INPLASY

Telemedicine in Rheumatology in the United States: A ScopingReview of Modalities, Outcomes, and Costs in Support of a HybridModel of Care

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ADMINISTRATIVE INFORMATION

Support - No support.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 September 2026 and was last updated on 17 September 2026.

INTRODUCTION

Review question / Objective Background: Geographic maldistribution of rheumatologists, long travel distances, and limited specialist capacity create substantial barriers to rheumatology care in the United States. Tele-rheumatology, which includes synchronous video and audio visits, clinic-to-clinic telemedicine, asynchronous electronic consultation (eConsult), remote monitoring, and hybrid models, expanded rapidly during the COVID-19 pandemic.

Objective: To map telemedicine modalities, populations, settings, and reported outcomes in US rheumatology, with an emphasis on access, clinical effectiveness relative to face-to-face care, patient satisfaction, costs, safety, and equity.

Background Rheumatology is particularly vulnerable to geographic barriers to care. In the United States, specialist availability is concentrated in urban and academic settings, while many patients with rheumatic and musculoskeletal diseases require longitudinal follow-up, laboratory monitoring, imaging, infusion services, and periodic physical examinations. These challenges are especially pronounced in rural communities, tribal health systems, Veterans Affairs (VA) networks, and pediatric rheumatology, where the specialist supply is particularly limited.1,2 Before the COVID-19 pandemic, most US tele-rheumatology programs were targeted initiatives designed to connect specialists with rural patients or referring clinicians. The pandemic rapidly expanded direct-to-patient video and telephone care: in a large US community rheumatology network, telehealth use rose from almost none before the pandemic to 41.4% of follow-up visits during the initial transition and remained at 27.7% afterward. National registry data similarly showed a rapid increase in telemedicine, accompanied by an overall reduction in rheumatology encounters during the early pandemic.
Previous systematic reviews have generally reported favorable feasibility and satisfaction, with clinical outcomes often comparable to

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conventional care.5,6 However, the literature is heterogeneous; most studies are observational, and many carry substantial risk of bias. A 2022 systematic review identified 36 reports and found satisfaction to be the most commonly studied outcome. Heterogeneity precluded meta-analysis, and most studies had important methodological limitations.5 Internationally, remote consultation use has settled at approximately 30% of follow-up consultations in post-pandemic practice, suggesting that telemedicine has become a durable component of rheumatology care delivery. This scoping review therefore does not assume that telemedicine is beneficial. Its purpose is to determine where, for whom, and for which outcomes the US evidence supports its use. We synthesize the evidence thematically across access, clinical effectiveness, diagnostic concordance, patient and clinician experience, cost, safety, and equity, and conclude with implications for a hybrid care model that combines face-to-face and virtual encounters.

Rationale The primary question was: Which telemedicine modalities have been used in US rheumatology, and what outcomes have been reported for access, clinical effectiveness, patient and clinician experience, cost, utilization, safety, and equity? Secondary questions addressed which patients, diseases, and visit types appear most suitable for tele-rheumatology; whether tele-rheumatology reduces travel, waiting time, or patient costs; whether clinical outcomes are comparable to in-person care; and which limitations and disparities affect implementation.

METHODS

Strategy of data synthesis This review was structured according to the Joanna Briggs Institute (JBI) scoping-review methodology and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) 8,9 PRISMA-ScR is a reporting standard rather than a stand-alone methodologic framework; therefore, JBI guidance was used for question formulation, eligibility criteria, evidence charting, and synthesis.

Eligibility criteria The primary question was: Which telemedicine modalities have been used in US rheumatology, and what outcomes have been reported for access, clinical effectiveness, patient and clinician experience, cost, utilization, safety, and equity? Secondary questions addressed which patients, diseases, and visit types appear most suitable for tele-rheumatology; whether tele-rheumatology reduces travel, waiting time, or patient costs; whether clinical outcomes are comparable to in-person care; and which limitations and disparities affect implementation.

Source of evidence screening and selection Using a population–concept–context framework, eligible evidence comprised US-based empirical studies involving adults or children with rheumatic and musculoskeletal diseases, caregivers, rheumatology clinicians, or rheumatology referral pathways. Eligible modalities included direct-to-patient video or audio visits, clinic-to-clinic telemedicine, provider-to-provider eConsults and electronic referrals, remote monitoring, electronic patient-reported outcomes (ePROs), mobile health applications, and hybrid models. We included randomized, observational, qualitative, survey, implementation, and quality-improvement designs. We excluded editorials, commentaries, and studies of care delivered entirely outside the United States from primary charting; we retained systematic reviews and professional society guidance as secondary sources for contextual synthesis and citation searching.

Data management We created a reproducible MEDLINE/PubMed search strategy that combined telemedicine and rheumatology terms without initially applying a geographic filter; we identified the US context during screening. We categorized evidence by modality, population, setting, clinical purpose, comparator, access outcome, clinical outcome, patient or clinician experience, cost, utilization, safety, equity, and barriers to implementation. Following scoping-review methods, we did not use a formal risk-of-bias assessment to exclude evidence; instead, we documented design limitations. This is because satisfaction surveys without adjustments, pandemic-era comparisons, and nonrandomized studies cannot establish causality or cost-savings equivalence. Given the heterogeneity of populations, interventions, and outcome measures, we did not quantitatively pool findings; we summarized them narratively by theme.

Language restriction Yes.

Country(ies) involved USA.

Keywords telemedicine; telehealth; rheumatology; scoping review; health servicesaccessibility; cost of illness.

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