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## Lifestyle and Dietary Modifications for Reducing Psoriatic Disease Activity: A Comprehensive Review

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# Lifestyle and Dietary Modifications for Reducing Psoriatic Disease Activity: A Comprehensive Review

## Abstract

Abstract: Psoriasis is a prevalent, immune-medication disorder affecting millions of individuals in the United States, leading to substantial healthcare costs (Armstrong, 2021; Brenzinski, 2015). Psoriasis has an established correlation with comorbidities such as hypertension, coronary artery disease, obesity, dyslipidemia, and metabolic syndrome (Al-Mutairi, 2010). Due to the substantial socioeconomic burden psoriatic disease poses on modern day society, significant benefit could be derived from identifying nonprescription strategies for patients to adopt in order to reduce disease activity. This comprehensive review includes 33 publications from 2008 to 2023, evaluating non-prescription therapeutic strategies including lifestyle modification and anti-inflammatory dietary changes. The analysis suggests a positive correlation with reducing psoriatic disease activity by practicing weight loss, adherence to a Mediterranean diet, and gluten avoidance (Di Minno et al., 2014; Phan et al., 2018; Pietzrak, 2017). Further research is needed to provide more robust evidence to establish evidence based medical guidelines with respect to lifestyle and dietary modifications. Psoriatic patients, healthcare professionals, and healthcare systems would collectively benefit from research identifying and evaluating the impact of outside factors on disease severity, such as environmental/dietary exposures with respect to patients' varied comorbidity status and other baseline demographics.

## Keywords

psoriasis, psoriatic arthritis, psoriatic disease, anti-inflammatory, diet, lifestyle

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**Introduction:** Psoriasis is a common immune-mediated disease affecting 3% of the U.S. population, resulting in a significant economic burden on the healthcare system with over \$100 billion USD indirect and indirect patient costs (Armstrong, 2021; Brenziski, 2015). Psoriasis has an established correlation with comorbidities such as hypertension, coronary artery disease, obesity, dyslipidemia, and metabolic syndrome which can contribute economic burden on healthcare resources (Al-Mutairi, 2010). Having psoriasis and/or psoriatic arthritis can be a positive predictor for increased overall healthcare spending with psoriatic arthritis having a stronger association for more healthcare dollars spent (Merola, 2021). This manuscript explores alternative disease modifying options beyond prescription medications, focusing on strategies such as lifestyle modification and anti-inflammatory dietary changes. This comprehensive

review aims to identify non-prescription strategies to alleviate disease activity and reduce financial strain on the healthcare system.

**Methods:** A comprehensive database search was performed using PubMed, Medline, Cochrane, and Embase identifying 33 publications between 2000 to 2023 related to psoriasis and psoriatic arthritis with lifestyle modification and dietary changes. Key search words included: psoriasis, psoriatic arthritis, diet, anti-inflammatory, and lifestyle. Publications reviewed included various study designs including randomized controlled trials, meta-analyses, systematic reviews, case reports, literature reviews, and expert opinions. Inclusion criteria for publications and studies reviewed in the analysis encompassed those that actively assessed the positive or negative effects of lifestyle or dietary effects on psoriatic disease activity. Excluded publications and studies included those which did not evaluate dietary or lifestyle effects on psoriatic disease activity.

**Description of Sample:** The study sample consisted of adult patients with psoriasis and/or psoriatic arthritis including a range of publications ranging from case studies to randomized, controlled, blinded trials. A subset of publications specifically addressed comorbidities such as obesity, non-alcoholic fatty liver disease, and metabolic syndrome as it pertains to psoriatic disease activity. Clinical metrics for disease activity included psoriasis assessment severity index (PASI), physician global assessment (PGA), body surface area (BSA), and minimal disease activity (MDA), among others.

**Results and Discussion:** The literature review covered a wide range of non-prescription interventions, such as dietary modifications, omega-3 supplementation, anti-inflammatory

supplements, gut microbiome, weight loss, and gluten avoidance. Notable findings of non-prescription interventions associated with a reduction in psoriatic disease activity included weight loss, Mediterranean diet adoption, and gluten avoidance. Several studies suggested weight loss has a positive correlation with reduced psoriatic disease activity and assessments. Specifically, weight loss combined with TNFalpha inhibitors was associated with lower disease activity scores (Di Minno, 2014). The Mediterranean diet, which is rich in fish oils, olive oil, and fresh produce, also showed a positive association with reduced psoriatic disease activity (Phan, 2018). However, there is limited information to clearly delineate whether the reduction in psoriatic disease activity was due to specific dietary components, or the adoption of an overall healthier lifestyle by study participants. Gluten avoidance was suggested as a factor in reducing psoriatic disease activity with a subset of psoriatic patients who exhibit clinical findings of gluten intolerance (Pietzrak, 2017; Michaelsson, 2000). There is some additional data of interest regarding the role of bio-active adipocytokines in inflammation and their potential impact on psoriatic disease (Dalamaga, 2013). Further research is needed on this topic to understand how adipose tissue may, or may not, play a role in disease activity in psoriatic patients. Limited evidence suggests psoriatic patients may benefit from vitamin D supplementation and oral enzyme combination supplements, however, further research is needed (Pelosi 2023; Pietzrak 2017). Omega-3 supplementation did not show a significant correlation with psoriatic disease activity (Yang, 2019). The gut microbiome was also discussed and evaluated in its role in psoriatic disease, but is still not well understood (Pietzrak, 2017). This highlights and identifies another disease modifying option requiring further research.

Research findings with the most noteworthy effects on reducing psoriasis and/or psoriatic arthritis disease activity included: weight loss, Mediterranean diet adoption, and gluten avoidance.

**Limitations:** Review articles and randomized controlled trials included in this comprehensive review included publications with small sample sizes, patient self-reported data, and potential publication bias. Additionally, there was a lack of diversity in participant demographics and in many publications, as well as omission of analysis of patient demographics as it relates to study outcomes. In particular, lifestyle and dietary modification was not strictly controlled in the clinical trials, highlighting concerns for variability in patient outcomes due to external factors other than the designated intervention. Some publications had interventions demonstrating the absence of strong, supporting clinical evidence, indicating the need for further research.

**Conclusion:** As the incidence of psoriasis and psoriatic arthritis continues to persist in the general U.S. population, there is an unmet need to identify non-prescription disease modifying strategies to mitigate disease burden for patients and the healthcare system. This comprehensive review highlights the potential of lifestyle and dietary modifications as adjunctive therapy for psoriasis disease management, thus improving overall patient quality of life and disease activity. Finding alternative treatments to traditional prescription medications is important for patients, healthcare providers, and healthcare systems. Weight loss, Mediterranean diet adoption, and gluten avoidance showed the most promise in reducing psoriasis and/or psoriatic arthritis disease activity. Further research, including larger patient sample sizes in randomized controlled trials with delineation of sub-analyses in diverse patient populations is essential to accurately assess

the impact of disease activity. With well designed clinical research protocols, the healthcare community can establish evidence based medical guidelines to improve psoriatic disease management and patient outcomes.

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