**Abstract:**

The term “empty calories” refers to the calories that are contributed by some starchy foods, saturated fats, alcohol, and refined sugars (Jenkins, 2004). The effect of empty calories on a person's diet is at odds with maintaining a healthy lifestyle. Data for individuals aged 4 to 18 years old in the United States from NHANES 2003-2008 were used to estimate the association between intake of added sugars and discretionary fats with intake of essential nutrients. We fit a regression model that allows for non-independent measurement error between the dependent and the response variables, to account for the fact that observed daily intakes are noisy measurements of usual intakes. The response variable in our models is the nutrient density (units of the nutrient per 100 calories); calories from empty calories are similarly scaled for consistency. Other covariates in the model (e.g., BMI and age) are assumed to be measured with no error. For certain age-sex groups, added sugars and discretionary fats are found to be negatively associated with intake of some nutrients, suggesting that intake of foods with high content of added sugar and fat displace consumption of some nutrients.

**Keywords:** Measurement error model, empty calories, added sugar, discretionary fat