**SERUM MAGNESIUM AND IMPAIRED FASTING GLUCOSE IN NON-DIABETIC ADULTS**

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*Background*: Epidemiological evidence on the link between Magnesium (Mg) and fasting glucose has been mixed.

*Objectives*: This study investigated whether and to what extent blood levels of Mg were independently associated with fasting glucose levels in nondiabetic adults.

*Methods*: We conducted a cross-sectional study among 890 participants aged 51-87 years from the Clinical Translational Science Center (CTSC) subcohort of the VITamin D and OmegA-3 TriaL. Participants were free of self-reported diabetes mellitus, cardiovascular disease, and cancer and had fasting glucose <126 mg/dl. We used linear regression to compare fasting glucose levels across five categories of serum Mg levels at 0.54-0.75, 0.76-0.83, 0.83-0.88, 0.89-0.95, and 0.96-1.04 mmol/L. Logistic regression and restricted cubic spline regression was used to explore both linear and nonlinear associations of serum Mg with prevalent impaired fasting glucose (defined as fasting glucose in the range of 100-126 mg/dl). Multivariable models adjusted for age, sex, race/ethnicity, body mass index, smoking, parental history of ischemic heart disease, physical activity, alcohol consumption, history of hypertension, and renal function (eGFR).

*Results*: Of 890 nondiabetic participants, serum Mg levels were 0.85(±0.06) mmol/L and 181(20.3%) had impaired fasting glucose levels. Serum Mg was inversely associated with fasting glucose levels (94.5, 94.2, 93.1, and 91.3 mg/dL across increasing serum Mg categories, P for linear trend=0.05). The odds of impaired fasting glucose was higher in the lower categories of serum Mg; the ORs and 95% confidence intervals (CIs) for increasing categories of serum Mg were 1.65 (0.84-3.25), 1.67 (1.02-2.76), and 1.00 (referent), 1.14 (0.61-2.13), and 0.75 (0.33-1.69) (P for linear trend = 0.02). The trends remained similar in sensitivity analyses after excluding 370 participants with abnormal renal function or currently using antihypertensive medications.

*Conclusions*: Among non-diabetic individuals, serum Mg was inversely correlated with fasting glucose levels and presence of impaired fasting glucose.