**Systematic Review**

**Patient Preferences for the Mode and Frequency of Drug Formulations for Treating Adults with Psoriatic Arthritis: A Systematic Review Protocol**

**Abstract**

***Background:* Psoriatic Arthritis (PsA), affects diverse patient populations with different levels of disease severity and associated comorbidities. Patients with psoriatic arthritis and their relatives may prefer and demand certain medications in use and how often they are administered by the physician. Understanding patients’ perspectives and involving them in healthcare decision-making influence medication adherence and treatment outcomes.**

***Objectives:* This systematic review aims to synthesize evidence from discreet choice experiments that elicit patients’ preferences for the mode and frequency of administration of biological agents used for treating psoriatic arthritis in adults, as well as the relationship between these preferences and patient characteristics.**

*Data sources:* Electronic databases including Web of Science, PubMed, Scopus, Embase, PsycINFO, and ECONLIT will be searched for relevant articles written in English. These electronic sources of information were chosen because of the wider indexing of scholarly articles. Grey literature search and scanning of the reference list of included studies for potentially relevant papers will also be performed.

***Study eligibility and criteria****:* Peer-reviewed articles that have employed discrete-choice experiments and methods such as conjoint analysis to assess patients’ preferences for mode and frequency of administration of therapies used for treating PsA in adults greater > than 18 years of age will be included. Eligible studies must be published in English.

***Study appraisal and synthesis methods****:* Two reviewers will independently screen the studies against predetermined inclusion criteria at the title, abstract, and full-text levels. The quality assessment will be conducted using the PREFS Checklist (Purpose, Respondents, Explanation, Findings, and Significance) to examine the quality of the included articles. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension (PRISMA-P) 2015 was followed in developing the review protocol. This protocol has been registered in the PROSPERO database (#CRD42023439635).

***Keywords****:* Patient Preferences, Mode, Frequency, Drug delivery, Psoriatic arthritis, Treatment, attributes

**Introduction**

Psoriasis is an immune-mediated inflammatory skin disease that affects approximately 1% ­- 3% of the global population and is often accompanied by comorbidities.1 A significant portion (20-30%) of individuals with psoriasis develop a chronic, inflammatory musculoskeletal condition known as psoriatic arthritis.2,3 Psoriatic arthritis (PsA) affects both males and females equally and is characterized by symptoms such as peripheral joint pain, spinal pain, stiffness, swollen tendons and ligaments, skin pain, severe joint inflammation, and subsequent destruction, leading to reduced functioning in daily activities, impaired quality of life,2-4 and increased risk of mortality.5 In addition, PsA is associated with several comorbidities, including obesity, type 2 diabetes, hypertension, hyperlipidemia, fatty liver disease, cardiovascular outcomes, metabolic syndrome, depression, and anxiety, 2,6,7 which can lead to multiple organ damage and increased risk of premature mortality.8-10

Treatment recommendations for PsA commonly include tumour necrosis factor (TNF) inhibitors, disease-modifying anti-rheumatic drugs (DMARDs), phosphodiesterase (PDE)-4 inhibitors, and interleukin-17 antagonists. 2,11,12 However, treating patients with PsA can be very challenging because of differences in patients’ preferences for the mode and frequency of drug administration as well as the diverse nature of the patient population, with different levels of disease severity and associated comorbidities.13 Patient preferences for the mode and frequency of drug administration may influence medication adherence and treatment outcomes,14-16 highlighting the importance of shared decision-making as emphasized in PsA treatment guidelines.17,18

Therefore, it is crucial to integrate the patient's perspective during the development of new therapeutics. Recognizing treatment characteristics valued and preferred by PsA patients allows physicians and patients to collaboratively assess and identify the most suitable PsA treatment option for individual patients.2,19 This understanding has the potential to enhance patients' satisfaction with and adherence to the chosen treatment. 20,21 Discrete choice experiments (DCEs) are commonly employed to assess patient treatment preferences by presenting real-life scenarios.12,22 DCEs quantify the relative significance of various treatment characteristics and delve into the trade-offs patients are willing to make regarding specific treatment attributes.22-24

Patient preferences regarding therapies for rheumatoid arthritis 25,26 and psoriasis19,20,27 have been extensively explored. Previous systematic reviews have examined the prevalence of PsA in patients with psoriasis 28 and patient preferences in the treatment of psoriasis.29 However, to the best of our knowledge, no reports have synthesized patients’ preferences for the mode and frequency of medications used in PsA treatment. This systematic review aims to synthesize patients’ preferences for drug delivery with a focus on the mode and frequency of administration as well as the relationship between these preferences and patient characteristics. A better understanding of the mode and frequency of treatment preferred by the diverse PsA patient characteristics can have a substantial impact on medication adherence, which in turn can, significantly enhance treatment outcomes.

**2. Methods**

The research team considered a systematic review study design suitable as the findings may inform future practice and registered the review protocol in the International Prospective Register of Systematic Reviews (PROSPERO) database (#CRD42023439635). We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-P) guidelines in developing the study.30

**2.1 Data sources and search strategy**

A systematic literature search of electronic databases will be performed across PubMed, Embase, Scopus, PsycINFO, Web of Science, and ECONLIT from their inception to April 30th 2025 to fetch potentially relevant publications. A combination of Keywords developed by the lead author and controlled vocabularies will be used and tailored to each database in conjunction with Boolean operators. (e.g. ‘Psoriatic arthritis OR ‘’psoriatic arthritis’’ [MesH]) OR ‘’PsA patient’’ ) AND (Preference OR ‘’patient preferences’’ [Mesh]) OR (‘’patient choice’’ OR ‘’patient perspective’’) AND (‘’Drug administration’’ OR mode OR frequency OR drug delivery’’ ) OR ( intravenous OR oral OR subcutaneous OR treatment OR therapy OR therapeutics) AND (‘’contingent valuation’’ OR ‘’discreet choice experiment’’ OR DCE OR ‘’willingness-to pay’’ OR ‘’willingness-to-accept’’). The lead reviewer will conduct additional searches manually by checking the reference lists of included studies and grey literature using Google Scholar.

**2.2 Study Eligibility Criteria**

The review will focus on primary studies that employ discrete-choice experiments to measure and gather preferences regarding different aspects of medications for the treatment of adults (both male and female) aged 18 years and above diagnosed with PsA. Attributes under consideration include the mode and frequency of drug administration. In this context, "mode" pertains to the route of drug delivery (such as oral, intravenous, subcutaneous, sublingual, auto injections, injection implants and any other reported injection devices etc.), while "frequency" refers to the timing or intervals between dosages administered to patients. We will also include studies measuring stated preference using direct elicitation of monetary values of an intervention31 (e.g., Contingent valuation or willingness-to-pay and willingness-to-accept methods). Primary studies measuring stated preferences for ‘non-pharmacologic treatment of Psoriatic arthritis such as emollients, vitamin D analogues, and tar’ 32, reviews, commentaries, editorials, opinions, letters, conference abstracts, preference-based studies such as time-trade-off or standard gamble as well as studies on populations below 18 years of age will be excluded.

**2.3 Data management and Study selection**

Citations obtained from the databases will be imported into the Mendeley reference manager for identification and removal of duplicates. Two authors (TJA and OOB) will perform the title and abstract screening based on predefined inclusion criteria to identify potentially relevant articles, followed by full-text screening to confirm eligibility. Any disagreements between the duo will be resolved through discussion. The PRISMA flow diagram will be used to visually represent the screening process.

**2.4 Data items for extraction**

Data extraction form will be developed based on templates provided by the Center for Reviews and Dissemination, 31 in line with the study objectives. The form pilot was tested on four eligible studies to judge its appropriateness. All necessary adjustments will be made to improve the form’s effectiveness if loopholes are found. Data points will be extracted by two authors (TJA and OOB) to cover the characteristics of the included studies and the; primary and secondary objectives.

We will extract data on the general characteristics of the studies, including –the first author, title of the study, country and, year of publication, study objective, study participants, sample size, and analysis method. The main outcome of this study was to assess the mode and frequency of drug administration; therefore, data on oral modes of administration, subcutaneous, intramuscular, intravenous, vial-and-syringe, pre-filled syringe, auto injections, injection implants, and any other reported injection devices will be extracted. Information on choices made in trade-off scenarios, particularly on the various formulations (liquid, capsules, tablets, chewable tablets, buccal, sub-labial and sublingual), will be extracted. Furthermore, data on the frequency, for example; once daily (OD), twice daily (BD), thrice daily (TDS), four times daily (QDS), weekly and monthly will be extracted. Data on daily joint pain and swelling reduction, convenience, safety, and cost will be collected. These attributes were derived from real-world examples of FDA-approved medications used for treating Psoriatic Arthritis.16, 31-33 Furthermore, attribute and level identification, selection and labelling, mode of survey administration, and the relative importance of each attribute category will, be collected. Similar attributes identified across the included studies will be grouped into the same category to facilitate analysis and comparison.34 Data extractors will resolve any disagreement through discussion.

**2.5 Evidence analysis**

Thematic analysis will be used to categorize the attributes into groups. Qualitative synthesis methods, particularly narrative techniques, will be employed to appropriately summarize the findings. Descriptive measures, such as frequencies and percentages, will be used for data analysis. Furthermore, tables will be employed to offer a comprehensive overview of the various types of studies on stated preferences conducted with patients.

**2.6 Quality Assessment**

Quality assessment will be conducted independently by two authors (TJA and OOB) using the PREFS Checklist (Purpose, Respondents, Explanation, Findings, Significance) to examine the quality of the included DCE35. In contrast to alternative checklists, such as the ISPOR checklist 36, the PREFS checklist is preferred and used more frequently by authors for assessing the quality of DCEs 37-41. The PREFS checklist evaluates a DCE based on five dimensions: Purpose, Respondents, Explanation, Findings, and Significance. Each dimension features two clearly expressed questions designed to gauge the suitability of the study. A study will be awarded one point if it is considered acceptable in a given dimension and zero points if it is deemed unacceptable. A total score of five indicates a good quality study, while a score below three implies significant issues in the study. We will compute scores for each included study and their mean, revealing an average quality for the studies analyzed in our review. Discrepancies will be resolved through discussion.

**Discussion**

Psoriatic arthritis adversely affects the musculoskeletal system, resulting in a diminished quality of life and associated comorbidities for diagnosed individuals.1, 2, 6 Treatment options for Psoriatic arthritis are diverse, necessitating consideration of various administration routes. Clinical guidelines advocate for therapies that enhance quality of life, functionality, and collaborative decision-making between patients and healthcare providers. This approach aims to enhance treatment adherence, patient satisfaction, and overall positive outcomes. 17, 18 By leveraging discrete-choice experiments, this study seeks to consolidate the latest evidence on patients with Psoriatic arthritis, focusing on their concerns and preferences regarding medication delivery methods. The synthesis of this information aims not only to improve the quality of life and treatment outcomes but also to enhance healthcare delivery and priority setting.

**Data availability**

***Underlying data***

This proposed review does not include underlying data.

**Software and code**

A qualitative synthesis strategy will be used; there is no software or code for this review.

Reporting guideline

**Ethical and consent**

This systematic review and meta-analysis will compile previously published research in which participants voluntarily and knowingly consented. Hence, ethical approval is not required.

**Competing interest**

We do not have any conflict of interest to disclose.

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**Reporting guideline**:

PRISMA-P checklist for systematic review of Patient Preferences for Mode and Frequency of Drug Formulations for treating Adults with Psoriatic Arthritis, DOI:

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