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## Associations between micronutrient intakes and psoriasis severity: the Asking People with Psoriasis about Lifestyle and Eating cross-sectional study

Sylvia Zanesco<sup>1</sup>, Thiviyan Maruthappu<sup>1</sup>, Christopher E.M. Griffiths<sup>2</sup>, Kathryn V. Dalrymple<sup>1</sup>, Rachel Gibson<sup>1</sup> and Wendy L. Hall<sup>1</sup>

<sup>1</sup>King's College London, School of Life Course and Population Sciences, Department of Nutritional Sciences, London

<sup>2</sup>King's College Hospital, Department of Dermatology, King's College London

Psoriasis is a chronic debilitating skin disease driven by pro-inflammatory immunological pathways. Research examining the effect of micronutrient supplementation on the severity of psoriasis has extensively focused on vitamin D and magnesium, yielding conflicting findings<sup>(1)</sup>. As part of the Asking People with Psoriasis about Lifestyle and Eating (APPLE) study; micronutrient intakes were estimated in people with psoriasis for comparison with Reference Nutrient Intakes (RNIs) and to examine associations with psoriasis severity.

The APPLE study was a cross-sectional internet-based survey recruiting adult volunteers with psoriasis residing in the United Kingdom (King's College London Research Ethics Committee LRS/DP-21/22-29257; NCT05448352). Volunteers were recruited between June 2022–January 2024 through social media. Psoriasis severity and diet were self-reported with validated tools, the self-assessed Simplified Psoriasis Index and a 147-item food frequency questionnaire. Micronutrient constituents were determined using the Composition of Foods Integrated Dataset (<https://www.gov.uk/government/publications/composition-of-foods-integrated-datasetcofid>).

The demographic characteristics of the study population (n = 270) comprised of a White-British (88%), middle-aged (median (IQR) age of 40 (20.0) years), female majority (82%), reporting a median body mass index (BMI) of 25.8 (8.2) kg/m<sup>2</sup>. Two-thirds (66%) of both males and females reported intakes below sex-specific RNIs for calcium. Approximately 80% of both males and females reported an iodine intake below 140 µg/day and more than 90% did not meet the 10 µg/day dietary recommendation for vitamin D. Most males (93%) and females (80%) did not meet the RNI for selenium intake. Two-thirds of women aged 18–50 years reported dietary iron intakes below the RNI of 14.8 mg/day. Intakes for other vitamin and minerals met dietary requirements. Magnesium ( $\beta = -0.197, P < 0.01$ ), copper ( $\beta = -0.174, P < 0.01$ ) and iron ( $\beta = -0.127, P < 0.05$ ) were significantly inversely associated with psoriasis severity, adjusted for age, sex, smoking, alcohol use, and diagnosed depression/anxiety. These associations with psoriasis severity were no longer significant when additionally adjusted for BMI.

There is a lack of studies examining dietary mineral intakes in populations with psoriasis, although some reports suggest people with psoriasis have a lower iron and magnesium status compared with control groups<sup>(2,3)</sup>. Our preliminary data suggests that dietary screening of micronutrient intakes as part of routine care may be beneficial in people with psoriasis. Additional research is warranted to explore the effects of mineral intakes and physiological mineral status in people living with psoriasis. Minerals are key regulators of cellular and immunological responses which is of relevance to population groups with underlying immune-mediated conditions such as psoriasis.

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### References

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