









Clinical Application of Infrared Thermography in Rheumatic Diseases: A Systematic Review

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ABSTRACT

Aim: This systematic review aims to evaluate the clinical applications of infrared thermography (IRT) in rheumatic diseases (RDs), focusing on its potential as a non-invasive, cost-effective, and reliable tool for diagnosis, monitoring, and treatment to improve patient outcomes. **Methods:** A systematic literature review was conducted following the PRISMA guidelines. A comprehensive search strategy was implemented using various databases, namely Medline/PubMed, Scopus, Web of Science, Google Scholar, PubMed Central, Cochrane Library, and ScienceDirect. After screening, data extraction and quality assessment were performed to synthesise the findings and evaluate the methodological quality of the included studies. **Results:** The systematic review included 51 studies comprising 7 randomised controlled trials and 44 observational studies. IRT demonstrated utility in various RDs. In osteoarthritis, it detected elevated temperatures in affected joints, correlating with pain intensity. For rheumatoid arthritis, IRT was effective in diagnosing active synovitis and monitoring disease progression, although its effectiveness was limited in small joint assessments. In Sjögren's syndrome, IRT differentiated dry eye aetiologies, while in fibromyalgia, the studies yielded mixed results. IRT effectively assessed arthritis in juvenile idiopathic arthritis and aided in detecting disease activity, monitoring progression, and evaluating treatment responses in scleroderma and Raynaud's phenomenon. Additionally, IRT showed potential in assessing therapeutic interventions across several conditions. **Conclusion:** IRT showed significant potential as a non-invasive tool for diagnosing, monitoring, and evaluating treatment in RDs. While its effectiveness varied by condition, IRT complemented existing methods. Further research is needed to standardise protocols and confirm its clinical utility.

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