

Title: Poor Dietary Habits Increase Proinflammatory Factors in College Students

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Abstract: With the emerging obesity epidemic and associated negative chronic cardiovascular and cognitive health outcomes, diet and nutrition have become a greater focus of research in past decades. Obesity is associated with an increase in adipose tissue and low-grade peripheral inflammation. Inflammation, in particular, has been causally linked to several adverse health outcomes in obese individuals. However, more recently it has begun to be appreciated that poor dietary choices can increase inflammation even in the absence of obesity, suggesting dietary intake is an independent risk factor for adverse health outcomes. College-aged individuals are particularly susceptible to adverse effects of poor diet on health due to key brain development during this stage and notoriously poor nutritional intake, yet few studies have examined the impact of nutrition in this specific age group of individuals on inflammation. To address this, we examined the implications of poor overall quality of nutrition and high fat intake in college students on peripheral proinflammatory markers, IL6 and CRP. Briefly, students voluntarily answered several questions on diet and subsequently were categorized as healthy vs unhealthy. Blood was collected and IL6 and CRP were assessed via ELISA. Results indicate that individuals with poor nutrition had significantly greater plasma CRP levels, and there was a significant positive correlation between increasingly poor nutritional quality in diet and plasma CRP levels. Furthermore, we found that this was sex-driven, with female but not male participants exhibiting a significant positive correlation between plasma CRP and poor nutritional quality. IL6 was not impacted by either overall dietary choices or specifically fat intake in diet. These results indicate that overall dietary choices and nutrition quality have an impact on the acute phase protein CRP, which is produced in the liver, suggesting poor diet may adversely impact proinflammatory factors secreted by the liver. These results suggest it is vital to make good dietary choices at young ages to prevent the detrimental effects of diet on peripheral inflammatory factors, which could have long-term implications on health outcomes.

Keywords: neuroinflammation, obesity, diet, cognitive impairment, cytokines, development