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REVIEW

Patient-reported outcomes in European spondyloarthritis patients: a systematic review of the literature

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Objective: This review aims to summarize the current literature on patient-reported outcomes (PROs) in spondyloarthritis (SpA).

Patients and methods: We performed a systematic literature review to identify studies (original articles and narrative and systematic reviews) regarding PROs (health-related quality of life [HRQoL], satisfaction, preferences, adherence/compliance, and persistence) in SpA patients published in the European Union through December 2016. International databases (Medline/PubMed, Cochrane Library, ISI Web of Knowledge, Scopus) were searched using keywords in English. The methodological quality of the studies was assessed using the Oxford Centre for Evidence-Based Medicine criteria.

Results: A total of 26 publications met the inclusion criteria. Generally, studies indicated that SpA has a negative impact on patients' HRQoL. In patients with ankylosing spondylitis, physical domains were more affected than emotional ones, whereas for psoriatic arthritis, both physical and psychological factors were strongly affected by the disease. Data indicated that biological agents (BAs) greatly contributed to improvement in HRQoL in both ankylosing spondylitis and psoriatic arthritis patients. Findings on compliance with BAs were heterogeneous. However, persistence rates exceeded 50% irrespective of the BA administered. Results on preferences indicated that most SpA patients prefer being involved in decisions regarding their treatment and that besides efficacy and safety, frequency and route of administration may influence patients' preferences for BAs.

Conclusion: Implementing management programs for SpA patients focuses on the physical, emotional, and social consequences of the disease, in addition to assessing and including patient preferences in the treatment decision-making process, could be crucial to improve patients' HRQoL and ensure their satisfaction and compliance with treatment.

Keywords: spondyloarthritis, ankylosing spondylitis, psoriatic arthritis, patient-reported outcomes, European Union, systematic review

Introduction

Spondyloarthritis (SpA) refers to a group of interrelated inflammatory diseases that share some features, including articular and extra-articular manifestations.[1] SpA affects 1%–3% of the general population. In European countries, the reported prevalence varies between 0.3% and 1.9%.[2] Ankylosing spondylitis (AS) and psoriatic arthritis (PsA) are the most frequent types of SpA. AS mainly affects the spine and sacroiliac joint and to a lesser extent the peripheral joints and entheses. PsA is characterized by the involvement of both peripheral and/or spinal joints and skin manifestations.[2,3] The European prevalence of AS is 0.03%–1.8%, while prevalence is 0.05%–0.42% for PsA.[4]

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PsA causes joint damage that leads to loss of articular function; specifically, a high percentage of PsA patients have more than one deformed joint and about 20% develop a very destructive disabling form of arthritis.[5] As a consequence, progression of PsA leads to a reduction in patients' functional capacity, affecting their social and working lives.[6] Various studies have suggested that SpA has a negative impact on functional status and patients' health-related quality of life (HRQoL),[7–9] and it is associated with an increased risk of death.[5]

AS patients typically present axial skeleton and sacroiliac joint involvement, resulting in structural and functional impairment. Additionally, many extra-articular features may also occur in AS patients, including uveitis, osteoporosis, bowel disease, and cardiac, pulmonary, skin (psoriasis), and kidney involvement.[10] The incidence of cardiovascular disease and mortality is also increased in AS patients.[5] Adults with AS may thus have significantly reduced HRQoL, in addition to limitations in physical functioning and comorbidities that are strongly associated with decreased work productivity.[7]

In view of the clinical and social implications of SpA, management of SpA patients should aim to prevent structural damage and preserve their functional status, in order to optimize HRQoL.[11–13] With this aim, new therapies, such as biological therapies, have been developed, and new treatment strategies, eg, treat to target, have been adopted over the last decade.[14] The implementation in routine-practice of biological agent (BA) therapy[11–13] has led to a significant improvement in clinical outcomes, including the physical functioning of patients with rheumatic disease.[15] However, poor adherence to medication in SpA patients remains a challenge in clinical practice.[16] New BAs involve different routes of administration and different toxicity, and are sometimes associated with higher drug costs, all of which may influence patient adherence and preference for medication.[17] In view of the new scenario, a more patient-centered approach to decision making is needed. In fact, assessing and including patients' preferences within routine clinical practice are related to an increase in medication adherence, as well as improved treatment outcomes. This work reviews and summarizes the current literature on patient-reported outcomes (PROs) in patients with SpA (AS and PsA) in the European Union (EU).

Methods

We performed a systematic literature review to identify studies on PROs in SpA (AS and PsA) patients. Studies assessing HRQoL, satisfaction, adherence/compliance, or persistence with treatment and patients' preferences for treatment in SpA populations published in the EU through December 2016

were selected. As recommended by the *Cochrane Handbook for Systematic Reviews of Interventions*,[18] publicly accessible international databases (Medline/PubMed, Cochrane Library, ISI Web of Knowledge, Scopus) were searched using keywords in English joined by the Boolean operators "OR" and "AND" (Table 1).

Inclusion criteria

We included original articles, narrative reviews, and systematic reviews in English and Spanish that evaluated PROs (HRQoL, satisfaction, adherence/compliance, or persistence with treatment and patients' preferences) in SpA patients in EU setting.

Exclusion criteria

We excluded studies conducted in non-EU countries, letters to the editor, editorials, experts' opinions, case studies, congress proceedings, mixed-population studies, those that focused on only one explanatory factor, and studies related to specific medical interventions.

Selection of studies

Following removal of duplicates and irrelevant publications, two independent researchers screened the remaining studies based on preset inclusion and exclusion criteria. Discrepancies were resolved by consensus. The methodological

Table 1 Search terms and search strategies

Number of search terms	Search terms
1	Ankylosing spondylitis (MeSH)
2	Ankylosing spondylitis
3	Psoriatic arthritis (MeSH)
4	Psoriatic arthritis
5	Quality of life (MeSH)
6	QoL
7	Health related quality of life
8	HRQoL
9	Medication adherence (MeSH)
10	Patient compliance (MeSH)
11	Medication persistence (MeSH)
12	Adherence
13	Compliance
14	Persistence
15	Satisfaction
16	Preference
17	Utility
18	Utilities
	Search strategies
	(1 OR 2) AND (5 OR 6 OR 7 OR 8)
	(3 OR 4) AND (5 OR 6 OR 7 OR 8)
	(1 OR 2) AND (9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18)
	(3 OR 4) AND (9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18)

quality of the studies was assessed using Oxford Centre for Evidence-Based Medicine criteria.[19]

Results
Studies selected
The database searches yielded a total of 8,954 titles. Of these, 8,864 were excluded as irrelevant to study purposes (4,748, 53%) or duplicates (3,916, 43.7%). Following full-text reading and application of the inclusion/exclusion criteria, 26 of the remaining 290 publications were included in the review (Figure 1). Most publications reviewed (n=16, 61.5%) were cross-sectional studies examining HRQoL in SpA patients, while a lower proportion evaluated other PROs such as persistence, satisfaction, or preferences (Table 2).

HRQoL in SpA patients
Of the 18 publications examining HRQoL in SpA patients, 13 (72.5%) employed generic HRQoL instruments, while only four used disease-specific questionnaires, alone or in combination with generic ones (Tables 2 and 3).

HRQoL in SpA patients compared with other rheumatological disorders and the general population
Salaffi et al[20] revealed that inflammatory rheumatic diseases, including SpA, have a negative impact on patients' HRQoL,

affecting both physical (physical component summary [PCS]) and mental (mental component summary [MCS]) dimensions. PCS was more affected in AS, whereas both physical and emotional well-being deteriorated in patients with PsA.

Correlation between clinical variables and HRQoL in SpA
Of the studies selected, two[20,21] sought to identify explanatory clinical factors for HRQoL in SpA. In particular, Salaffi et al[20] showed that for inflammatory rheumatic diseases, high disease-activity score, chronic comorbidity, and radiographic damage negatively affected PCS, while the severity of psoriatic lesions (Psoriasis Area and Severity Index) was significantly associated with poor MCS in PsA patients. In the same line, Jajić et al[21] observed that for AS patients, clinical variables correlated mainly with PCS, whereas in PsA patients both PCS and MCS were affected by the disease. Functional status, measured by the Bath Ankylosing Spondylitis Functional Index (BASFI), had the strongest impact on PCS in both diseases.

Depression, anxiety, and HRQoL in SpA
Kotsis et al[22] and Hyphantis et al[23] investigated the prevalence of major depressive disorders in SpA and rheumatoid arthritis (RA) and their association with HRQoL. Both studies showed that psychological factors were strongly associated with HRQoL in PsA patients. In particular, both anxiety and concern about bodily symptoms were independent correlates of the physical domain of HRQoL.[22] On the other hand, only cognitive variables were important correlates of HRQoL in AS patients, with illness concern being the only significant independent correlate of physical HRQoL.[23]

HRQoL and work productivity in SpA patients
Two studies evaluated the relationship between HRQoL and productivity loss in SpA patients. Chorus et al[24] showed a positive association between work and HRQoL PCS; however, no association was found with MCS. Kawalec et al[25] observed that patients' HRQoL, expressed as utility scores, was negatively correlated with absenteeism, presenteeism, and indirect costs, suggesting that higher HRQoL was associated with higher productivity and lower indirect costs. Disease-activity score was positively correlated with indirect costs and negatively correlated with HRQoL. Therefore, the greater the disease activity, the lower the utility and the larger the indirect cost.

Compliance and HRQoL in SpA patients
Hromadkova et al[26] assessed the relationship between drug compliance and HRQoL in patients with different rheumatic
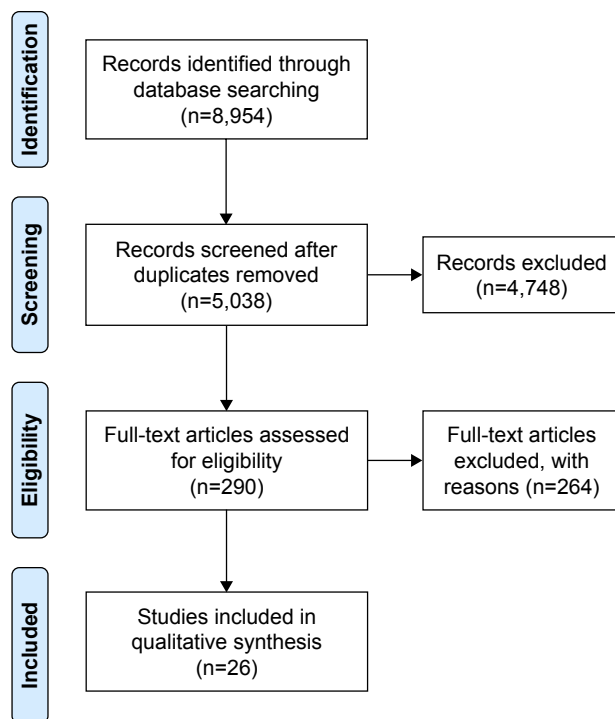

Identification	Records identified through database searching (n=8,954)
Screening	Records screened after duplicates removed (n=5,038) → Records excluded (n=4,748)
Eligibility	Full-text articles assessed for eligibility (n=290) → Full-text articles excluded, with reasons (n=264)
Included	Studies included in qualitative synthesis (n=26)

Figure 1 Flowchart of study selection according to PRISMA.
Abbreviation: PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Table 2 Description of studies reviewed

	Design	Evidence level	PROs evaluated	PROMs used
Salaffi et al[20] (Italy)	Cross-sectional	2C	HRQoL	SF36
Jajić et al[21] (Croatia)	Cross-sectional	2C	HRQoL	SF36
Kotsis et al[22] (Greece)	Cross-sectional	2C	HRQoL	WHOQoL-Bref
Hyphantis et al[23] (Greece)	Cross-sectional	2C	HRQoL	WHOQoL-Bref
Chorus et al[24] (the Netherlands)	Cross-sectional	2C	HRQoL	SF36
Kawalec et al[25] (Poland)	Cross-sectional	2C	HRQoL	EQ5D
Saad et al[27] (UK)	Prospective study (6-month follow-up)	2B	HRQoL	Ad hoc questionnaire
Sieper et al[28] (Germany, France, Spain, Italy, UK)	Cross-sectional	2C	HRQoL	SF36 EQ5D
Kucharz et al[30] (Poland)	Cross-sectional	2C	HRQoL	SF36
Ariza-Ariza et al[31] (Spain)	Cross-sectional	2C	HRQoL	EQ5D
de las Peñas et al[32] (Spain)	Cross-sectional	2C	HRQoL	ASQoL
Ariza-Ariza et al[33] (Spain)	Cross-sectional	2C	HRQoL	EQ5D
O'Dwyer et al[34] (Ireland)	Cross-sectional	2C	HRQoL	PsAID12 DLQI EQ5D SF36
Tälli et al[35] (multicenter – 13 countries)	Cross-sectional	2C	HRQoL	PsAID12
Puyraimond-Zemmour et al[36] (multicenter – 13 countries)	Cross-sectional	2C	HRQoL	EQ5D PsAQoL
Brodszky et al[37] (Hungary)	Cross-sectional	2C	HRQoL	SF36
Hromadkova et al[26] (Czech Republic)	Cross-sectional	2C	HRQoL Compliance	SF36 CQR
Wallman et al[29] (Sweden)	Prospective (3-year follow-up)	1C	HRQoL Persistence	EQ5D Kaplan–Meier curves
López-González et al[39] (Spain)	Systematic literature review	2A	Compliance Persistence	
Lyu et al[40] (Germany)	Retrospective (12-month follow-up)	2B	Persistence	Kaplan–Meier curves
Saad et al[41] (UK)	Prospective (3-year follow-up)	1B	Persistence	Kaplan–Meier curves
Kristensen et al[42] (Sweden)	Prospective (2-year follow-up)	1B	Persistence	Kaplan–Meier curves
Favalli et al[43] (Italy)	Retrospective (8-year follow-up)	2B	Persistence	Kaplan–Meier curves
Renzi et al[44] (Italy)	Cross-sectional	2C	Satisfaction	Ad hoc questionnaire
Nolla et al[45] (Spain)	Cross-sectional	2C	Preferences	Rank-based conjoint analysis
Rothery et al[46] (UK)	Cross-sectional	2C	Preferences	DCE

Abbreviations: ASQoL, Ankylosing Spondylitis Quality of Life; CQR, Compliance Questionnaire Rheumatology; DCE, discrete-choice experiment; DLQI, Dermatology Life Quality Index; EQ, EuroQol; HRQoL, Health-Related Quality of Life; PsAID, Psoriatic Arthritis Impact of Disease; SF, Short Form; WHOQoL-Bref, World Health Organization Quality of Life – brief.

disorders, including SpA. A significantly negative correlation between compliance and HRQoL PCS was found in SpA patients, suggesting that patients with worse HRQoL might be more compliant with treatment.

Influence of biological therapies on SpA-patient HRQoL

Three of the studies investigated the impact of BAs on HRQoL in SpA patients in the clinical practice setting. Saad et al[27] reported a significant improvement in all Short Form (SF)-36 subscales after 6 months of therapy with BAs, with greatest improvements observed in PCS. Sieper et al[28] found that in nonradiographic axial SpA (nr-axSpA) patients, treatment with BAs was associated with improved clinical

outcomes (pain, remission, acute episodes) compared to BA-naïve patients. Furthermore, BA-naïve patients reported greater presenteeism, overall work impairment, and activity impairment than BA-treated patients. In line with previous studies, Wallman et al[29] showed that following BA treatment, both HRQoL (EuroQoL 5D utility and visual analog scale) and clinical outcomes (pain, erythrocyte-sedimentation rate and CRP) improved rapidly in both nr-axSpA and AS patients.

HRQoL in AS patients
Factors influencing HRQoL in AS patients

Kucharz et al[30] observed that almost two-thirds of AS patients considered pain a very important risk factor in their HRQoL.

Table 3 Characteristics of HRQoL-related studies reviewed

	Objective	Demographic and clinical characteristics	Main results
Salaffi et al[20] (Italy)	To compare HRQoL scores among patients with RA, PsA, and AS and a selected sample of healthy people and determine their relationship with measures of clinical condition	RA (n=469, 71.8% female, mean age 57.5 [SD 14.3] years, disease duration 6.1 [SD 4.2] years) AS (n=164, 18.9% female, mean age 51.7 [SD 9.2] years, disease duration 8.2 [SD 4.6] years) Axial PsA (n=65, 50.7% female, mean age 58.2 [SD 10.3] years, disease duration 8.4 [SD 4.3] years) Peripheral PsA (n=101, 61.4% female, mean age 60.7 [SD 11.6] years, disease duration 7.5 [5.3] years) General population (n=1,579, 50.2% female, mean age 55.2 [SD 19.2] years)	Compared to healthy controls, both components of the SF36 questionnaire (PCS and MCS) were significantly impaired in patients with the three inflammatory diseases ($P<0.0001$). Compared to other rheumatoid diseases, MCS were lower in PsA patients. The PCS was influenced by high disease activity (DAS, $P<0.0001$), chronic comorbidity ($P<0.0001$), and radiographic damage ($P=0.004$) in all diseases. An association was found in AS ($P>0.001$) and axial PsA ($P=0.009$) with low educational level and MCS. In peripheral PsA ($P<0.0001$) and axial PsA ($P=0.03$), severity of psoriatic lesions was associated with poor MCS.
Jajić et al[21] (Croatia)	To assess clinical variables with the best correlation with HRQoL in patients with SpA	AS (n=32, 62.5% female, mean age 51.4 [SD 9.7] years, disease duration 7 [2–11] years) PsA (n=22, 50% female, mean age 54.2 [SD 8.3] years, disease duration 10.5 [4–12] years)	Although perception of general health was similar in both groups, AS patients had reduced HRQoL values for physical domains, whereas PsA patients presented reduced HRQoL values for both PCS and MCS. For AS patients, clinical variables correlated mainly with the PCS, while in PsA patients correlations between clinical variables and SF36 were more distributed. In both diseases, BASFI had the strongest correlation with PCS.
Kotsis et al[22] (Greece)	To compare psychological distress in PsA and RA and test whether the association between psychological variables and HRQoL was similar in the two forms of arthritis	PsA (n=83, 47% female, mean age 48.9 [SD 12.4] years, disease duration 9.2 [SD 6] years) RA (n=199, 82.4% female, mean age 55.2 [SD 12.7] years, disease duration 13.7 [SD 10.5] years)	The prevalence of moderate and severe levels of depressive symptoms (PHQ $9\geq10$) was similar in PsA (21.7%) and RA (25.1%) patients. Among PsA patients, depression symptoms were more frequent in those with polyarthritis (36.7%) compared to those with oligoarthritis (9.8%) and spondyloarthritis (16.7%). In general, all participants perceived their arthritis as a chronic disease that could not be controlled. According to a regression analysis, both anxiety ($\beta=-0.28$) and concern about bodily symptoms ($\beta=-0.33$) were independent correlates of the physical domain of HRQoL in PsA patients.
Hyphantis et al[23] (Greece)	To compare psychological distress symptoms and illness perceptions in AS and RA and test whether their association with HRQoL was similar	AS (n=55, 14.5% female, mean age 42.9 [SD 10.9] years, disease duration 15.3 [SD 11.5] years) RA (n=199, 82.4% female, mean age 55.2 [SD 13.6] years, disease duration 13.7 [SD 11.5] years)	The prevalence of clinically significant depressive symptoms (PHQ $9\geq10$) was lower in AS (14.8%) compared to RA (25.1%) patients ($P=0.09$), but psychological distress levels and HRQoL were similar in both disorders. Illness concern ($\beta=-0.37$) was the only significant independent correlate of physical HRQoL in AS. Symptoms of anxiety and depression had a minor contribution to physical HRQoL.
Chorus et al[24] (the Netherlands)	To investigate the relationship between work and HRQoL in patients with RA and AS aged 16–59 years	AS (n=658, 29.9% female, mean age 43.5 [SD 9.4] years, disease duration 12.3 [SD 8] years) RA (n=1,056, 72.3% female, mean age 49 [SD 8.3] years, disease duration 11.9 [SD 9.1] years)	PCS was worse in patients with RA than AS, although MCS was reported to be more favorable in RA than AS. A positive association between work and PCS in both group of patients was assessed. However, no association between work and MCS was fond.
Kawalec et al[25] (Poland)	To investigate associations among activity, utility of PsA-affected patients, and productivity loss	PsA (n=50, 58% female, mean age 45.5 [35.75–53.5] years, age at onset 36.5 [29–44] years)	PsA has been demonstrated to reduce patients' HRQoL and generate considerable indirect costs, mainly due to lower productivity at work.

(*Continued*)

Table 3 (*Continued*)

	Objective	Demographic and clinical characteristics	Main results
			Patients' HRQoL, expressed as utility, was correlated with absenteeism (−0.537, P=0.002) and presenteeism (−0.682, P<0.001). Utility showed a significantly negative moderate–strong correlation with absenteeism, presenteeism, and total indirect cost (−0.772, P<0.001). Disease activity was significantly correlated with indirect cost (absenteeism 0.618, presenteeism 0.838, total cost 0.864, P<0.0001) and HRQoL (−0.878, P<0.0001).
Hromadkova et al[26] (Czech Republic)	To elucidate the relationship between drug compliance and HRQoL in patients with different rheumatic disorders	SpA (n=41, 68.1% female, mean age 50 [22–79] years, disease duration 3.8 [0.7–8.3] years) RA (n=178, 78.7% female, mean age 59 [26–82] years, disease duration 7.4 [0.5–19.9] years) SSc (n=41, 75.6% female, mean age 58 [26–80] years, disease duration 6.8 [0.5–23.9] years) JIA (n=23, 73.9% female, mean age 28 [18–51] years, disease duration 6.8 [0.6–20.9] years)	A significantly negative correlation between compliance and PCS was established in SpA patients (−0.301, P<0.05).
Saad et al[27] (UK)	To evaluate the impact of BAs on HRQoL, functional status in PsA patients, and study-potential predictors for HRQoL	PsA (n=596, 52.3% female, mean age 45.7 [SD 11.1] years, disease duration 12.4 [SD 8.7] years)	The largest changes were achieved within the first 6 months of BA treatment, and were sustained throughout the follow-up period (18 months). At 6 months, improvement for PCS was 53.2% (95% CI 44.5%–61.9%), whereas for the mental component scale it was 16.9% (95% CI 14.7%–19.2%). There was a statistically significant association between improvement in PCS and change in DAS28 (β=2.92 per unit improvement, 95% CI 2.10–3.75).
Sieper et al[28] (Germany, France, Spain, Italy, UK)	To assess the impact of nr-axSpA on patients and society based on real-world evidence from the Adelphi Disease Specific Programme	axSpA (n=631, 29.6% female, mean age 41.8 [SD 12] years, disease duration 51.6 [SD 60] months, cDMARD, 25.58%, BAs 36.1%, 66.5% responders to treatment, 24.8% nonresponders)	EQ5D utility scores were lower in patients with nr-axSpA versus general population-matched controls (0.776 vs 0.884, P<0.001). Pain-score reduction was higher in BA-treated than BA-naïve (2.5 vs 4.0, P<0.001) patients. BA-treated patients were more likely to be in remission than BA-naïve patients (67% vs 34%, P<0.001). BAs-naïve patients reported greater presenteeism (28% vs 16%, P=0.037), overall work impairment (37% vs 19%, P=0.018), and activity impairment (31% vs 23%, P=0.045) than BA-treated patients.
Wallman et al[29] (Sweden)	To compare clinical development, HRQoL, and treatment adherence between nr-axSpA and AS patients during 3 years of BA in clinical practice	nr-axSpA (n=86, 38% female, mean age 38 [SD 13] years, disease duration 9 [SD 9] years) AS (n=238, 24% female, mean age 43 [SD 12] years, disease duration 16 [SD 12] years)	Following BA initiation, mean VAS global, VAS pain, EQ5D utility, Evaluator's global, ESR, and CRP improved rapidly in both groups, and within 3–6 months had reached a plateau, which was then sustained for 3 years.
Kucharz et al[30] (Poland)	To obtain patients' opinions on factors associated with AS that may potentially influence their HRQoL	AS (n=53, 22.2% female)	Patients considered pain (64% [0, not important at all to 4, very important], mean score 3.5), to need help of another person for everyday functioning (52%, 3.4) and impairment in family life (49%, 3.4) very important risk factors in their HRQoL. Management of AS, including treatment (23%, 2.5) and frequent hospitalizations (7.5%, 2.4), were not considered a significant factor impairing patients' HRQoL. Young male patients were more worried by risk of losing of their jobs, while an impairment of sexual life due to AS was more important to male than to female patients.

(*Continued*)

Table 3 (*Continued*)

	Objective	Demographic and clinical characteristics	Main results
Ariza-Ariza et al[31] (Spain)	To determine physical function and HRQoL of Spanish patients with AS	AS (n=92, 25% female, mean age 40.7 [SD 9.1] years, disease duration 11 [SD 7.8] years)	BASFI had a good correlation (Pearson >0.6) with PCS (r=0.75, R^2=0.56; P<0.0001), patient and physician global assessment, pain measurements, BASDAI, and most HRQoL scores. Physician global assessment (P=0.043), patient paint assessment (P=0.036), and BASFI score (P=0.002) were independently associated with the SF36. Only BASFI score showed an independent association with the EQ5D health profile (P=0.002).
de las Peñas et al[32] (Spain)	To assess correlations among mobility, function, and HRQoL in subjects with AS	AS (n=42, 20% female, mean age 46 [SD 9] years, disease duration 15 [SD 3] years)	All domains of HRQoL except mental health were negatively correlated with BASFI score (r=−0.35 to −0.75, P<0.05). Physical function, bodily pain, general health, vitality, and social role were negatively correlated with BASDAI score (r=−0.35 to −0.63, P<0.05). Few mobility measures of BASMI showed a positive correlation with SF36 domains: lumbar flexion (modified Schober) correlated with physical function (r=0.36, P=0.03), and maximal intermalleolar distance correlated with physical function (r=0.36, P=0.034) and social role (r_s=0.33, P=0.04).
Ariza-Ariza et al[33] (Spain)	To identify variables associated with utility of health states in patients with AS	AS (n=70, 24.7% female, mean age 43.7 [SD 9.1] years, disease duration 10.8 [SD 8.1] years)	In the univariate analysis, patient global assessment (r=−0.66, P<0.0001), BASDAI (r=−0.68, P<0.0001), and BASFI (r=−0.75, P<0.0001) had good correlations with EQ5D values. In the multivariate analysis, BASFI (β=−0.0679, P=0) and BASDAI (β=−0.0441, P=0.004) kept an independent association with utility.
O'Dwyer et al[34] (Ireland)	To assess health-related physical fitness of adults with AS, compare this to the general population, and examine the relationship between physical fitness and condition-specific outcomes	AS (n=39, 18% female, mean age 40 [SD 9] years, disease duration 6 [SD 10] years)	Compared to age- and sex-matched population controls, AS patients showed significantly lower cardiorespiratory fitness, flexibility, muscular strength and endurance, and increased body fat. Physical fitness was associated with physical function (BASFI). Flexibility (BASMI) had the largest contribution of any individual physical fitness component, and accounted for 35.9% of the total variance in BASFI score (β=−0.599, P=0.038). Aerobic capacity was associated with HRQoL, accounting for 11.2% of the variance (β=−0.334, P<0.001). Disease activity was not associated with any physical fitness component.
Tälli et al[35] (multicenter)	To explore the meaning of PGA in PsA by examining associations with domains of health assessed by the PsAID	PsA (n=223, 51.1% female, mean age 51 [SD1 3.3] years, disease duration 9.9 [SD 10.1] years)	Physical domains of PsAID – pain (0.72, P<0.0001), discomfort (0.73, P<0.0001), work and/or leisure activities (0.70, P<0.0001), and functional capacity (0.68, P<0.0001) – had stronger correlation with patients' assessment (PGA) than other PROs or physician-based assessments, such as HAD (0.59, P<0.0001) and SF36 PCS (−0.56, P<0.0001). A good correlation was established between PGA and psychological and social impact of PsAID: coping (0.77, P<0.0001), anxiety (0.68, P<0.0001), fatigue (0.66, P<0.0001), depression (0.65, P<0.0001), and social participation (0.58, P<0.0001). A moderate or low correlation was found between PGA and impact related to skin (0.34–0.47, P<0.0001). Joint counts were poorly correlated with PGA (0.24–0.52, P<0.0001).

(*Continued*)

Table 3 (*Continued*)

	Objective	Demographic and clinical characteristics	Main results
			PGA assessment was explained by coping (β=0.287), pain (β=0.540), work and/or leisure activities (β=0.141), and anxiety (β=0.109).
Puyraimond-Zemmour et al[36] (multicenter)	To explore the link between PASS and patient-perceived impact in RA and PsA	PsA (n=446, 50.6% female, mean age 50.6 [SD 12.6] years, disease duration 9.6 [SD 9.5] years) RA (n=531, 78.5% female, mean age 55.8 [SD 13.3] years, disease duration 12.6 [SD 10.3] years)	Multivariate analyses of the five domains of PsAID – pain, functional capacity, fatigue, sleep disturbance, and coping – indicated that in PsA patients, pain (OR 0.63, 95% CI 0.52–0.75) and coping (OR 0.63, 95% CI 052–0.75) were associated in PASS after adjustment on DAS28 (OR 0.83, 95% CI 0.71–0.97).
Brodszky et al[37] (Hungary)	To compare PsAQoL, HAQ, and EQ5D in terms of ability to assess disease severity in PsA	PsA (n=183, 57% female, mean age 51.1 [SD 12.9] years, disease duration 9.2 [SD 9.2] years)	EQ5D and PsAQoL scores were strongly correlated with clinical variables, such as HAD (−0.71 to 0.64, $P<0.05$), BASDAI (−0.69 to 0.62, $P<0.05$), PGA (−0.63 to 0.52, $P<0.05$), and patient pain VAS (−0.68 to 0.54, $P<0.05$). Disease duration (−0.14 to 0.15, $P<0.05$) and psoriasis (−0.13 to 0.12, not significant) correlated weakly with HRQoL instruments.

Abbreviations: axSpA, axial spondyloarthritis; AS, ankylosing spondylitis; BAs, biological agents; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; BASFI, BAS Functional Index; BASMI, BAS Metrology Index; DAS, disease-activity score; EQ, EuroQol; ESR, erythrocyte-sedimentation rate; HAQ; Health Assessment Questionnaire; HRQoL, health-related quality of life; MCS, mental component summary; nr, nonradiographic; PASS, patient-acceptable symptom state; PCS, physical component summary; PGA, patient global assessment; PHQ 9, Patient Health Questionnaire; PsA, psoriatic arthritis; PsAID, Psoriatic Arthritis Impact of Disease; SF, Short Form; VAS, visual analog scale.

In addition, around 50% of patients indicated that the need for assistance in activities of daily living (ADL) and impairment in family life potentially influenced their HRQoL. Young male patients were more concerned by the risk of losing their jobs than older ones, while impairment of sexual life due to the disease was more important to males than to females. Management of the disease (treatment or frequent hospitalization) was not considered a significant factor impairing their HRQoL.

Patient-reported measures and HRQoL in AS patients

Mobility and physical function are the most important end points for AS patients, and several instruments have been developed to evaluate disease activity from patient perspectives (BAS Disease Activity Index [BASDAI]) and physical functioning (BASFI and BAS Metrology Index). A correlation between physical function (BASFI) and HRQoL in AS patients was established by Ariza-Ariza et al,[31] showing that BASFI score presented an independent association with HRQoL. This association was confirmed by de las Peñas et al.[32] These authors observed that function (BASFI) and disease activity (BASDAI) were correlated with HRQoL (physical function, pain, and vitality domains). In the same vein, Ariza-Ariza et al[33] found that physical function (BASFI) and disease activity (BASDAI) were the main determinants of health-state utility values in AS patients. Finally, a recent study published by O'Dwyer et al[34]

confirmed that adults with AS show a significant reduction in physical fitness compared to age- and sex-matched healthy controls. The AS group demonstrated significantly lower cardiorespiratory fitness, flexibility, muscular strength, and increased body fat compared to controls. All components of physical fitness were associated with physical function (BASFI), while only aerobic capacity was associated with HRQoL (ASQoL).

HRQoL in PsA patients
Patient-reported measures and HRQoL in PsA patients

Tälli et al[35] showed that patient global assessment (PGA) in PsA was determined mainly by physical but also physiological aspects of the disease. In particular, coping, pain, work, leisure activities, and anxiety were identified as the main explanatory factors for PGA scores. Skin lesions seemed to have a lower impact on PGA than joint involvement, which had a larger effect on PsA patients' HRQoL. Similarly, Puyraimond-Zemmour et al[36] established an association between pain and coping with patient-acceptable symptom state, showing that less pain and better coping were correlated with better level of acceptability of disease status.

Disease severity and HRQoL in PsA patients

Brodsky et al[37] found strong correlations between both generic (EuroQol 5D) and specific HRQoL (PsAQoL) instruments

and disease severity assessed by Health Assessment Questionnaire (HAQ) disability score, patient-pain visual analog scale, PGA, and BASDAI. However, disease duration and psoriasis correlated weakly with these HRQoL instruments.

Compliance and persistence in SpA patients

According to the definition of adherence/compliance (extent to which patient acts in accordance the prescribed interval and dose of dosing regimen) and persistence (duration of time from initiation to discontinuation of therapy),[38] five studies evaluated persistence to BA therapy in SpA patients, one assessed compliance with BA treatment, while the remaining publication was a systematic review (Table 4).

The systematic review[39] reported great variability in the operational definition and measurement of adherence/compliance among studies. Most studies focused on persistence, measured by survival time, retention, or continuation rates, while fewer publications assessed adherence based on proportion of days covered or medication-possession ratio. The results suggested better compliance with biological therapy in SpA compared to RA. Age, female sex, comorbidity,

Table 4 Characteristics of adherence/persistence-related observational studies reviewed

	Objective	Demographic and clinical characteristics	Main results
López-González et al[39] (Spain)	To analyze evidence on adherence to BAs in RA, SpA, and PsA	A total of 24 publications were reviewed: 19 included RA patients, nine SpA, and five chronic arthritis in general. Follow-up 1–9 years. Survival time of the BA was the most common measure of persistence (n=16); MPR or PDC the usual method to assess adherence (n=5)	Adherence to BAs was superior in SpA over RA. Several factors were identified as adherence predictors. Women were less adherent than men. A poor clinical condition at baseline was associated with lower persistence; however, high baseline CRP improved overall persistence. Methotrexate and other DMARDs increased adherence, but the number of previous DMARDs was associated with premature treatment discontinuation.
Lyu et al[40] (Germany)	To evaluate treatment persistence among RA, AS, and PsA patients initiating subcutaneous BAs in Germany	RA (n=576, 75% female, mean age 56.9 years, SD 13.1 years). AS (n=108, 29.6% female, mean age 42 years, SD 11.5 years). PsA (n=197, 50.3% female, mean age 49.4 years, SD 10.6 years)	Persistence rates over 12 months were 51.9%, 48.1%, and 57.9% for RA, AS, and PsA patients, respectively. In AS and PsA, there was no significant difference in the time to discontinuation for naïve compared to experienced patients.
Saad et al[41] (UK)	To assess persistence with first-course and second-course treatment with BAs in PsA patients	PsA (n=566, 53% female, mean age 45.7 years, SD 11.1 years), disease duration 12.4 years, SD 8.7 years	At 12-month follow-up, 75.5% remained on their first BA, while 9.5% discontinued treatment due to inefficacy and 10% due to AEs. Being female (HR 1.5, 95% CI 1.0–1.7) and having baseline comorbidity (HR 1.5, 95% IC 1.1–2.0) were associated with significantly higher drug-discontinuation rates. Persistence with the second course of therapy was lower than with the first course.
Kristensen et al[42] (Sweden)	To examine clinical characteristics as possible predictors of long-term treatment continuation with BAs in naïve AS patients	Isolated AS (n=122, 25% female, mean age 42 years, SD 12 years), disease duration 15 years, SD 12 years. AS peripheral arthritis (n=121, 10% female, mean age 44 years, SD 12 years), disease duration 16 years, SD 12 years	Drug-survival rates at 12 and 24 months were 86% and 78% for patients with peripheral arthritis and 74% and 68% for patients with isolated SA (P=0.05). In both groups, at 24 months 11% of withdrawals were due to AEs and 13% due to inefficacy. After 12 and 24 months, 93% and 85% of the patients with improvement in VAS global remained on treatment, while only 79% and 68% continued the treatment in the less favorable VAS global response (P<0.01), respectively. Male sex (discontinuation HR 0.36, 95% CI 0.19–0.68) and presence of peripheral arthritis (HR 0.49, 95% CI 0.27–0.88) were found to be statically significant predictors for continuation of therapy. This impact seemed to be mainly related to a lower risk of ceasing treatment due to inefficacy.

(Continued)

Table 4 (*Continued*)

	Objective	Demographic and clinical characteristics	Main results
Wallman et al[29] (Sweden)	To compare clinical development, HRQoL and treatment adherence between nr-axSpA and AS patients during 3 years of BAs in clinical practice	nr-axSpA (n=86, 38% female, mean age 38 years, SD 13 years), disease duration 9 years, SD 9 years AS (n=238, 24% female, mean age 43 years, SD 12 years), disease duration 16 years, SD 12 years	After 3 years of follow-up, the proportion of patients with nr-axSpA and AS remaining on BA therapy was 70% and 77%, respectively. Male sex and higher brazilein CRP levels were significantly associated with better treatment persistence.
Favalli et al[43] (Italy)	To evaluate the 8-year survival of first-BA patients with axSpA or PsA and identify predictive factors for withdrawal	PsA (n=298, 48.3% female, mean age 47.8 years, SD 12.1 years), disease duration 8.7 years, SD 7.7 years axSpA (n=316, 30% female, mean age 42.8 years, SD 12.1 years), disease duration 7.2 years, SD 7.9 years	The cumulative 8-year retention rate was 51.9% in PsA patients and 57.2% in axSpA patients. 43.1% of patients with PsA and 42.1% with axSpA stopped the first-line BA. 22.4% of patients with PsA and 15.8% with axSpA reported that discontinuation was due to inefficacy, while 15% and 41.2% of patients, respectively, indicated that they stopped the treatment due to AEs. Male sex (HR 0.595, 95% CI 0.405–0.875; P=0.008) and concomitant methotrexate use were associated with a lower overall risk of withdrawal in PsA, but not in axSpA patients. High baseline BASDAI was a predictor of drug persistence in axSpA (HR 1.016, 95% CI 1.002–1.030; P=0.028).
Hromadkova et al[26] (Czech Republic)	To elucidate the relationship between drug compliance and HRQoL in patients with different rheumatic disorders	SpA (n=41, 68.1% female, mean age 50 (22–79) years), disease duration 3.8 (0.7–8.3) years RA (n=178, 78.7% female, mean age 59 (26–82) years), disease duration 7.4 (0.5–19.9) years SSc (n=41, 75.6% female, mean age 58 (26–80) years), disease duration 6.8 (0.5–23.9) years JIA (n=23, 73.9% female, mean age 28 (18–51) years), disease duration 6.8 (0.6–20.9) years	Mean CQR score (0 nonadherence to 100 complete adherence) in SpA patients was 77.1 (42.1–97.9). 38.3% of patients with SpA were considered compliant (CQR <80). Patients with JIA were the least adherent (CQR 66), while patients with RA presented higher rates of adherence (CQR 82.5).

Abbreviations: axSpA, axial spondyloarthritis; AS, ankylosing spondylitis; BAs, biological agents; CQR, Compliance Questionnaire Rheumatology; HRQoL, health-related quality of life; JIA, juvenile idiopathic arthritis; MPR, medication-possession ratio; nr-axSpA, nonradiographic axial spondyloarthritis; PDC, proportion of days covered; PsA, psoriatic arthritis; SSc, systemic sclerosis.

poor clinical condition, and number of previous BAs were identified as explanatory factors for patient compliance.

Results of persistence in SpA patients were heterogeneous among the studies reviewed. Lyu et al[40] observed that among AS and PsA patients who were initiating biological treatment, persistence at 12 months was relatively low (48%–58%). Nonetheless, Saad et al[41] reported a higher survival rate on their index BA (75.5%) for patients with PsA after 12 months of follow-up. In line with these results, Kristensen et al[42] showed drug-survival rates at 12 and 24 months of 86% and 78% for peripheral arthritis patients and 74% and 68% for patients with isolated AS starting biological therapy. Likewise, Wallman et al[29] showed a high proportion of patients with nr-axSpA (70%) and AS (77%) remaining on BA therapy after three years follow up. For long-term persistence, Favalli et al[43] reported cumulative 8-year retention of 57.2% for axSpA and 51.9% for PsA. Finally, related to compliance, Hromadkove et al[26] reported that only 38.3% of patients with AS were compliant with BA treatment, as indicated by Compliance Questionnaire Rheumatology score (≥80).

Satisfaction with decision making

Renzi et al[44] examined PsA patients' preferences about their role in the decision-making process, as well as their satisfaction with both their care and their knowledge about PsA therapies (Table 5). Overall, the majority of PsA patients (72.7%) wanted to be involved in decision making, although 40.6% preferred that their doctors make the final decision after considering their opinion; 65.5% of PsA patients reported being completely or fairly satisfied with their care and information. Multivariate analysis showed that information on both treatment side effects and treatment options was significantly associated with overall satisfaction, confirming that improving patient–doctor communication may improve patients' satisfaction with their care.

Patient preferences for SpA treatments

Two publications examined patient preferences for treatment characteristics (Table 5). Nolla et al[45] assessed the relative importance given by patients with rheumatic diseases (RA, AS, and PsA) and rheumatologists to attributes of BAs.

Table 5 Characteristics of studies of satisfaction and preferences for treatment that were reviewed

	Objective	Demographic and clinical characteristics	Main results
Renzi et al[44] (Italy)	To examine attitudes toward and satisfaction with decision making of patients with PsA compared with patients who had cutaneous psoriasis	PsA (n=33, 51% female, 61.5% aged ≤50 years, disease duration 76.9% <12 years) Pso (n=207, 29.5% female, 64.7% aged ≤50 years, disease duration 54.4% <12 years)	Only 27.3% and 28.1% of patients with Pso and PsA preferred to leave decisions entirely to the doctor, whereas 72.7% and 71.9% wanted to be involved in decision making, respectively. No significant differences between groups were found. Patients with PsA were more likely to be satisfied with the information they received about treatment side effects compared with patients with Pso ($P<0.05$). Overall satisfaction of both groups was associated with the doctor asking the patient if they had preferences or concerns ($P<0.001$), the doctor considering the patient's preferences ($P<0.01$), and the doctor informing the patient about treatment options ($P<0.05$) and potential side effects ($P<0.01$). Information about treatment and side effects (OR 5.11, 95% CI 2.5–15.0; $P<0.001$) and treatment options (OR 3.15, 95% CI 1.4–7.1; $P<0.01$) were significantly associated with overall satisfaction. The likelihood of preferring an active role increased with the patient's level of knowledge of treatment (OR 5.67, 95% CI 1.3–25.2; $P<0.05$) and the duration of disease (OR 2.03, 95% CI 1.0–4.2; $P<0.05$).
Nolla et al[45] (Spain)	To define importance of values assigned to attributes of BAs by Spanish patients with rheumatic diseases (RA, AS, and PsA) and rheumatologists	AS (n=158, 28.2% female, mean age 46.3 [SD 11.4] years, disease duration 13.1 [SD 9.2] years) PsA (n=165, 44.2% female, mean age 49.5 [SD 11.4] years, disease duration 12.6 [SD 8.2] years) RA (n=165, 73.8% female, mean age 55.9 [SD 11.5] years, disease duration 13 [SD 7.8] years) Treatment: 100% of study participants were currently being treated with BAs, 34% had received previous treatment with BAs	Independently of the diagnosis, patients placed more importance on pain relief and improvement in functional capacity (RI AS 37.8%, RI PsA 41.6%, RI AR 37.5%), followed by the risk of AEs (RI AS 39%, RI PsA%, RI AR%), administration methods (RI AS 25.7%, RI PsA 24.6%, RI AR 24.3%), and duration of effect (time until perceiving the need for a new dose) (RI AS 17.1%, RI PsA 15%, RI AR 17.2%).
Rothery et al[46] (UK)	To assess patients' preferences for treatment-related benefits and risk of disease relapse in the management of patients in low disease states of PsA	PsA (n=136, 46.6% female, 56.3% aged ≥55 years, 57% <9 years' disease duration) Treatment 31.2% methotrexate alone, 15.4% other cDMARDs alone, 12.2% BAs alone, 27.5% methotrexate combined with cDMARDs or BAs, 3.2% other cDMARDs combined with BA,10.5% no medication	The most important benefit attribute was the elimination of severe side effects of sickness and nausea (weights 1.8668 and 0.7996, respectively). Patients were willing to accept a very large increase in risk of relapse in exchange for improvements in levels of sickness/nausea (76.1% severe to some sickness/nausea, 32.6% some to no sickness/nausea) and health status (30.1% health state 3 [no problems with mobility or self-care, some problems with performing usual activities, moderate pain or discomfort, and moderate anxiety or depression] to 2 [no problems with mobility, self-care, anxiety, or depression, some problems with performing usual activities, moderate pain or discomfort], 38.6% health state 1 [no problems with mobility or self-care, usual activities, pain or discomfort, anxiety or depression] to 3).

Abbreviations: AE, adverse event; AS, ankylosing spondylitis; BAs, biological agents; cDMARDs, conventional disease-modifying antirheumatic drugs; HRQoL, health-related quality of life; PsA, psoriatic arthritis; Pso, psoriasis; RI, relative importance; SpA, spondyloarthritis.

For these patients, although efficacy (pain relief and improvement in functional capacity) and safety (risk of adverse events) were key aspects, both the frequency (time until perceiving the need for a new dose) and method of administration played an important role as attributes of BAs. Rothery et al[46] observed that PsA patients conferred the greatest importance to eliminating severe side effects of sickness/nausea and the least importance to a change in risk

of relapse. Patients were willing to accept a large increase in the risk of relapse in order to reduce the side effects of sickness/nausea.

Discussion

This review reports current knowledge on PROs in SpA patients in the EU. To date, the evidence indicates that similar to other rheumatic conditions,[47] SpA patients report poorer

HRQoL compared to the general population. For AS patients, physical domains were more impaired than emotional well-being, whereas for PsA patients both physical and psychological factors were strongly affected by the disease. Indeed, prevalence of depressive symptoms was higher in PsA than in AS and particularly high in patients with polyarthritis. In PsA, anxiety symptoms and concern about somatic symptoms were independently correlated with HRQoL, while in AS patients only impairment of cognitive function was found to be associated with HRQoL deterioration.

Work disability is a major problem for SpA patients. Indeed, these diseases tend to occur in the working-age population, and studies have suggested that the ability to work and to perform ADL positively influence patients' perceptions of their physical performance. In a cross-sectional study conducted in the US,[7] limitations in ADL were significantly associated with lower PCS scores in patients with AS whereas for PsA patients ADL limitations were associated with both lower PCS and MCS scores, which supports results from EU reports in this review.

The PCS in AS patients is important. In these patients, physical restrictions in joint mobility, particularly of the spine,[48,49] in addition to reductions in aerobic capacity[50,51] and loss of skeletal muscle,[52,53] are frequent. We found that physical function measured by the BASFI was highly correlated with HRQoL, indicating that functional impairment associated with AS can cause a significant impact on patients' HRQoL, with important limitations on their daily activities. Conversely, PsA is a heterogeneous disease that is greatly influenced by psychological and social aspects of the disease. The most affected aspects of HRQoL in PsA patients were coping with a chronic disease, limitations on work and/or leisure time, and anxiety or depression. Interestingly, joint symptoms had a greater effect on PsA patients' lives than skin symptoms.

Overall, SpA treatment has changed dramatically with the development of BAs.[11–13] Substantial improvements in the signs and symptoms of PsA patients have been reported for these agents, although all BAs are similar in terms of efficacy and safety.[54] The current evidence suggests that routine clinical use of BAs contributes greatly to the improvement of HRQoL in SpA patients. Significantly, the greatest improvements were found in the PCS, with smaller but still significant improvements in the MCS.

However, the potential clinical benefits demonstrated by BAs in clinical trials may be reduced by poor adherence and early discontinuation of treatment in clinical practice, thereby increasing medical costs and resulting in the need for more aggressive treatments.[55–57] Results on compliance

with biological treatment of SpA patients were heterogeneous in real-life situations; nonetheless, all rates of persistence at 12 months were >50% of the population, with no significant differences between PsA and AS patients and irrespective of the individual BA administered. A recent retrospective cohort study[58] conducted in 53,477 BA-naïve patients with rheumatic conditions in the US reported that the majority of patients remained persistent in the first year of BA therapy; however, they observed lower adherence ratios when 12-month medication-possession ratios were measured. Overall, in line with our results, patient characteristics, such as male sex, high disease activity, or peripheral arthritis, and treatment characteristics, such as concomitant methotrexate use, positively influence treatment persistence. Interestingly, higher HRQoL and a lower rate of functional disability were associated with lower compliance with treatment. According to Calip et al,[58] young adults were less likely to be treatment-compliant, resulting in more comorbidities, hospitalizations, or visits to the emergency department.

In rheumatic diseases, assessing and including patient preferences in the decision-making process have been found to contribute to increased medication adherence, improved treatment outcomes, reduced health care costs, and enhanced patient satisfaction.[59–61] The available evidence suggests that European SpA patients attach great importance to outcomes (pain relief and improvement of functional capacity, low risk of adverse events); however, process attributes, such as self-administration at home or longer time between doses, were also considered important attributes for BAs. Preferences varied depending on the PsA-disease states: low-disease-state patients were more concerned about the side effects of sickness/nausea than about the risk of relapse.

Results on PsA patients confirm that most patients want to be involved in decision making about their treatment. Satisfaction was associated with doctors providing treatment information and actively involving patients in decision making. In line with these results, Nota et al[62] reported that most patients with rheumatic disease preferred to be involved in decisions about their medication and especially preferred more participation in decision making regarding their first treatment, which most commonly occurs in newly diagnosed patients.

Limitations

Possible limitations of this review include the heterogeneity of the articles retrieved in terms of patients, treatments, or methodology. Regarding the design, all studies assessing HRQoL in SpA were cross-sectional, and it is important to take into account that cross-sectional design might limit

comparisons among SpA patients and with other diseases and does not allow the drawing of final conclusions about the factors associated with HRQoL and their cause–effect relationship. On the other hand, there may be relevant publications in languages other than English and Spanish or that are indexed in different databases than those searched that we have not identified in this review.

Conclusion

SpA has a negative impact on patients' HRQoL. The physical aspects of HRQoL, especially functioning limitations and pain, are severely affected in both AS and PsA patients. In PsA patients, the impact of disease on emotional well-being is considerable. In both disease, BA therapy is associated with improvements in both physical and emotional status. However, these potential improvements may be reduced by poor adherence. Even though there are inconsistent findings, persistence rates in SpA patients are >50%, irrespective of the individual BA administered. Finally, results on preferences showed that most SpA patients preferred to be involved in decisions regarding their treatment, and although efficacy and safety are both considered essential, frequency and methods of administration also play a role as preference attributes for BA. These findings suggest that implementing management programs for SpA patients focused on the physical, emotional, and social consequences of the disease, in addition to assessing and including patient's preferences in the treatment decision-making process, could be crucial in improving patients' HRQoL and ensuring their satisfaction and compliance with treatment.

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Disclosure

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