



2023

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

Andrea Nguyen

University of the Pacific, a_nguyen281@u.pacific.edu

Jessica Garner

University of the Pacific, jgarner@u.pacific.edu

Follow this and additional works at: <https://scholarlycommons.pacific.edu/pjh>



Part of the [Dietetics and Clinical Nutrition Commons](#), [Immune System Diseases Commons](#), [Nutritional and Metabolic Diseases Commons](#), and the [Skin and Connective Tissue Diseases Commons](#)

Recommended Citation

Nguyen, Andrea and Garner, Jessica (2023) "Lifestyle and Dietary Modifications for Reducing Psoriatic Disease Activity: A Comprehensive Review," *Pacific Journal of Health*: Vol. 6: Iss. 1, Article 4.

DOI: <https://doi.org/10.56031/2576-215X.1026>

Available at: <https://scholarlycommons.pacific.edu/pjh/vol6/iss1/4>

This Article is brought to you for free and open access by Scholarly Commons. It has been accepted for inclusion in Pacific Journal of Health by an authorized editor of Scholarly Commons. For more information, please contact mgibney@u.pacific.edu.



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

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

Manuscript ID:

Revised: October 1, 2023

Authors: Andrea T. Nguyen, MPAS, PA-C, Jessica Garner, DMSc, PA-C

Affiliations:

- a. School of Health Sciences, University of the Pacific, Sacramento, CA
- b. School of Health Sciences, University of the Pacific, Sacramento, CA

Correspondence and reprint requests: Andrea T. Nguyen, PA-C, a_nguyen281@u.pacific.edu

Funding: None

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

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.

References:

- Al-Mutairi, N., Al-Farag, S., Al-Mutairi, A., & Al-Shiltawy, M. (2010). Comorbidities associated with psoriasis: an experience from the Middle East. *The Journal of dermatology*, 37(2), 146–155. <https://doi.org/10.1111/j.1346-8138.2009.00777.x>
- Al Sawah, S., Foster, S. A., Goldblum, O. M., Malatestinic, W. N., Zhu, B., Shi, N., Song, X., & Feldman, S. R. (2017). Healthcare costs in psoriasis and psoriasis sub-groups over time following psoriasis diagnosis. *Journal of medical economics*, 20(9), 982–990. <https://doi.org/10.1080/13696998.2017.1345749>
- Armstrong, A. W., Mehta, M. D., Schupp, C. W., Gondo, G. C., Bell, S. J., & Griffiths, C. E. M. (2021). Psoriasis Prevalence in Adults in the United States. *JAMA dermatology*, 157(8), 940–946. <https://doi.org/10.1001/jamadermatol.2021.2007>
- Brezinski, E. A., Dhillon, J. S., & Armstrong, A. W. (2015). Economic Burden of Psoriasis in the United States: A Systematic Review. *JAMA dermatology*, 151(6), 651–658. <https://doi.org/10.1001/jamadermatol.2014.3593>
- Burgos-Pol, R., Martínez-Sesmero, J. M., Ventura-Cerdá, J. M., Elías, I., Caloto, M. T., & Casado, M. Á. (2016). The Cost of Psoriasis and Psoriatic Arthritis in 5 European Countries: A Systematic Review. Coste de la psoriasis y artritis psoriásica en cinco países de Europa: una revisión sistemática. *Actas dermo-sifiliograficas*, 107(7), 577–590. <https://doi.org/10.1016/j.ad.2016.04.018>
- Chung, M., Bartholomew, E., Yeroushalmi, S., Hakimi, M., Bhutani, T., & Liao, W. (2022). Dietary Intervention and Supplements in the Management of Psoriasis: Current Perspectives. *Psoriasis (Auckland, N.Z.)*, 12, 151–176. <https://doi.org/10.2147/PTT.S328581>
- Dalamaga M, Papadavid E. Adipocytokines and psoriasis: Insights into mechanisms linking obesity and inflammation to psoriasis. *World J Dermatol* 2013; 2(4): 27-31 [DOI: 10.5314/wjd.v2.i4.27]

- Dalamaga M, Papadavid E. Adipocytokines and psoriasis: Insights into mechanisms linking obesity and inflammation to psoriasis. *World J Dermatol* 2013; 2(4): 27-31 [DOI: [10.5314/wjd.v2.i4.27](https://doi.org/10.5314/wjd.v2.i4.27)]
- Di Minno, M. N., Peluso, R., Iervolino, S., Russolillo, A., Lupoli, R., Scarpa, R., & CaRRDs Study Group (2014). Weight loss and achievement of minimal disease activity in patients with psoriatic arthritis starting treatment with tumour necrosis factor α blockers. *Annals of the rheumatic diseases*, 73(6), 1157–1162.
- Guasch-Ferré, M., & Willett, W. C. (2021). The Mediterranean diet and health: a comprehensive overview. *Journal of internal medicine*, 290(3), 549–566. <https://doi.org/10.1111/joim.13333>
- Katsimbri, P., Korakas, E., Kountouri, A., Ikonomidis, I., Tsougos, E., Vlachos, D., Papadavid, E., Raptis, A., & Lambadiari, V. (2021). The Effect of Antioxidant and Anti-Inflammatory Capacity of Diet on Psoriasis and Psoriatic Arthritis Phenotype: Nutrition as Therapeutic Tool?. *Antioxidants (Basel, Switzerland)*, 10(2), 157. <https://doi.org/10.3390/antiox10020157>
- Ko, S. H., Chi, C. C., Yeh, M. L., Wang, S. H., Tsai, Y. S., & Hsu, M. Y. (2019). Lifestyle changes for treating psoriasis. *The Cochrane database of systematic reviews*, 7(7), CD011972. <https://doi.org/10.1002/14651858.CD011972.pub2>
- Martini D. (2019). Health Benefits of Mediterranean Diet. *Nutrients*, 11(8), 1802. <https://doi.org/10.3390/nu11081802>
- Michaëlsson, G., Gerdén, B., Hagforsen, E., Nilsson, B., Pihl-Lundin, I., Kraaz, W., Hjelmquist, G., & Lööf, L. (2000). Psoriasis patients with antibodies to gliadin can be improved by a gluten-free diet. *The British journal of dermatology*, 142(1), 44–51. <https://doi.org/10.1046/j.1365-2133.2000.03240.x>
- Merola, J. F., Dennis, N., Chakravarty, S. D., Villacorta, R., Mesana, L., Lin, I., Wang, Y., Shawi, M., Pacou, M., Baker, T., & Peterson, S. (2021). Healthcare utilization and costs among patients with psoriasis and psoriatic arthritis in the USA-a retrospective study of claims data from 2009 to 2020. *Clinical rheumatology*, 40(10), 4061–4070. <https://doi.org/10.1007/s10067-021-05713-8>
- Naldi, L., Conti, A., Cazzaniga, S., Patrizi, A., Pazzaglia, M., Lanzoni, A., Veneziano, L., Pellacani, G., & Psoriasis Emilia Romagna Study Group (2014). Diet and physical exercise in psoriasis: a randomized controlled trial. *The British journal of dermatology*, 170(3), 634–642. <https://doi.org/10.1111/bjd.12735>
- Pelosi E. (2023). Effect of oral enzyme combination, diet and exercise on chronic low-grade inflammatory conditions-a report of three cases. *AME case reports*, 7, 7. <https://doi.org/10.21037/acr-22-45>

Phan, C., Touvier, M., Kesse-Guyot, E., Adjibade, M., Hercberg, S., Wolkenstein, P., Chosidow, O., Ezzedine, K., & Sbidian, E. (2018). Association Between Mediterranean Anti-inflammatory Dietary Profile and Severity of Psoriasis: Results From the NutriNet-Santé Cohort. *JAMA dermatology*, 154(9), 1017–1024.

<https://doi.org/10.1001/jamadermatol.2018.2127>

Pietrzak, D., Pietrzak, A., Krasowska, D., Borzęcki, A., Franciszkiewicz-Pietrzak, K., Polkowska-Pruszyńska, B., Baranowska, M., & Reich, K. (2017). Digestive system in psoriasis: an update. *Archives of dermatological research*, 309(9), 679–693. <https://doi.org/10.1007/s00403-017-1775-7>

Tosti, V., Bertozzi, B., & Fontana, L. (2018). Health Benefits of the Mediterranean Diet: Metabolic and Molecular Mechanisms. *The journals of gerontology. Series A, Biological sciences and medical sciences*, 73(3), 318–326.

<https://doi.org/10.1093/gerona/glx227>

Wu, A. G., & Weinberg, J. M. (2019). The impact of diet on psoriasis. *Cutis*, 104(2S), 7–10.

Wu, J. J., Feldman, S. R., Rastogi, S., Menges, B., Lingohr-Smith, M., & Lin, J. (2018). Comparison of the cost-effectiveness of biologic drugs used for moderate-to-severe psoriasis treatment in the United States. *The Journal of dermatological treatment*, 29(8), 769–774.

Yang, S. J., & Chi, C. C. (2019). Effects of fish oil supplement on psoriasis: a meta-analysis of randomized controlled trials. *BMC complementary and alternative medicine*, 19(1), 354. <https://doi.org/10.1186/s12906-019-2777-0>