

# STRONG CHILDREN'S RESEARCH CENTER

## Summer 2016 Research Scholar

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### ABSTRACT

**Title:** "Effect of Nutritional Intervention on Growth of Children with Inflammatory Bowel Diseases"

**Background:** Inflammatory Bowel Diseases (IBD) are a group of diseases characterized by chronic inflammation of the colon and small bowel including Crohn's Disease (CD) and Ulcerative Colitis (UC). Most cases are diagnosed between ages 15 and 30 and about 25% of cases are diagnosed during childhood. When diagnosed in children, effects on growth and pubertal progression have been shown in up to 85% of children with CD and 65% with UC. This is due to a variety of factors including use of corticosteroids, inflammation and malnutrition. While careful monitoring of growth and pubertal progression are recognized as an essential part of care, what helps these patients grow is not completely understood.

**Objective:** To determine if children with IBD who meet with a registered dietician and/or receive nutritional supplements have better growth rates than those who are treated with medications only. We hypothesize that patients that who are treated with nutritional supplements or meet with a registered dietician will have higher growth velocities than those who do not.

**Design/Methods:** A retrospective chart review was performed on all patients seen for IBD between June 2013 and May 2016. All patients between the ages of 12 and 17 with a diagnosis of IBD were included. Data including height, weight, BMI percentile and medications were recorded. Additionally, lab values routinely checked in IBD patients including albumin, pre albumin, calcium, hemoglobin, iron, vitamin D, CRP and ESR were also recorded before and after diagnosis of IBD. The height velocity and averages of each lab value were calculated for each patient before and after IBD diagnosis. Patients were separated into three groups; those saw a dietician, those who received nutritional supplements and a control group. Statistical analysis included an ANOVA with a Dunnet's t-test and a Pearson's correlation. Changes in vitamin D, iron and pre-albumin were not assessed due to small sample sizes. Differences in height velocity due to age, diagnosis and sex were also assessed.

**Results:** A total of 497 charts were reviewed and 215 patients met the criteria for the study. The results of the ANOVA showed that there was no significant difference between groups in the change of any of the parameters. Additionally, no significant association in the change in height velocity was found for age, diagnosis or sex. However, there was a very strong trend towards an increase in height velocity in those subjects who received nutritional supplements and/or met with a dietician. The Pearson's correlation showed a positive correlation between calcium, albumin and hemoglobin and a negative correlation between hemoglobin and both ESR and CRP. All of these correlations were expected based on the pathophysiology of IBD. Interestingly, a negative correlation was found between height velocity and calcium and albumin, a correlation that, if truly present, is expected to be positive.

**Conclusions:** While not quite achieving statistical significance, there was a very strong trend towards increased growth/height velocity in those subjects who either saw a dietician and/or received nutritional supplements for their IBD compared to those who did not. Additionally, the

group on nutritional supplements was the only group with a mean increase in height velocity after diagnosis of IBD. To better assess changes in height velocity, a study with a larger sample size or a prospective study should be undertaken, but in the meantime we would strongly recommend the use of nutritional supplements in children with IBD.