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REVIEW

Health Disparities in Rheumatology in the United States

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Objective: Underserved populations are often at risk of experiencing systematic healthcare disparities. Existing disparities in care access, quality of care received, and treatment outcomes among patients with rheumatic disease are not well understood.

Methods: We conducted a targeted literature review to understand disparities in health outcomes, treatment patterns, and healthcare management faced by rheumatology patients in the United States, with a focus on rheumatoid arthritis (RA), psoriatic arthritis (PsA), and ankylosing spondylitis (AS).

Results: The findings of this review indicate that disparities in RA, PsA, and AS affect several historically underserved populations, including underrepresented racial and ethnic groups, persons with lower socioeconomic status (SES), persons experiencing homelessness, and patients with Medicare or Medicaid insurance types. The disparities experienced by these populations include greater disease activity and severity, decreased or delayed access to specialist care, decreased likelihood of receiving advanced therapeutics, and worse clinical outcomes.

Conclusion: To provide equitable healthcare for all patients with RA, PsA, and AS, multiple closely linked health disparities must be addressed. Possible solutions include partnerships between healthcare systems and community-based organizations, targeted outreach tailored to patients with low SES, interventions to improve patient adherence and knowledge, and interventions to improve access to care for rural-residing and unhoused patients. In all, the findings of this literature review underscore the need for mitigation of health disparities in rheumatology care and may serve as a foundation for developing strategies to reduce disparities.

Keywords: Healthcare disparities, health inequities, rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, United States, social determinants of health

Introduction

Despite ongoing efforts to achieve health equity in the United States (US), historically marginalized communities continue to experience health disparities,[1,2] defined as "preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health."[3] These inequities systematically undermine the physical, social, economic, and emotional health of underserved populations, including racially or ethnically diverse groups, older persons, and persons in rural locations.[4] Social determinants of health (SDOH) are specific conditions and factors that can affect health risk and outcomes that fall within the domains of economic stability, education access and quality, healthcare access and quality, neighborhood and built environments, and social and community context.[5] Within SDOH, socioeconomic status (SES) factors, such as income and education, have significant impacts on health outcomes, as these factors may influence personal health choices and affect access to quality healthcare.[6,7]

Historically underserved populations in the US are at risk of experiencing disparities in rheumatology care access, quality of care received, and treatment outcomes.[8–10] Despite advancements in rheumatology therapeutic strategies and treatments,

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not all patients may experience the resulting treatment benefits equitably. Early treatment strategies—including corticosteroids and conventional disease-modifying antirheumatic drugs (DMARDs), such as methotrexate—are aimed at reducing inflammation and providing symptom relief. Over the last several decades, treatments for rheumatologic conditions, including rheumatoid arthritis (RA), psoriatic arthritis (PsA), and ankylosing spondylitis (AS), have evolved substantially toward those that reduce disease activity, improve patient outcomes, and slow the progression of disease (eg, biologic DMARDs [bDMARDs]).[11–13] However, these newer, aggressive treatment options are more costly and may introduce a financial barrier to treatment access for patients. Variability in insurance coverage may further impact access, and the insurance status of patients may introduce perceptions about affordability that influence prescribing patterns.[14]

Recent studies suggest that differences exist across the rheumatology care continuum in the US that contribute to disparities in care and patient outcomes; however, the extent of these disparities is not well understood. The aim of this literature review was to enhance the understanding of US healthcare disparities in rheumatology—with a focus on RA, PsA, and AS patient populations—as they relate to health outcomes, treatment patterns, and healthcare management. We additionally evaluated gaps in the current literature and considered potential solutions toward achieving greater equity in rheumatology treatment, care, and patient outcomes.

Materials and Methods

A targeted literature review was conducted that included topics of disparities in health outcomes, care patterns, and treatment patterns in RA, PsA, and AS. We searched PubMed, Embase, and Cochrane databases for studies published within the last 10 years (December 2012 to December 2022) and conference abstracts from the last 2 years (December 2020 to December 2022). PubMed search terms are displayed in Supplementary Table S-1; these search terms were translated for use in the Embase and Cochrane database searches. Additionally, we performed a targeted desktop search of abstracts from government briefs and whitepapers and bibliographies from systematic literature reviews. Screening was completed in 2 phases: a single reviewer performed level 1 screening of titles and abstracts meeting search criteria, followed by level 2 screening of full-text articles to determine inclusion or exclusion. Eligible studies were published in English and conducted in a US patient population. Randomized controlled trials, animal studies, and records published as commentaries, letters, editorials, or case reports were excluded. The results of our literature search were synthesized and analyzed thematically for each health disparity topic of interest (ie, disparities associated with demographic or socioeconomic factors in RA, PsA, or AS).

Results

We identified and screened 2859 records from database searches and 2 records from targeted searches. Following title and abstract screening, 2,324 records were excluded, and 135 full-text articles were assessed for eligibility. After the exclusion of 81 articles failing to meet population, intervention, outcomes, study type, or other criteria during full-text screening, 54 studies met the inclusion criteria for our literature review (Figure 1). Our results are summarized first by disease area and then by factors associated with health disparities within that disease area.

Rheumatoid Arthritis

We identified 24 studies evaluating demographic factors[15–38] and 18 studies reporting on socioeconomic factors[9,15,18,20,22–24,26,28,30,33,35,38–43] that were associated with differences in access, medication use, and health outcomes in people with RA (Tables 1 and 2, and Supplementary Tables S-2 to S-4).

Health Disparities in RA Associated with Demographic Factors

Patients with RA belonging to underserved racial and ethnic communities were more likely to experience poor clinical (eg, higher disease activity, lower likelihood of achieving remission) and functional (eg, difficulty performing daily activities) outcomes.[16,17] Greenberg et al[16] reported that achievement of low disease activity was significantly lower in Black individuals than White individuals, and functional outcomes were significantly worse for Black and Hispanic Americans compared with White Americans.[16] Molina et al[17] reported that, compared with non-Hispanic White individuals, Hispanic individuals had more tender and swollen joints and significantly higher disease activity, as

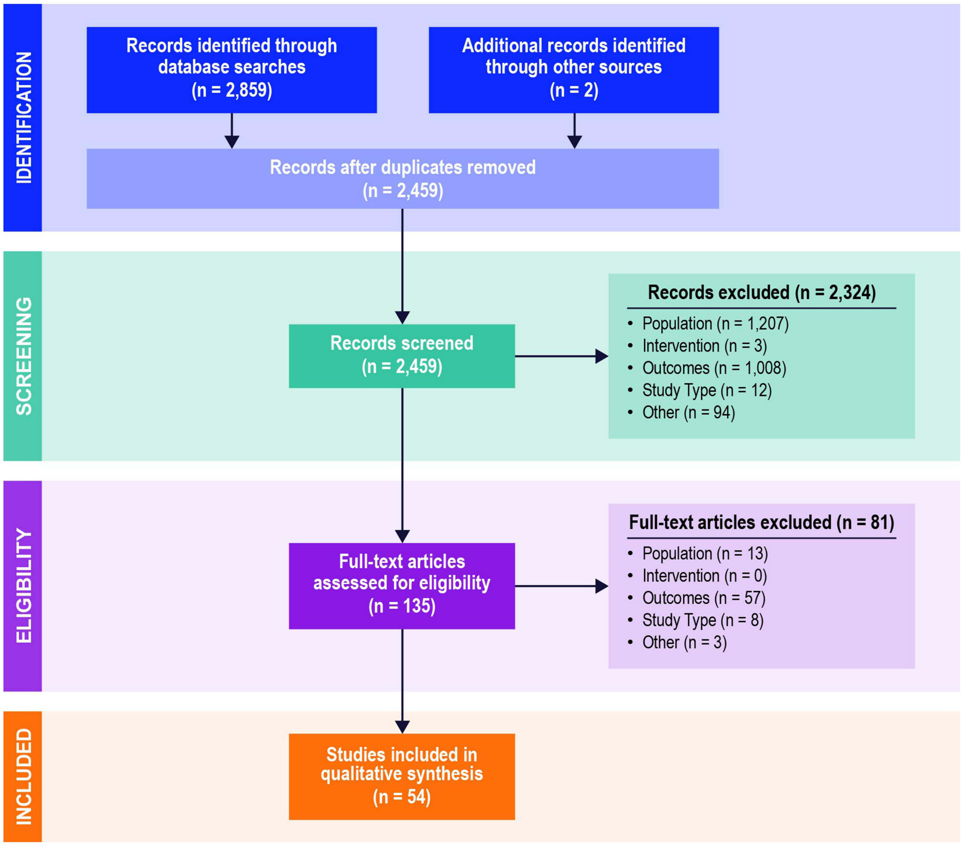

Figure 1 PRISMA Flowchart.
Abbreviations: PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

evidenced by clinical measures associated with worsening disease activity, such as erythrocyte sedimentation rate and modified Sharp scores.

Notably, health literacy and English proficiency may affect outcomes in certain racial or ethnic groups. For example, Katz et al[31] found that worse function, higher pain levels, and higher likelihood of moderate to severe fatigue were associated with non–English-proficient Hispanic patients with RA, compared with either Hispanic or White patients who were English proficient. However, there is evidence suggesting knowledge about RA may not affect health outcomes among underserved ethnic groups of patients with RA.[44]

Underserved racial and ethnic groups may also face disparities in access to care and be less likely to be referred to specialists, resulting in delayed diagnosis and treatment. Riad et al[19] found that primary care providers referred a higher percentage of White and Black patients to rheumatologists compared with Hispanic patients and patients belonging to other racial or ethnic groups. Additionally, the Hispanic patient group had a significantly higher median time from symptom onset to first rheumatologist visit (22.7 months) compared with all other racial or ethnic groups (6.0–8.0 months).[19] In studies of patients with Medicaid, Black patients were less likely to use or receive DMARD and bDMARD therapies, whereas bDMARD use was more likely in White patients.[25,26]

Beyond associations with race and ethnicity, age and sex were also found to be predictors of disparities in disease activity, mortality rates, and access to care. Specifically, older age and female sex were significant predictors of worsening disease activity (based on Clinical Disease Activity Index score);[16] higher mortality rates related to interstitial lung disease (ILD)—a complication experienced by some patients with RA—were observed in older patients, female patients, and Native American patients with RA;[32] and Jin et al,[26] Gaitonde et al,[24] and Kim et al,[21] found bDMARD use was positively associated with male sex and/or younger age. Similarly, Yazdany et al[23] found DMARD and bDMARD users in a Medicare population were more likely to be younger compared with glucocorticoid monotherapy users: 24% of patients aged 65–69 years received DMARDs and 15%

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Table 1 Health Disparity Associations Evaluated: RA Demographics (n=24)

Outcome	**Age**	**Sex**	**Race**	**Education**	**Health Literacy**
Disease activity	Not studied	Not studied	Dowell S et al[15] Greenberg et al[16] Hurd and Barnabe[36] Molina et al[17] Astrike-Davis et al[30,a]	Astrike-Davis et al[30,a]	Not studied
Specialist access; access to care	Schmajuk et al[18] Riad et al[19] Hathaway et al[33]	Schmajuk et al[18] Riad et al[19] Hathaway et al[33]	Riad et al[19] Schmajuk et al[18] Hathaway et al[33]	Hathaway et al[33]	Not studied
DMARD initiation/use	DMARDs: Solomon et al[22] Gaitonde et al[24] bDMARDs: Kan et al[20] Kim et al[21] Yazdany et al[23] Gaitonde et al[24] Chu et al[25] Jin et al[26] Kerr et al[34] Cifaldi et al[35] csDMARDs: Kan et al[20] Yazdany et al[23] Kerr et al[34] Cifaldi et al[35]	DMARDs: Gaitonde et al[24] bDMARDs: Kim et al[21] Yazdany et al[23] Chu et al[25] Jin et al[26] Gaitonde et al[24] csDMARDs: Yazdany et al[23]	DMARDs: Solomon et al[22] Gaitonde et al[24] bDMARDs: Kan et al[20] Kim et al[21] Yazdany et al[23] Gaitonde et al[24] Chu et al[25] Jin et al[26] Navarro-Millán et al[27] Kerr et al[34] csDMARDs: Kan et al[20] Yazdany et al[23] Kerr et al[34]	DMARDs: Solomon et al[22] bDMARDs: Kerr et al[34] csDMARDs: Kerr et al[34]	Not studied
DMARD adherence	bDMARDs: Berger et al[28] Kan et al[20] csDMARDs: Kan et al[20]	bDMARDs: Berger et al[28] Kan et al[20] csDMARDs: Kan et al[20]	bDMARDs: Kan et al[20] csDMARDs: Kan et al[20] Waimann et al[29]	Waimann et al[29]	Not studied
General health and patient-reported outcomes	Not studied	Not studied	Greenberg et al[16] Hurd and Barnabe[36] Katz et al[31]	Astrike-Davis et al[30,b] Baldassari et al[38,c]	Hirsh[37] Katz etal[31]
Healthcare expenditures and work productivity	Not studied	Not studied	Not studied	Not studied	Not studied
Mortality[d]	Jeganathan et al[32]	Jeganathan et al[32]	Jeganathan et al[32]	Not studied	Not studied

Notes: [a]Regarding radiographic progression. [b]Regarding pain. [c]Regarding self-reported measures. [d]Mortality due to interstitial lung disease, a complication not experienced by all patients with RA.

Abbreviations: bDMARD, biological disease-modifying antirheumatic drug; csDMARD, conventional synthetic disease-modifying antirheumatic drug; DMARD, disease-modifying antirheumatic drug; RA, rheumatoid arthritis.

Table 2 Health Disparity Associations Evaluated: RA Socioeconomics (n=18)

Outcome	Type of Insurance/ Uninsured	SES/Employment Status	Region
Disease activity	Dowell S et al[15]	Baldassari et al[39]	Dowell S et al[15]
Specialist access; access to care	Cifaldi et al[35] Hathaway et al[33]	Schmajuk et al[18]	Schmajuk et al[18] Walsh et al[40]
DMARD initiation/use	DMARDs: Gaitonde et al[24] bDMARDs: Gaitonde et al[24] Cifaldi et al[35] Jin et al[26] csDMARDs: Cifaldi et al[35]	DMARDs: Molina et al[41] Solomon et al[22] bDMARDs: Yazdany et al[23] csDMARDs: Yazdany et al[23]	DMARDs: Gaitonde et al[24] bDMARDs: Gaitonde et al[24] Yazdany et al[23] Peterman et al[42] csDMARDs: Yazdany et al[23]
DMARD adherence	bDMARDs: Berger et al[28] Kan et al[20] csDMARDs: Kan et al[20]	Not studied	bDMARDs: Kan et al[20] csDMARDs: Kan et al[20]
General health and patient-reported outcomes	Cifaldi et al[35]	Astrike-Davis et al[30] Baldassari et al[39] Baldassari et al[38] Izadi et al[9] Molina et al[41]	Not studied
Healthcare expenditures and work productivity	Not studied	Nair et al[43,a]	Not studied
Mortality	Not studied	Not studied	Not studied

Note: [a]Regarding employment status.

Abbreviations: bDMARD, biological disease-modifying antirheumatic drug; csDMARD, conventional synthetic disease-modifying antirheumatic drug; DMARD, disease-modifying antirheumatic drug; RA, rheumatoid arthritis; SES, socioeconomic status.

received glucocorticoid monotherapy, whereas only 9% of patients aged ≥ 85 years received DMARDs and 21% received glucocorticoid monotherapy.[23]

Health Disparities in RA Associated with Socioeconomic Factors

Several studies showed that lower SES was associated with greater odds of developing RA; resulted in worse clinical, functional, and patient-reported outcomes; and was a barrier to high-quality rheumatologist care and broad treatment access.[9,15,30,35,38,39,41,45] For instance, in studies of the associations of SES with health outcomes among African American patients with RA, nonprofessional occupation and limited education were associated with worse health across all self-reported measures, including pain, physical function, and fatigue.[30,38] Further, Molina et al[41] found that patients with lower SES, compared with middle and upper SES patients, experienced longer times from symptom onset to DMARD treatment initiation (8.5 years vs 6.1 years) and worse clinical outcomes. Across the full study population, the authors reported a range of 3.1–4.6 years from symptom onset to diagnosis and 0.9–1.8 years from diagnosis to first rheumatologist visit, which could explain the lag time to DMARD initiation in all SES groups. Additionally, 2 studies reported that Medicaid insurance was associated with higher overall RA disease activity and burden and less access to treatment and care.[15,35] In agreement, Schmajuk et al[18] reported that the combination of lower SES and Medicare insurance was associated with living in areas with very limited access to rheumatologists and corresponding long travel times to rheumatologist appointments.

Many studies also highlighted additional SDOH that were associated with differences in patient access to therapy.[21,23,24,26,42,43] Initiation and use of bDMARDs was positively associated with higher income, employment status, and having commercial insurance as opposed to insurance through Medicaid or Medicare.[23,26,43] One study found patients in the United Healthcare commercial insurance database were 87% more likely to initiate a bDMARD compared with patients with Medicaid insurance.[26] Additionally, higher comorbidity score, urban location, and previous use of steroid and nonbiologic DMARDs were positively associated with bDMARD use.[21,24,26,42]

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Psoriatic Arthritis

Five articles evaluated health disparities among patients with PsA (Tables 3 and S-5).[40,46–49] Ahmed et al[46] found that patients with PsA from certain underserved racial and ethnic populations reported greater PsA disease activity (indicated by a higher Routine Assessment of Patient Index Data 3 score); specifically, Black and Hispanic patients reported greater disease activity than White patients, whereas Asian and White patients reported similar scores. Disparities in access to therapy according to race and ethnicity were inconsistent; for example, Jaleel et al[48] reported that DMARDs of any type were used substantially more often by Black patients than by White patients, whereas Kerr et al[49] found that use of bDMARDs was greater in White patients than in Black patients. Moreover, Ogdie et al[47] reported that a similar proportion of bDMARDs and targeted synthetic DMARDs (tsDMARDs) were prescribed across racial and ethnic groups among patients with commercial insurance, while among patients with Medicare, a lower percentage of White patients (20.2%) compared with Black (28.5%) and Hispanic (24.1%) patients were prescribed bDMARDs/tsDMARDs.

Two studies found disparities in treatment patterns and access based on sex and location. Ogdie et al[47] found that a lower proportion of female than male patients with commercial insurance were prescribed bDMARDs/tsDMARDs, whereas similar proportions of female and male patients with Medicare and Medicaid were prescribed bDMARDs/tsDMARDs.[47] A study in veterans found that general use of rheumatology care and DMARDs was low in this population and further indicated that those living further from Veterans Affairs sites and rheumatology care had lower bDMARD use.[40]

Ankylosing Spondylitis

We identified 6 studies reporting on health disparities for patients with AS (Tables 4 and S-6)[36,40,47,50–52] and found that results were inconsistent among the limited studies on disparities in access to AS therapy based on race and ethnicity. A cross-

Table 3 Health Disparity Associations Evaluated: PsA (n=5)

Outcome	Sex	Race	Type of Insurance/Uninsured	Rheumatology Provider Distance
Disease Activity Specialist access; access to care DMARD initiation/use	Not studied Ogdie et al[47] bDMARDs: Ogdie et al[47] tsDMARDs: Ogdie et al[47]	Ahmed et al[46] Ogdie et al[47] DMARDs: Jaleel et al[48] Kerr et al[49] bDMARDs: Ogdie et al[47] csDMARDs: Kerr et al[49] tsDMARDs: Ogdie et al[47]	Not studied Ogdie et al[47] bDMARDs: Ogdie et al[47] tsDMARDs: Ogdie et al[47]	Not studied Walsh et al[40] bDMARDs: Walsh et al[40] tsDMARDs: Walsh et al[40] csDMARDs: Walsh et al[40]

Abbreviations: bDMARD, biological disease-modifying antirheumatic drug; csDMARD, conventional synthetic disease-modifying antirheumatic drug; DMARD, disease-modifying antirheumatic drug; PsA, psoriatic arthritis; tsDMARD, targeted synthetic disease-modifying antirheumatic drug.

Table 4 Health Disparity Associations Evaluated: AS (n=6)

Outcome	Age	Sex	Race	Health Literacy	Type of Insurance/ Uninsured	Rheumatology Provider Distance
Disease Activity	Jamalyaria et al[50]	Jamalyaria et al[50]	Jamalyaria et al[50] Hurd and Barnabe[36]	Not studied	Not studied	Not studied
DMARD initiation/use	Not studied	bDMARDs: Ogdie et al[47] tsDMARDs: Ogdie et al[47]	bDMARDs: Ogdie et al[47] Singh and Magrey[51] tsDMARDs: Ogdie et al[47]	Not studied	bDMARDs: Ogdie et al[47] tsDMARDs: Ogdie et al[47]	bDMARDs: Walsh et al[40] tsDMARDs: Walsh et al[40] csDMARDs: Walsh et al[40]
Biologics switching	Hwang et al[52]	Hwang et al[52]	Hwang et al[52]	Not studied	Not studied	Not studied

Abbreviations: AS, ankylosing spondylitis; bDMARD, biological disease-modifying antirheumatic drug; csDMARD, conventional synthetic disease-modifying antirheumatic drug; DMARD, disease-modifying antirheumatic drug; tsDMARD, targeted synthetic disease-modifying antirheumatic drug.

sectional analysis assessing disparities in health outcomes found that Black patients with AS had more severe disease in terms of disease activity, functional impairment, and radiographic worsening compared with either White or Latino patients.[50] Ogdie et al[47] found that Black patients within the Medicaid population and Asian patients within the Medicare population had the lowest proportion of prescribed bDMARDs/tsDMARDs. Conversely, another study from Singh and Magrey[51] reported no significant difference in the use of either biologics or NSAIDs between Black and White patients, despite the presence of worse disease severity in Black patients.

In addition to race and ethnicity, factors, such as sex, age, and veteran status, also may influence treatment patterns. Within the commercial insurance population, a lower proportion of women than men were prescribed bDMARDs/tsDMARDs.[47] A study by Hwang et al[52] found that patients who switched biologics within 2 years of initiation were more likely to be older, have higher baseline subjective disease activity, and not be currently smoking. Additionally, a study in veterans found that general use of rheumatology care and use of synthetic DMARDs was low in this population.[40]

Rheumatology

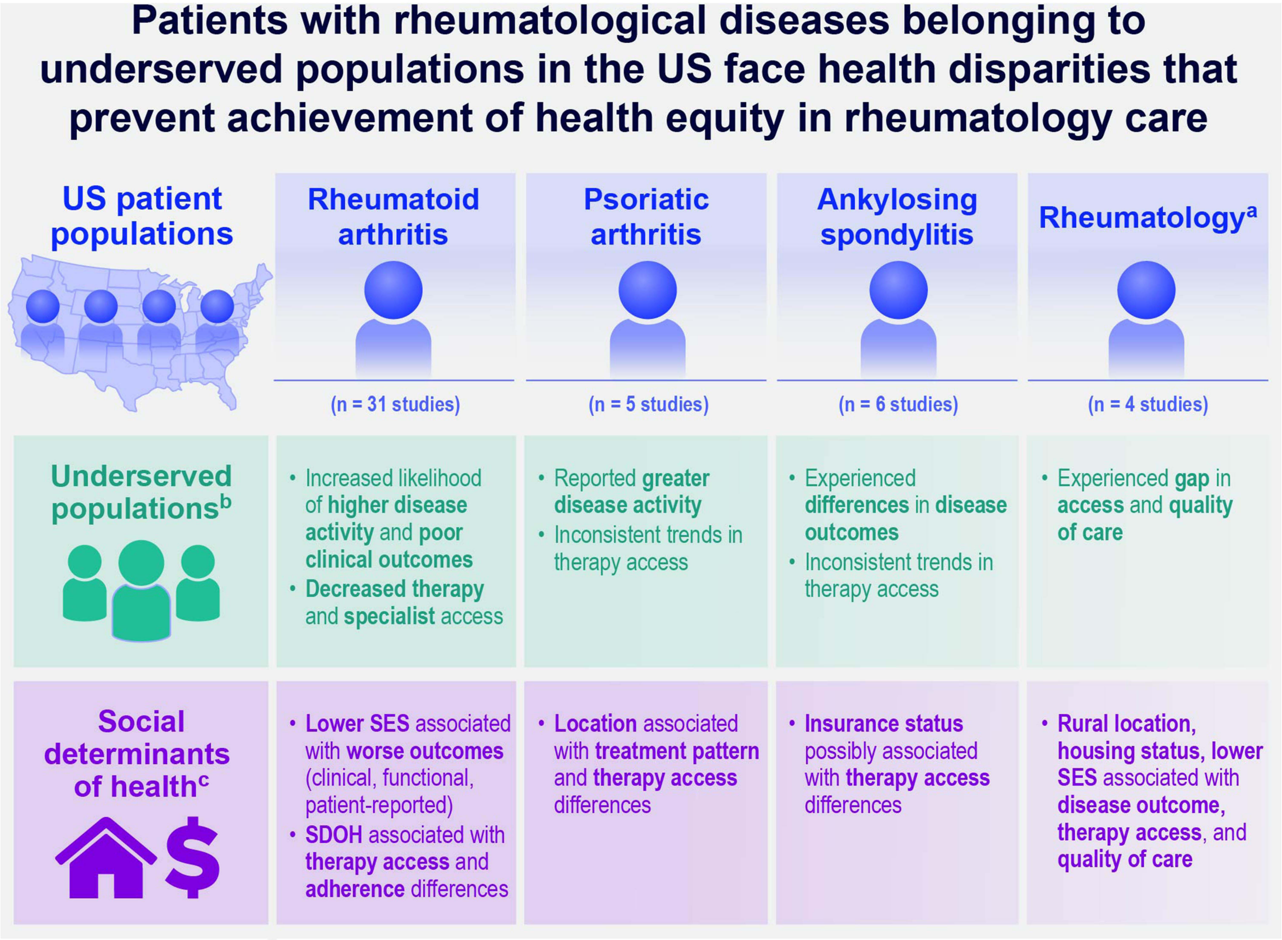
Four studies reported on patients with rheumatology diseases in general—encompassing autoimmune or inflammatory conditions usually affecting the musculoskeletal system, such as systemic lupus erythematosus, most forms of arthritis, and spondyloarthropathies.[53] These patients faced health disparities in outcomes and access to therapy based on SES and SDOH, including factors, such as area deprivation index and homelessness (Supplementary Table S-7).[54–57] Rai et al[55] found that patients experiencing homelessness had less DMARD use and more steroid use compared with patients who were not experiencing homelessness. Prescribing rates may also be influenced by SES, as Mbonu et al[54] found that DMARDs, NSAIDs, and/or glucocorticoids were more likely to be prescribed in areas with less socioeconomic disadvantage, but these trends were inconsistent and not clinically meaningful. Additionally, this study found that the number of rheumatologists was higher in areas with less deprivation, and this disparity was evident both in rural areas and in neighborhoods with higher deprivation within cities. When examining challenges of caring for patients experiencing homelessness, Rai et al[55] found that these patients had poorer access to clinic appointments (80% versus 91% access) and higher use of emergency services (20 versus 5 emergency department visits for any reason in 12 months) compared with patients who were not experiencing homelessness.

Discussion

The findings of this literature review provide a comprehensive overview of the health disparities faced by patients with rheumatological diseases, including RA, PsA, and AS. The studies identified in this review indicate that clinical and functional outcomes are affected by several factors, including race and ethnicity, age, sex, SES, insurance status, location, and housing status (Figure 2). Access to specialist care, including rheumatologist visits and treatment-prescribing patterns, also differs by race and ethnicity, SES, insurance status, and sex.

The demographic and socioeconomic factors discussed do not exist in isolation. Historic underrepresentation, under-inclusion, and exclusion of groups in medical research; barriers to equal access and quality care; limited educational and outreach opportunities; and other systemic, institutional, or structural factors continue to shape individual experiences and health outcomes. In addition, there is a complex interplay between factors, such as race, SES, and access to education and healthcare, and numerous factors leading to health disparities that often intertwine. For example, rural, Indigenous, immigrant, and refugee populations tend to fall within lower SES groups and may face additional hurdles to access care. Incomplete definitions of race and ethnicity and conflation with SES may also incorrectly imply race-based differences in disease presentation, response to treatment, and adverse events. For instance, the existing literature supports differences in disease phenotype and severity in Black, Hispanic, and Indigenous populations.[15–17,36,46,50] Indeed, a systematic review by Hurd and Barnabe[36] found that patients with AS belonging to the Indigenous populations of Canada, the US, Australia, and New Zealand experienced more severe disease symptoms than non-Indigenous patients, but as the authors importantly state, whether the etiology of these differences is biologic or reflective of disparities in access to care requires further study.

The presence of comorbidities, such as cardiovascular disease, diabetes mellitus, and obesity, can influence adverse events and patient and provider willingness to use advanced therapies.[58] Further, multimorbidity burden, a phenomenon in which 2 or more comorbidities are present concurrently,[59] is reported at increased rates in Black patients and female patients with RA compared with White patients or male patients with RA, respectively,[60,61] potentially contributing to



Patients with rheumatological diseases belonging to underserved populations in the US face health disparities that prevent achievement of health equity in rheumatology care

US patient populations	Rheumatoid arthritis (n = 31 studies)	Psoriatic arthritis (n = 5 studies)	Ankylosing spondylitis (n = 6 studies)	Rheumatology[a] (n = 4 studies)
Underserved populations[b]	• Increased likelihood of **higher disease activity** and **poor clinical outcomes** • **Decreased therapy** and **specialist** access	• Reported **greater disease activity** • Inconsistent trends in therapy access	• Experienced **differences** in **disease outcomes** • Inconsistent trends in therapy access	• Experienced **gap** in **access** and **quality of care**
Social determinants of health[c]	• **Lower SES** associated with **worse outcomes** (clinical, functional, patient-reported) • **SDOH** associated with **therapy access** and **adherence** differences	• **Location** associated with **treatment pattern** and **therapy access** differences	• **Insurance status** possibly associated with **therapy access** differences	• **Rural location, housing status, lower SES** associated with **disease outcome, therapy access**, and **quality of care**

Figure 2 Summary of Findings.

Notes [a]Rheumatology generally indicates the group of autoimmune or inflammatory conditions that usually affect the musculoskeletal system and that encompass most forms of arthritis and spondyloarthropathies. [b]Included in review: underserved racial and ethnic groups, older persons, and female sex. [c]Included in review: SES (income and employment status, education access and quality), location, healthcare access and quality, insurance status, and housing status.

Abbreviations: SDOH, social determinants of health; SES, socioeconomic status; US, United States.

disparities in achievement of positive outcomes. Additionally, perceptions and implicit bias among healthcare professionals may influence clinical decision-making and quality of care. A systematic review by FitzGerald and Hurst[62] found substantial evidence that healthcare professionals exhibited implicit bias based on factors, such as race and ethnicity, SES, gender, age, disability, and body weight. Furthermore, these biases impacted healthcare professionals' clinical judgement and behavior, including diagnosis and treatment recommendations.[62] To provide equitable healthcare for all patients with RA, PsA, and AS, multiple, closely linked health disparities must be properly addressed. It is necessary to identify the root cause(s) of these disparities and distinguish modifiable versus nonmodifiable risk factors to develop solutions for achieving rheumatology health equity.

Gaps in Literature

Our literature review identified several key areas that are not currently well characterized across RA, PsA, and AS disease states. First, although we found evidence of health disparities among patients with RA aligning with and expanding upon existing literature reviews,[10,63] we identified far fewer studies characterizing health disparities in patients with PsA or AS. We may expect some similar disparities across these 3 conditions, as patients with RA, PsA, and AS are all typically managed by a rheumatologist; indeed, proximity to a physician, rural community demographics, insurance status, low-income status, and race and ethnicity were found to contribute to a gap in access to and quality of rheumatology care.[57] Nonetheless, this dearth of evidence regarding PsA and AS disparities represents a major gap in the literature. Second, further studies on disparate DMARD switching patterns and adherence outcomes driven by demographic or socioeconomic factors are warranted, especially considering clinically superior yet more costly biologic/targeted DMARDs. Third, in patients with PsA, evidence exists that differences in disease activity are affected by race and ethnicity, but the causes for these differences are unclear. Lastly, although the correlation between low health literacy, health disparities, and SDOH is well established in the general literature, limited research has been conducted regarding the impact of health literacy on treatment patterns and clinical outcomes within the fields of RA, PsA, and AS. In addition, healthcare expenditures and work productivity were not well captured as outcomes that may be impacted by demographic or socioeconomic factors among rheumatology patients.

Recommendations and Future Directions

Of the 54 articles included in this review, 16 offered insights on possible solutions to the health disparities studied.[9,18,31,33,37,40,45,49,55–57,64–68] Among low-income populations, Izadi et al[9] suggested targeted outreach to patients with low SES as a potential strategy to reach this population, as well as partnerships between healthcare systems and community-based organizations (eg, smoking cessation classes, fresh food markets, and free support groups). According to Hathaway et al,[33] providing early intervention programs in atypical settings (eg, community centers, schools) may increase the opportunities for patients with low SES, including those who are uninsured, to become aware of their healthcare options. Providing educational materials targeted to disproportionately impacted patient populations on the importance of diet, exercise, and comorbidity management may be beneficial for mitigating multimorbidity and improving related disparate outcomes.[69] Additionally, given the relation between overweight/obese status and the development of arthritis, efforts aimed at reducing high body mass indexes among disadvantaged children may potentially mitigate disparities that arise later in life.[45]

Several studies have evaluated disparities experienced by various racial and ethnic groups and patients with limited health literacy or English proficiency. To ensure that patient-reported outcome measurements are linguistically and culturally appropriate, both Hirsh[37] and Katz et al[31] recommended that patient-reported outcome instruments should be validated and tested for accurate translations and cultural equivalence of concepts. Moreover, because patient reporting alone may be unreliable in these groups, Kerr et al[49] determined that the adoption of objective disease measurements of skin and joint involvement may help lessen treatment and clinical outcome disparities for patients with PsA. Finally, Vina and Quinones[64] suggested incorporating patient preferences and values into the medical decision-making process and using interventions to improve treatment adherence and patient knowledge (eg, decision aids) as potential approaches to minimize racial and ethnic disparities in rheumatology and musculoskeletal care.

Patients residing in low-access areas, those with transportation difficulties, and unhoused patients all experience health disparities, particularly disparities related to access to healthcare. Telemedicine programs may improve access for a subset of patients with rheumatological diseases experiencing access barriers to medical care; however, cost and existing disparities in internet and technology access will disproportionately and adversely affect the wide adoption of telehealth among these groups.[57,65–67] Access to rheumatology practices may also be increased by providing travel support, providing incentives for providers to practice in rural areas, and training primary care and nonphysician providers in these areas to deliver rheumatology care.[18,40] Lastly, care for unhoused patients should focus on disparities in housing, income, transportation, and education, which may be accomplished by expanding direct healthcare delivery to unhoused patients using a multidisciplinary approach.[55,56] Overall, these potential solutions require a collaborative approach to care, which may involve collaboration across specialties, collaboration with tech companies to provide service to underserved populations, and partnerships between healthcare systems and community organizations.

Conclusion

In summary, we identified health disparities in RA, PsA, and AS that affect several historically underserved populations, including underrepresented racial and ethnic groups, persons with lower SES, persons experiencing homelessness, and patients with Medicare or Medicaid insurance types. The disparities experienced by these populations included greater disease activity and severity, decreased or delayed access to specialist care, decreased likelihood of DMARD prescription, and worse clinical and functional outcomes. Importantly, we also identified several key gaps in the existing literature that require further study—such as a paucity of evidence regarding disparities in PsA and AS—and summarized insights on possible solutions to health disparities in the field of rheumatology. Taken together, the findings of this literature review highlight the need for new approaches to mitigate health disparities in rheumatology and may serve as a foundation for developing strategies to achieve this goal.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

CCM, SK, JC, and AK are full-time employees of RTI Health Solutions. Their compensation is unconnected to the studies on which they work. PMZ and OT are employees of AbbVie and hold shares and/or stock options in the company. GCW has served as a consultant for AbbVie, Amgen, Bristol Myers Squibb, Janssen, Eli Lilly, Novartis, Pfizer, Sanofi, and UCB. PR has participated on advisory boards, received speaker fees and/or had research support from AbbVie, Horizon/Amgen, Bristol Myers Squibb, Janssen, Lilly, Novartis, Pfizer, Sanofi, and UCB. AFW has served as a consultant and had research support from AbbVie, Amgen, Bristol Myers Squibb, Janssen, Eli Lilly, Novartis, Pfizer, Sanofi, and UCB.

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