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Fast Food, Slow Damage: Ultra-Processed Foods, Western Diet and Inflammatory Arthritis - a Systematic Scoping Review

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We are still developing and optimizing this protocol

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Disclaimer

Abstract

Abstract

Western dietary patterns, characterized by high intake of ultra-processed foods (UPFs), added sugars, and saturated fats, have been increasingly implicated in promoting systemic inflammation and disrupting gut microbiota composition. These mechanisms may influence the onset, progression, and comorbidities of chronic inflammatory arthritides. This systematic scoping review aims to summarize current evidence on the association between Western diet (WD) or UPF consumption and the risk, activity, and related outcomes in rheumatoid arthritis (RA), axial spondyloarthritis (axSpA), and psoriatic arthritis (PsA).

ADMINISTRATIVE INFORMATION

1 **Title:** Fast Food, Slow Damage: Ultra-Processed Foods, Western Diet and Inflammatory Arthritis - a Systematic Scoping Review

2 **Registration:** This scoping review protocol follows the PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for scoping reviews) guidelines. The protocol is registered and publicly available on protocols.io.

3 **Authors:** Dr. Gianluca Poncina et al.

4 **Amendments:** Any important amendments to this protocol will be documented on protocols.io with a description, rationale, and date of change.

5 **Support:** No specific funding. Institutional support from the University of Padova – U.O.C. Reumatologia.

INTRODUCTION

6 **Rationale:** The global rise in ultra-processed food (UPF) consumption has prompted increasing concern regarding its impact on chronic inflammatory diseases, including rheumatoid arthritis (RA), psoriatic arthritis (PsA), and axial spondyloarthritis (axSpA). UPFs, as defined by the NOVA classification, are industrial formulations typically high in added sugars, fats, salt, and additives, and have been implicated in adverse metabolic and inflammatory outcomes. Recent epidemiological studies and systematic reviews have identified a positive association between higher UPF intake and increased risk of RA and overall arthritis, with evidence suggesting mediation by systemic inflammation and metabolic dysregulation. For PsA and axSpA, the evidence base is less robust but emerging data indicate that high UPF consumption may be linked to increased disease risk and activity, particularly through effects on inflammatory biomarkers and the gut microbiome.

Despite these findings, the literature is characterized by heterogeneity in study design, populations, and outcome measures, and there is a paucity of high-quality, disease-specific syntheses addressing UPF exposure in PsA and axSpA. The American College of Rheumatology conditionally recommends dietary patterns that limit highly processed foods for RA management, reflecting the current consensus on the deleterious effects of UPFs. However, no formal dietary guidelines exist for PsA or axSpA, underscoring the need for comprehensive evidence mapping.

7 **Objectives:** This scoping review aims to systematically map and synthesize the extent, range, and nature of evidence regarding UPF consumption in patients with RA, PsA, and axSpA. Following the PRISMA Extension for Scoping Reviews (PRISMA-ScR) and current methodological guidance, the review will identify key concepts, summarize available evidence, and highlight research gaps to inform clinical practice and future research priorities. This approach is warranted given the complexity of dietary exposures, the evolving evidence base, and the need for clarity in recommendations for patients with inflammatory arthritis

METHODS

8 **Eligibility Criteria:**

Population: Patients diagnosed with RA, PsA and AxSpA
Intervention: Consumption of Western Diet (WD) or Ultra-Processed Foods (UPFs).
Comparator: Control group consuming usual diet (where applicable)
Outcomes: Disease risk, disease activity, epidemiology risks and any related outcomes.

9 **Information Sources Databases to be searched:** - PubMed/MEDLINE - Embase - Scopus - Web of Science - Cochrane Library

10 **Search Strategy:** A comprehensive search strategy will be developed and adapted for each database using both controlled vocabulary (e.g., MeSH terms) and free-text terms related to “rheumatoid arthritis” and “ultraprocessed foods.” No date or publication status restrictions will be applied. The strategy will follow PRISMA-S guidelines. Full search strings will be provided in supplementary files.

11 **Study Records and Data Management:** Search results will be managed using a reference management software (e.g., EndNote or Zotero) and uploaded into Covidence for screening.

12 **Selection Process:** Two reviewers will independently screen titles/abstracts and full texts based on eligibility criteria. Discrepancies will be resolved through discussion or by a third reviewer. Selection will be documented using a PRISMA 2020 flow diagram.

13 **Data Collection Process:** One reviewer will extract data from included studies and then data will be verified by a second reviewer. Disagreements will be resolved by consensus or a third reviewer. Authors of primary reviews may be contacted if clarifications are needed.

14 **Data Items:** We will extract data regarding
- Study Characteristics: First author, year of publication, country of origin, and study design (e.g., cross-sectional, cohort, case-control, preclinical).

- Population: Total sample size, demographic characteristics (mean age, sex distribution), and specific rheumatic diagnosis (RA, axSpA, or PsA).
- Exposure: Definition and measurement of dietary exposure, including the type of diet (Western Diet or Ultra-Processed Food), assessment tools used (e.g., Food Frequency Questionnaires, 24-hour recall), and classification systems (e.g., NOVA classification).

15 **Outcomes and prioritization**

We will extract data regarding
Disease Risk: Incidence or prevalence of the disease (reported as Hazard Ratios or Odds Ratios).
Disease Activity: Clinical scores (e.g., DAS28, Swollen Joint Count).
Inflammatory Markers: Levels of C-Reactive Protein (CRP), Erythrocyte Sedimentation Rate (ESR).
Metabolic and Anthropometric parameters: HbA1c, glucose levels, insulin, lipid profile, BMI, and visceral fat.
Microbiological outcomes: Alterations in gut microbiota composition or diversity.

16 **Risk of bias in individual studies**

Risk of bias will not be formally evaluated, in line with the exploratory nature of the review.

17 **Data synthesis**

Data will be synthetized narratively, dividing results for each condition.

18 **Meta-bias Assessment**

Publication bias and small-study effects will be examined through funnel plots and Egger's test when ≥10 studies are available for an outcome. Selective reporting will be assessed by comparing study protocols or trial registries with published results.

19 **Confidence in Cumulative Evidence**

The certainty of evidence will not be evaluated, in line with the exploratory nature of the review.

20 **Ethics and Dissemination**

Ethical approval is not required because the review uses published data. Results will be disseminated through a peer-reviewed journal and conference presentations.