

Serving Fruits and Vegetables in Kid-Friendly Shapes Increased Fruit and Vegetable Consumption for Preschool Children Aged 2-5 Years



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Contact smillard@llu.edu, sstevenson@llu.edu, mcojocar@llu.edu
Department of Nutrition and Dietetics, Loma Linda University

Introduction

Early childhood is a critical period for influencing feeding behavior.^{1,2} Currently the U.S. has seen an alarming increase in prevalence of obesity in children.¹ A promising opportunity to prevent obesity is to increase fruits and vegetables (F&Vs) consumption. F&Vs often displace empty calories while the additional fiber, vitamins, and minerals reduce the risks for chronic diseases.^{3,4} Currently, preschool students have a lower intake of F&Vs than the recommended daily allowance.³ Since these children's taste preferences and food choices tend to continue into adolescence and adulthood,² increasing F&Vs consumption at a younger age may influence obesity trends not only in children, but also in the future adult population.

Purpose

Determine whether preschool-aged children consume more fruits and vegetables when they are designed into kid-friendly shapes.

Methods

- Intakes were recorded for 461 lunch-meals served to healthy preschool-age children (male & female) between the ages of 2-5 at a local children's center. Data collected during 16 days, in a four-week pilot study included 270 intakes at baseline (weeks 1&2) and 191 intakes at intervention (weeks 3&4).
- During the study, eight menus were served; four included vegetables and four included fruits. Menus remained exactly the same with the exception of F&Vs being served in kid-friendly shapes during intervention weeks.
- Daily measurements were pooled by gender and age group (2-3, 3-4, 4-5) for a total of 16 days. This generated a total of 91 data points due to some days only five of the six groups were represented.
- Data was analyzed looking at F&V consumed/total F&V served and reported as a percentage.

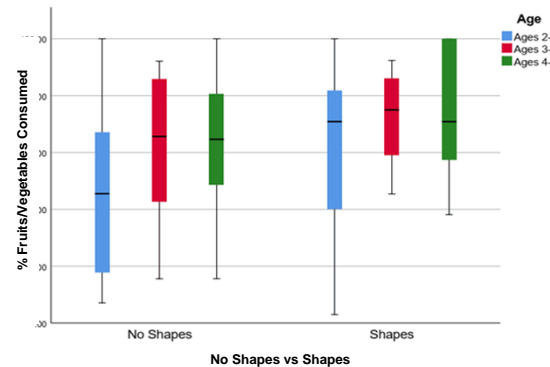


Figure. Mean percentage of F&Vs consumed by age and shape of F&Vs.

Table. Percentage of F&Vs Consumed for Meals Served by Type of Meal, Gender, and Age.

| Variable | Mean (SD) | p-value |
|--------------------|-------------|---------|
| Type of Meal | | .02 |
| No Shapes (n=46) | 57.9 (27.0) | |
| Shapes (n=45) | 68.7(24.0) | |
| Meals | | <.001 |
| Vegetables (n =45) | 50.9 (23.2) | |
| Fruits (n =46) | 75.4 (22.8) | |
| Gender | | .13 |
| Male (n=45) | 66.3 (23.3) | |
| Female (n=46) | 60.3 (28.3) | |
| Age (Year) | | .11 |
| 2-3 (n=30) | 55.2 (31.1) | |
| 3-4 (n=33) | 67.3 (20.8) | |
| 4-5 (n=28) | 67.2 (24.4) | |

Results

- F&Vs served in kid-friendly shapes increased intake by 10.8% when comparing to unshaped F&Vs ($p = .02$).
 - A significant difference was noted when comparing fruit vs. vegetable menus. Children ate 24.5% more fruits than vegetables ($p < .001$).
 - Although there was a 6% increase in F&Vs intake in males compared to females, there was no significant difference between group means ($p = .13$).
 - Although the 3-4 & 4-5 age-groups showed a 12% higher F&Vs intake when compared to 2-3 age-group, there was no significance ($p = .11$).
- See Figure and Table.

Conclusion

- Increased intake of F&Vs in preschool-aged children augment the overall quality of diet, providing a variety of nutrients important for growth and maintenance.
- Food presentation may influence children's interest in F&Vs consumption and their willingness to expand food choices.
- With childhood obesity rates on the rise, the nutritional value of vegetables, including fiber, phytonutrients, and an overall lower amount of sugar may notably decrease risk of obesity related chronic diseases.
- Future research can expand on the findings in this pilot study by further investigating economically varied demographics and measuring intakes on individual children rather than pooled measures.



References:

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