**Effects of Fruit and Vegetable Intake as Part of the National School Lunch Program on BMI z-score in 3rd-5th Graders**

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### BACKGROUND

**Increasing Rates of Childhood Obesity**
- Childhood obesity rates tripled since 1970.¹
- Approximately 1 in 5 children (5-18 years old) are overweight or obese.²
- Body mass index (BMI) has been indicated as a strong predictor of health and weight status by the Centers for Disease Control (CDC).²

**National School Lunch & Breakfast Program (NSLP & SBP)**
- Goals include reducing childhood obesity through improved meals
- Provides free and reduced price meals based on income
- Schools receive reimbursement for meals served.
- Meals must meet specific nutrient standards

### OBJECTIVES

- **Primary**
  - Determine impact of the NSLP & SBP at reducing childhood obesity.
- **Secondary**
  - Measure the relationship between FV selection and intake for children
  - Assess FV intake in 3rd-5th grade children compared to RDI

### METHODOLOGY

**Study Design:** Quasi-experimental, pretest-posttest design

**Participants:** 210 3rd-5th grade children from Red Bank & East Side Elementary School District in Chattanooga, TN, (n=105 from each)

**Setting:** In the school environment, during breakfast and lunch

**Time Period:** August 30th, 2018 - June 30th, 2019

#### Recruitment
- June 18th - June 22nd: Flyer Advertisements sent home with children
- July 30th: Deadline for returning flyer via email or mail

#### Selection
- August 1st: August 3rd: Large pool submission filtered
- August 6th: Participants contacted & inclusion/exclusion criteria assessed

#### Baseline Measurements
- Consent and Assent forms will be signed and filed.
- August 20th: Height and Weight
- August 20th: FFQ data as well as age, grade, gender and race/ethnicity
- August 21st: Identifier assigned

#### Monthly Measures
- August 30th - June 30th, 2019: Fruit and vegetable intake once a month by researchers
- Height and weight measurements taken monthly

#### Researchers Monitoring
- Process Flow for Participant Recruitment, Selection, Measurements and Monitoring

### RESULTS

**Sample size** determined by independent t-test using a 95% power and 0.50 effect size & .05 error rate. H1: children from intervention group with a BMI z-score of 2 or greater will have a reduction of 2.0 as a result of increased FV compared with the control group who will have a reduced BMI of 1.0.

**Age & BMI means** will be compared between schools using independent t-tests to identify significant difference between the groups and adjust covariates accordingly.

**Paired t-test** will be used within groups to compare BMI z-score changes between baseline and final to determine if they are significant using two-tailed t-test.

**Pearson’s correlation** will be used to assess the correlation between BMI z-score changes and FV intake from month to month for each group.

**Monthly FV selection/intake** data will be reviewed to determine effectiveness of NSLP at increasing FV intake.

**P-value <0.05.**

**CONCLUSIONS**

The outcome of this research will add to the body of knowledge surrounding the effectiveness of the NSLP & SBP at increasing FV intake as well as improving BMI status for school aged children.

### REFERENCES
