Association of Frequency of School Meal Consumption and Student Dietary Intake during COVID-related School Closures

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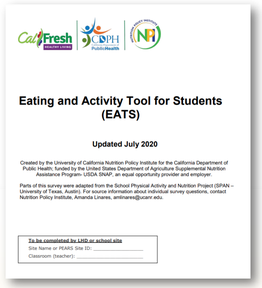
Abstract #PO05-24-22

Objectives

- 30 million U.S. children participate in the National School Lunch Program (NSLP) and 15 million participate in the National School Breakfast Program (NSBP). The NSLP and NSBP play a critical role in supporting child nutrition security, and adequate nutritional status is linked to proper immune function, which guards against diseases like the coronavirus 2019 (COVID-19).[1-6]
- In California, nutrition insecurity among households with children has increased since the start of the COVID-19 pandemic and related school closures.[7,8]
- Programs like CalFresh Healthy Living (CFHL) - the Supplemental Nutrition Assistance Program Education (SNAP-Ed) in California— can help address nutrition insecurity.
- This study describes:
  1. The dietary intake of students at CFHL-eligible (≥ 50% of the student population eligible for Free and Reduced Price Meals (FRPM)) schools during COVID-19-related school closures.
  2. The association between school meal consumption and dietary intake.

Methods

- **Design:** An observational, cross-sectional study of 4th and 5th grade students (n=3,317) from CFHL-eligible school and school-based afterschool sites (n=67) throughout California, conducted from October 2020 to May 2021.
- **Survey:** 16 survey questions asked about the frequency of consumption of vegetables (starchy vegetables [corn, potatoes, peas], orange vegetables, salad and green vegetables, other vegetables, beans), fruit (fruit, 100% fruit juice), French fries and chips, diet soda, sugar-sweetened beverages (SSBs) (fruit drinks, sports drinks, regular soda, energy drinks, sweetened coffee and tea, flavored milk), and water in the past day.
- **Analysis:** Descriptive statistics were generated. Multilevel Poisson regression models, adjusting for student age, race/ethnicity, sex, method of attending school the past day, school proportion of students eligible for FRPM, and accounting for clustering by school were conducted to assess the association between number of school meals consumed and student dietary intake frequencies.



CalFresh HEALTHY LIVING | CDPH Public Health | NPI

Eating and Activity Tool for Students (EATS)

Updated July 2020

Created by the University of California Nutrition Policy Institute for the California Department of Public Health; funded by the United States Department of Agriculture Supplemental Nutrition Assistance Program- USDA SNAP, an equal opportunity provider and employer.

Parts of this survey were adapted from the School Physical Activity and Nutrition Project (SPAN – University of Texas, Austin). For source information about individual survey questions, contact Nutrition Policy Institute, Amanda Linares, amlinares@ucanr.edu.

To be completed by LHD or school site

Site Name or PEARS Site ID: _____

Classroom (teacher): _____

Results

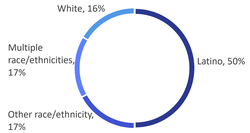
Student Characteristics (n = 3,317):

Average age: 9.8 years

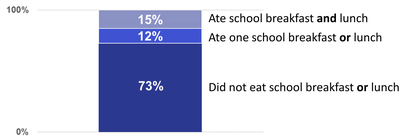
83% attended school by distance learning only

52% percent self-identified as female

Self-identified race/ethnicity



Percent of students who ate school meals yesterday



School Characteristics (n = 67):

Average percent of students eligible for FRPM at schools

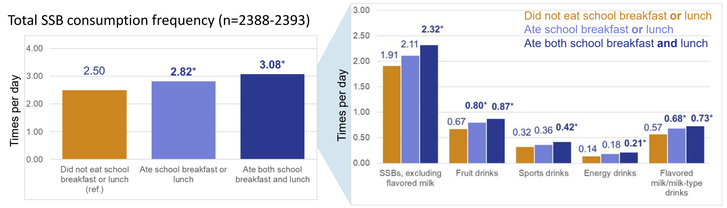
Conclusions

The Dietary Guidelines for Americans (DGA) recommend 9–13-year-olds eat 1.5 to 3 cups of vegetables and 1.5 to 2 cups of fruit per day.[9] Our data show students ate fruit 2 to 3 times per day and vegetables 3 to 4 times per day. Though not straightforward to equate cups/day to times/day, we infer our student population has room for improvement. The frequency of total SSB consumption is also of concern given the DGA recommendation to limit added sugar intake to less than 10% of total energy per day. Our data show students consume SSBs 2.5 to 3 times per day, which indicates they are a significant contributor to total added sugar intake.[9]

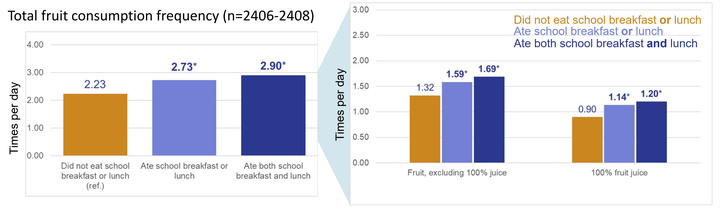
This study is one of the first to look at the association between school meals and dietary intake during COVID-19 school closures. While our findings support the contribution of school meals to student fruit and vegetable consumption during COVID, they also suggest more work is needed to reduce SSB intake. Future health, safety, and environmental concerns may impact students' ability to attend school as normal, and as a result, schools must be prepared for when conditions force them to modify meal service. Understanding the impacts of modified school meals on the overall diet is key to ensuring access to healthy options both at home and in school, an area addressed by CFHL efforts.

Adjusted mean intake frequency in the past day, by number of school meals consumed in the past day

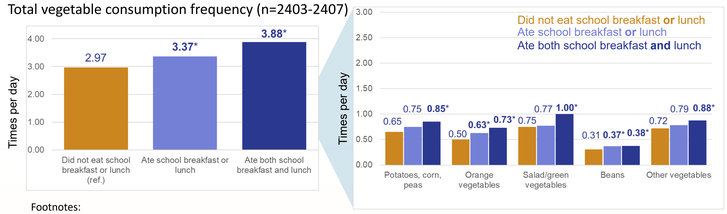
Total SSB consumption frequency (n=2388-2393)



Total fruit consumption frequency (n=2406-2408)



Total vegetable consumption frequency (n=2403-2407)



Footnotes:

* Indicates adjusted mean is significantly different from reference group. "Did not eat any school meals" is the reference group.

[1] No statistically significant associations were found in water, regular soda and sweetened coffee/ tea drink consumption between students that did not eat school meals and students that ate school breakfast or lunch or students that ate both breakfast and lunch.

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