The SWITCH® Implementation Process on School Lunch Consumption Patterns and Plate Waste

Abstract

Background: Schools provide an ideal setting to promote positive lifestyle behaviors in youth. The SWITCH® (School Wellness Integration Targeting Child Health) implementation process is designed to help schools operationalize and improve school wellness initiatives, including nutrition behaviors. Objective: This study examined the influence of the SWITCH® implementation process on school consumption and waste, especially fruits and vegetables. Study Design, Setting, and Participants: Four schools from a suburban school district in Iowa were included in the evaluation: two were participating in SWITCH® and two were not. Before- and after-lunch photos of food trays were taken for every 5th grade student participating in school lunch in both SWITCH® and control schools before SWITCH® started (baseline, 02/2017) and after SWITCH® finished (endpoint, 05/2017). Outcomes: Trained research assistants used the ‘Quarter System’ to compare the before-and after-lunch photos for each student to estimate waste percentage for individual food items on each tray. Based on the initial portion size, fruit and vegetable consumption was calculated. Linear mixed models were used to analyze the effects of SWITCH®, gender, and food types on the waste and consumption patterns. Results: There was no significant decrease in overall school lunch waste (average percentage wasted across all food types) in both SWITCH® and control schools. And the school lunch waste was not significantly different between SWITCH® and control schools at either baseline or endpoint. However, students in SWITCH® schools significantly increased their fruit consumption (p=0.02) by increasing their initial portion size. Contrarily, the fruit consumption from baseline to endpoint decreased in control schools, although this decrease was not statistically significant. Boys consumed fewer vegetables than girls did (p=0.001). Although boys wasted fewer vegetables (p=0.001), they selected much less to start (p=0.0001). Conclusions: By increasing the selection portion size, SWITCH® implementations may have a positive influence on the fruits and vegetable consumption in children.

Method and Study Design

- **School Recruitment and Selection**:
  - 2 suburban schools from a suburban school district in Iowa
  - 2 Control schools matched by socio-economic status (SES) of the school, 2 schools of suburban if and 1 schools of suburban if
  - Socially disadvantaged of equal distribution
  - Protocol from ethics committee

- **Data Collection**:
  - Provide the waste disposable trays with selected food items
  - Take color and photo of each food tray before and after lunch
  - Compare (images) fruit selection, vegetable selection, fruit and vegetable consumption, and waste in control and SWITCH® schools

- **Data Processing and Analysis**:
  - Provide the data to the research assistants
  - Random and on time food intake
  - Food intake visual comparison system
  - Data analysis: Conformity to food intake, time for each other

Results

- **Fruit Selection, Waste and Consumption**:
  - Selection: At baseline, fruit selection is significantly lower in SWITCH® schools compared to control schools. At endpoint, there is no significant difference between SWITCH® and control schools.
  - Fruit selection in SWITCH® schools was increased (p=0.004) and decreased in control schools (p=0.11).
  - Waste: No significant difference between baseline and endpoint either in SWITCH® or control schools.

- **Vegetable Selection, Waste and Consumption**:
  - Selection: A slight increase in vegetable selection was observed in both SWITCH® and control schools from baseline to endpoint.
  - No significant difference between baseline and endpoint either in SWITCH® schools or control schools.
  - Consumption: Remained almost the same from baseline to endpoints either in SWITCH® schools or control schools.

Conclusion

SWITCH® implementations may have a positive influence on fruit consumption in children by increasing selection portion size.