularities in PsA management within each specialty, rheumatologists' greater familiarity with csDMARDs as part of a treatment strategy, and the barriers to access specific therapies among patients with PsA. International guidelines on the management of PsA generally recommend csDMARDs as first-line treatment, followed by bDMARDs.[14,15] Despite being a well-established therapeutic approach for PsA, evidence linking csDMARDs with reduced radiographic progression or demonstrating the superiority of early versus delayed prescribing of csDMARDs is currently missing.[16]

Interestingly, dermatology patients had significantly higher productivity losses (specifically absenteeism), greater disability (in terms of pain assessment), and worse quality of life compared with rheumatology patients in this study. It is shown that patients with psoriasis experience the same deterioration in health-related quality of life as patients with other serious chronic diseases, including cancer and cardiovascular diseases[32]; in some cases, the disutility experienced by patients with psoriasis is even more severe.[32] It is possible that, in our sample, those patients attending dermatology practices had worse general health than those seen in rheumatology sites. Conversely, however, rheumatology patients had a numerically higher frequency of comorbidities than dermatology patients had, although only obesity reached statistical significance. Our findings do not provide an explanation for this difference, but it is reasonable to hypothesize that factors such as decreased physical activity due to articular damage may play a role.[33]

TABLE 3. Patient-Reported Outcomes and Disease Activity Measures by Clinical Specialty Setting

Measurement Score, Mean ± SD	Dermatology (n = 75)	Rheumatology (n = 55)	Total (N = 130)	*p* value
Disease activity measures				
TJC68, n = 110	7.6 ± 13.8	4.1 ± 9.9	5.9 ± 12.2	0.095
SJC66, n = 110	2.4 ± 5.2	1.7 ± 3.8	2.1 ± 4.5	0.206
Enthesitis, n = 111	2.1 ± 3.0	0.6 ± 1.6	1.4 ± 2.5	**0.002**
Dactylitis, n = 111	0.2 ± 0.7	0.3 ± 1.5	0.3 ± 1.2	0.901
BSA, %, n = 126	6.2 ± 11.5	7.5 ± 14.4	6.8 ± 12.7	0.442
Psoriatic nail count, n = 124	4.6 ± 5.9	4.8 ± 6.5	4.7 ± 6.2	0.751
Patient-reported outcomes				
PGA, n = 129	3.6 ± 2.7	3.1 ± 2.7	3.4 ± 2.7	0.210
HAQ-DI, n = 130	0.71 ± 0.7	0.83 ± 0.7	0.76 ± 0.7	0.464
SF-12 PCS, n = 118	43.7 ± 10.2	41.4 ± 8.9	42.8 ± 9.7	0.148
SF-12 MCS, n = 118	43.6 ± 11.6	47.4 ± 11.8	45.2 ± 11.8	0.081
DLQI, n = 129	8.5 ± 8.5	5.0 ± 6.2	2.1 ± 1.8	**0.019**
WPAI overall work impairment, n = 50	13 ± 20.6	5.2 ± 13.8	10.7 ± 19.1	0.063

Variables showed normal distribution. Bold text indicates statistical significance.

TJC68, tender joint count in 68 joints; SJC66, swollen joint count in 66 joints; BSA, body surface area with psoriasis; PGA, Physician Global Assessment; PCS, Physical Component Score; MCS, Mental Component Score.

Another difference between the specialties was that dermatology patients had a significantly higher enthesitis count, although other disease activity parameters were not significantly different. Enthesitis is considered an early manifestation of PsA associated with increased disease activity and impaired quality of life in previous studies.[34] It is also important to note that, because enthesitis and dactylitis, 2 hallmarks of PsA, are associated with radiographic peripheral/axial joint damage and severe disease,[35] early recognition of PsA in patients with psoriasis and enthesitis by dermatologists can help to prevent PsA disease progression.[36]

The humanistic burden of PsA is well established in the literature, and epidemiologic evidence has revealed that patients with PsA have higher productivity impairment[37] and worse quality of life[38,39] than patients with cutaneous psoriasis only. Nevertheless, only a few studies have addressed the effect of clinical specialty settings on PsA management and disease burden. It is reasonable to believe that our findings of differences between clinical specialties could be explained by patient characteristics, but one cannot preclude that they are driven by different treatment patterns and monitoring practices adopted by dermatologists and rheumatologists.[23] In our sample, there is a notable difference between subgroups in the percentages of patients receiving specific drug therapies recommended as first steps in PsA treatment algorithms,[14,15] reinforcing the need for combined management of PsA by rheumatologists and dermatologists.[40] To perform a complete assessment of PsA patients in both settings, dermatological and rheumatological shows to be essential because PsA is a multifaceted heterogenous disease and it would allow an adequate management of the condition.[41]

The main limitation of our study is the small sample size in clinical specialty subgroups for some of the examined variables. As a subset of the LOOP study database, our sample was not powered to address all the variables predefined in the study protocol for subgroups, which also may account for the absence of statistical significance for the primary end points of the LOOP study. Nevertheless, statistically significant differences between groups could be observed for most of the humanistic burden end points and for some of the measures of disease activity, providing relevant data to better understand how PsA management can affect patients' lives.

In conclusion, PsA disease burden and disease activity were influenced by specialty of patients' care. However, irrespective of clinical setting, patients experienced a delay before being diagnosed with PsA, reinforcing the need for collaborative management of PsA by rheumatologists and dermatologists and the relevance of timely diagnosis and appropriate treatment of patients with PsA for better outcomes.

KEY POINTS

- This post hoc study provides a comprehensive overview of the demographic and clinical characteristics of Brazilian patients with PsA, including comorbidities, treatment patterns, quality of life, productivity loss, disability, and disease activity.
- Specialty of patients' care was associated with disease burden and disease activity.
- Our data highlight the importance of collaborative management of PsA by rheumatologists and dermatologists.

ACKNOWLEDGMENTS

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