

# Total intake of different minerals and the risk of multiple sclerosis

Marianna Cortese, MD, PhD, Tanuja Chitnis, MD, Alberto Ascherio, MD, DrPH, et al.

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## Correspondence

Dr. Cortese  
mcortese@  
hsph.harvard.edu

## Study objective

To determine whether mineral intake levels are associated with the risk of developing multiple sclerosis (MS).

## Summary results

Mineral intake is not a determinant of MS risk.

## What is known and what this paper adds

Higher vitamin D intake levels are associated with a reduced risk of developing MS, and some studies have suggested that minerals such as zinc may also be relevant to MS risk. However, this study provides evidence against that hypothesis.

## Participants and setting

This study reviewed data for 80,920 women who participated in the Nurses' Health Study (NHS) between 1984 and 2004 and 94,511 women who participated in the Nurses' Health Study II (NHSII) between 1991 and 2009. The NHS participants were from 11 US states and were 30–55 years old at study start. The NHSII participants were from 14 US states and were 25–42 years old at study start.

## Design, size, and duration

The women examined in this study completed biennial questionnaires about lifestyle factors and health-related outcomes and quadrennial semiquantitative food frequency questionnaires. The food frequency questionnaire responses and the Harvard Nutrient Database were used to estimate intakes of potassium, magnesium, calcium, phosphorus, iron, zinc, manganese, and copper. MS diagnoses were detected from responses to the biennial questionnaires. This study used Cox proportional hazards models to determine whether mineral intake levels were associated with the risk of developing MS.

## Main results and the role of chance

There were 479 new verified MS cases during follow-up (0.27%). This study found no associations between

**Table** Selected results from the Cox proportional hazards regression analyses of whether baseline mineral intake levels were associated with the risk of developing MS

Mineral	Hazard ratio (95% confidence interval) for developing MS when comparing top-quintile baseline intakes to bottom-quintile baseline intakes
Potassium	1.24 (0.94–1.65)
Magnesium	1.30 (0.95–1.77)
Calcium	0.76 (0.56–1.04)
Iron	1.01 (0.74–1.38)
Zinc	0.92 (0.67–1.26)

baseline or cumulative mineral intake levels and the risk of developing MS ( $p_{\text{trend}}$  across baseline intake quintiles,  $\geq 0.13$  for each mineral).

## Bias, confounding, and other reasons for caution

This study lacked mineral intake data from before adulthood and data on mineral levels in the blood. The possibility of residual confounding in the regression models cannot be excluded.

## Generalizability to other populations

This study included only women, and these women were predominantly of Caucasian descent. This may limit the generalizability of the results to men and non-Caucasians.

## Study funding/potential competing interests

This study was funded by the National MS Society and the NIH. The authors report no competing interests. Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures.

*A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The authors of the full-length article and the journal editors edited and approved the final version.*

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