



Nutrition Society Congress 2024, 2–5 July 2024

Associations between macronutrient sources and psoriasis severity in a UK-based population: results from the Asking People with Psoriasis about Lifestyle and Eating study

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Psoriasis is a chronic dermatological disease often linked with systemic conditions such as cardiovascular disease, obesity, and type 2 diabetes⁽¹⁾. Unlike many other systemic diseases, psoriasis lacks specific dietary recommendations for its management⁽²⁾. To develop evidence-based dietary advice, profiling dietary intakes in this population group is paramount. As part of the Asking People with Psoriasis about Lifestyle and Eating (APPLE) study, we aimed to quantify macronutrient intakes and their food group sources and assess associations with psoriasis severity.

The APPLE study is a web-based cross-sectional survey recruiting UK-based adult volunteers with psoriasis (King's College London Research Ethics Committee LRS/DP-21/22-29257; NCT05448352). Recruitment was between June 2022 and January 2024 through social media. Participants self-reported age, weight, height, and alcohol use, depression or anxiety diagnosis, as well as psoriasis severity by responding to the self-assessed Simplified Psoriasis Index (possible score range 0–70 points). Diet was self-reported with a validated 147-item food frequency questionnaire. Nutritional composition was determined using the Composition of Food Integrated Dataset⁽³⁾. Linear models tested associations between food groups sources and psoriasis severity.

The final sample (n = 270) primarily constituted mid-life (median (IQR) 40 (20) years), White-British (85%), female participants (82%) with psoriasis, of which 51% were living with overweight or obesity. Protein intake from animal sources (processed meat, poultry, and red meat) was significantly positively associated with psoriasis severity, adjusted for age, gender, smoking, alcohol use, energy intake, and diagnosed depression/anxiety (β between 0.133 and 0.225, $P < 0.05$). Plant-based (excluding tree nuts) and tree nut sources of protein were inversely associated with psoriasis severity (adjusted β between -0.145 and -0.131, $P < 0.05$). Protein from red meat and plant-based protein remained significantly associated with psoriasis when adjusting for BMI. Poultry and processed meat sources of *n*-6 polyunsaturated fatty acids were also positively associated with psoriasis severity (β between 0.125 and 0.133, $P < 0.05$), whilst tree-nut sources were inversely associated with disease severity ($\beta = -0.144$, $P < 0.05$), but associations were no longer significant when adjusting for BMI.

Our findings highlight that associations between psoriasis severity and protein and *n*-6 polyunsaturated fatty acids intakes depend on their source, suggesting that healthy plant-based diets warrant further investigation by randomised controlled trials for the dietary management of psoriasis.

Acknowledgments

The authors are grateful to the volunteers who took participated in the study and to the Psoriasis Association for funding the study.

References

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