

### Association of Magnesium Intake With Sleep Duration and Sleep Quality: Findings From the CARDIA Study

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**Objectives:** As an antagonist of calcium (Ca), magnesium (Mg) has been hypothesized to improve individuals' sleep disturbances, a common health problem, through regulating the glutamatergic and GABAergic systems. The objectives of this study were to examine the longitudinal associations of Mg intake and Ca-to-Mg intake ratio with sleep quality and duration.

**Methods:** A total of 5115 American young adults, aged 18–30 years, were enrolled in the Coronary Artery Risk Development in Young Adults (CARDIA) study. Dietary information, including intakes of Mg and other nutrients, was obtained using the CARDIA dietary history at baseline (1985–86), year 7 (1992–93), and year 20 (2005–06). Sleep measures, including self-reported sleep quality and sleep

duration, were collected at year 15 (2000–01) and year 20. Sleep quality was assessed on a scale of 1 (very good) to 5 (very bad), whereas sleep duration was grouped into three categories: <7 hours, 7–9 hours, and >9 hours. Generalized estimating equation (GEE) was used to examine the associations of interest.

**Results:** After adjustment for potential demographical, behavioral, and nutritional confounders, Mg intake was associated with better sleep quality [highest intake quartile (Q4) vs. lowest intake quartile (Q1): odds ratio (OR) = 1.23; 95% CI = 1.00, 1.50, *P* for trend = 0.052]. Participants in Q4 were also less likely to have short sleep (<7 hours) compared to those in Q1 (OR = 0.64; 95% CI = 0.51, 0.81, *P* for trend = 0.012). The observed association with short sleep persisted among participants without depressive disorders (Q4 vs. Q1: OR = 0.64; 95% CI = 0.49, 0.82, *P* for trend <0.001), but not among individuals with depressive disorder. Ca-to-Mg intake ratio was not associated with either sleep quality or sleep duration regardless of depression status.

**Conclusions:** Mg intake was associated with sleep quality and duration in this longitudinal analysis. Randomized controlled trials with objective measures of sleep are warranted to establish the potential causal inference.

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