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Cardiovascular Risk in Psoriasis and Psoriatic Arthritis: An Umbrella Review of Systematic Reviews and Meta-Analyses

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We use this protocol and it's working

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Disclaimer

Abstract

Psoriasis and psoriatic arthritis are chronic inflammatory diseases associated with increased cardiovascular (CV) risk. Several systematic reviews have investigated these associations, but findings remain heterogeneous and fragmented. This umbrella review aims to identify, appraise, and synthesize evidence from published systematic reviews and meta-analyses evaluating the link between PsO/PsA and cardiovascular risk factors, events, and subclinical atherosclerosis. A comprehensive literature search will be conducted across major databases. Data will be synthesized narratively, and the methodological quality of included reviews will be assessed using AMSTAR 2. This work will provide a consolidated understanding of the cardiovascular burden in PsO and PsA and inform both clinical and research priorities.

ADMINISTRATIVE INFORMATION

1 **Title:** Cardiovascular Risk in Psoriasis and Psoriatic Arthritis: An Umbrella Review of Systematic Reviews and Meta-Analyses

2 **Registration:** This umbrella review protocol follows the PRISMA 2020 (Preferred Reporting Items for Systematic reviews and Meta-Analyses) guidelines. The protocol is registered and publicly available on protocols.io.

3 **Authors:** Dr. Gianluca Poncina, Dr. Stefano Rizzetto.

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:** Psoriasis and psoriatic arthritis (PsA) are chronic inflammatory diseases increasingly linked to elevated cardiovascular (CV) risk. Numerous systematic reviews have explored this association, but findings remain inconsistent due to variations in methodology, populations, and outcomes assessed. A comprehensive umbrella review is warranted to critically appraise and synthesize the existing evidence. This work will help clarify the strength of associations and guide both clinical decision-making and future research priorities.

7 **Objectives:** The objective of this umbrella review is to systematically identify, evaluate, and synthesize evidence from published systematic reviews and meta-analyses on the association between psoriasis and/or psoriatic arthritis and cardiovascular risk. Specifically, we aim to summarize the strength and consistency of associations with cardiovascular risk factors, major cardiovascular events, and subclinical atherosclerosis markers. Where possible, we will also explore differences between psoriasis and psoriatic arthritis.

METHODS

8 **Eligibility Criteria:** We will include systematic reviews and meta-analyses of observational studies evaluating the association between psoriasis and/or psoriatic arthritis and cardiovascular risk. Eligible populations are adults (≥18 years) with PsO

and/or PsA. Primary outcomes include cardiovascular risk factors, major cardiovascular events, and subclinical atherosclerosis. Reviews must be peer-reviewed and available in full text. Narrative or scoping reviews will be excluded.

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

10 **Search Strategy:** Draft search strategy will include terms for 'psoriasis', 'psoriatic arthrithis', and 'cardiovascular risk'. The final strategy will be adapted to each database and reported in full as supplementary material.

11 **Study Records Data management:** References will be managed using Paperpile. Deduplication of the records will be performed using the same software.

12 **Selection process:** Two reviewers will independently screen titles, abstracts, and full-texts.

13 **Data collection process:** Two reviewers will independently screen titles and abstracts, retrieve full texts, and assess eligibility based on predefined criteria. Disagreements will be resolved through discussion or consultation with a third reviewer. Data from included reviews will be extracted using a standardized form, including review characteristics, populations, outcomes, and effect estimates. Authors will be contacted for missing or unclear information if necessary.

14 **Data Items:** We will extract author, year, type of review, number and type of included studies, population (PsO/PsA), cardiovascular outcomes assessed, and summary effect estimates. We will also collect information on heterogeneity, publication bias, and use of GRADE or similar tools. Funding sources and conflicts of interest of each review will be recorded.

15 **Outcomes and Prioritization:** Primary outcomes include cardiovascular risk factors (e.g. hypertension, diabetes, dyslipidemia), major cardiovascular events (e.g. myocardial infarction, stroke, cardiovascular mortality), and subclinical atherosclerosis markers (e.g. carotid intima-media thickness). These outcomes were prioritized based on clinical relevance and their frequency across existing systematic reviews. Outcomes will be analyzed separately for psoriasis and psoriatic arthritis when data allow.

16 **Risk of Bias in Individual Studies:** We will not assess the risk of bias of primary studies directly, as our unit of analysis is the systematic review. Instead, we will evaluate the methodological quality of included reviews using the AMSTAR 2 tool. Two reviewers will assess each review independently, with disagreements resolved by consensus or a third reviewer. The quality ratings will inform the interpretation of the findings.

17 **Data Synthesis:** A narrative synthesis will be conducted to summarize findings across included reviews. We will compare effect estimates, assess consistency, and evaluate the methodological quality using AMSTAR 2. Where multiple reviews report on the same outcome, we will explore overlap of primary studies and identify the most comprehensive and robust evidence. No new meta-analysis of primary studies will be performed.

18 **Meta-bias(es):** We will assess whether included systematic reviews evaluated meta-biases, such as publication bias or small-study effects, using tools like funnel plots or Egger's test. This information will be extracted and summarized. We will also examine potential overlap of primary studies across reviews to identify redundancy or dominance of specific studies.

19 **Confidence in Cumulative Evidence:** We will assess the confidence in the body of evidence using a structured approach. When GRADE assessments are reported in the included reviews, they will be extracted and summarized. For outcomes without GRADE, we will evaluate strength of evidence based on consistency, magnitude of effect, number and quality of primary studies, and presence of bias, following criteria commonly used in umbrella reviews.