

Fruits and Veggies – Are WIC Kids Getting Enough?



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INTRODUCTION

Consuming the recommended amounts of fruits and vegetables introduce a balance of nutrients that is needed for weight management, disease prevention, and the overall functioning of the body.^{1,2} Both children and adults are prone to eating fewer fruits and vegetables than recommended. The USDA recommends that children between the ages of 2-3 years consume 1 cup each of fruit and vegetables daily.² Among children ages 4-8 years, the recommendation increases slightly to 1-1½ cups of fruit and 1½ cups of vegetables daily. These amounts are for children who are active for less than 30 minutes per day.² According to a National Cancer Institute study, 60% of children aged 1-18 years did not meet the USDA's fruit intake recommendations, and 93% did not meet vegetable intake recommendations in 2007-2010.³ In a separate study, the Centers for Disease Control and Prevention reported that white potatoes accounted for an average of 30% of total vegetable intake in children ages 2-18 years between 2003 and 2010.⁴

Research Questions

- Are children 2-4 years of age enrolled in the SC WIC Program meeting or exceeding the national recommendations for daily fruit and vegetable intake?
- Are there demographic and regional differences that exist in daily fruit and vegetable intake in children 2-4 years of age enrolled in the SC WIC Program?

METHODS

During the certification encounter, the South Carolina WIC Program collects information on consumption of fruit and vegetables on all participants. Participants are interviewed by a Competent Professional Authority to determine nutritional risk and prescribe supplemental foods. Participants are questioned regarding their daily consumption of half-cup servings of fruits and vegetables.

Data Source: SC WIC Program Data, Federal Fiscal Year 2016
 Study Sample: 27,475 Children Aged 2-4 Years with Reported Fruit and Vegetable Intake
 Statistical Tests: One Proportion Z-Test; Two Proportion Z-Test
 Outcome: Meeting or Exceeding USDA Recommendation for Daily Intake of Fruit and Vegetables (Excluding White Potatoes)
 Covariates: Age, Gender, Race, Ethnicity, Region of Service, Overweight or Obesity Risk Status

DISCUSSION AND CONCLUSIONS

- Among children 2-4 years enrolled in the SC WIC Program, **72.6% met or exceeded the recommendation for daily fruit intake** and **50.7% met or exceeded the recommendation for daily vegetable intake**.
- Daily fruit intake was significantly higher among children who were non-Hispanic (74.4%), Black (75.3%), and among those served in the Pee Dee public health region (75.6%) and primary care centers (76.8%) as compared to the program overall.
- Daily vegetable intake was significantly higher among children who were non-Hispanic (53.9%), Black (53.4%), Multiracial (58.7%), 2 years of age (60.8%), 3 years of age (59.7%), and among those served in the Midlands (51.8%) and Pee Dee (54.5%) public health regions as compared to the program overall.
- Consuming the appropriate amount of fruits and vegetables promotes health and decreases risk for chronic disease development.^{1,2}
- Next steps in the evaluation of daily fruit and vegetable consumption would include conducting a descriptive study to compare the characteristics of children who fall below the recommendations, meet the recommendations, or exceed the recommendations in the SC WIC Program.

LIMITATIONS

- Sample includes children who are new to the SC WIC Program and recertifications
- Vegetable consumption excludes white potatoes
- Self-reported (recall bias, over- or underestimation of intake)

RESULTS

Federal Fiscal Year 2016	Total	Meet or Exceeds the USDA Recommendation ²			
		Fruit		Vegetables	
	27,475	Yes (%)	No (%)	Yes (%)	No (%)
South Carolina WIC Program, Overall		72.6%	27.4%	50.7%	49.3%
Age, years					
2	11,296	73.0%	27.0%	60.8%*	39.2%
3	9,554	72.0%	28.0%	59.7%*	40.3%
4	6,625	72.6%	27.4%	20.7%	79.3%
Gender					
Male	14,111	72.1%	27.9%	50.1%	49.9%
Female	13,364	73.1%	26.9%	51.3%**	48.7%
Race					
White	14,381	70.4%	29.6%	48.5%	51.5%
Black/African-American	12,433	75.3%**	24.7%	53.4%**	46.6%
Native Hawaiian/Pacific Islander	48	72.9%	27.1%	50.0%	50.0%
American Indian/Alaskan Native	75	66.7%	33.3%	40.0%	60.0%
Asian	296	63.5%	36.5%	40.2%	59.8%
Multiple	242	74.0%	26.0%	58.7%**	41.3%
Ethnicity					
Non-Hispanic	22,891	74.4%*	25.6%	53.9%*	46.1%
Hispanic	4,584	63.3%	36.7%	34.5%	65.5%
Region of Service					
Upstate	7,024	69.7%	30.3%	48.0%	52.0%
Midlands	7,170	72.8%	27.2%	51.8%*	48.2%
Pee Dee	6,259	75.6%**	24.4%	54.5%**	45.5%
Lowcountry	5,988	71.7%	28.3%	48.7%	51.3%
Primary Care/Medical Centers	1,034	76.8%**	23.2%	50.5%	49.5%
Risk Status					
Has an Overweight or Obesity Risk	9,748	72.5%	27.5%	50.9%	49.1%
Does Not Have an Overweight or Obesity Risk	17,727	72.6%	27.4%	50.6%	49.4%

Referent groups by category: Age (2 years of age); Gender (Male); Race (White); Ethnicity (Non-Hispanic); Region (Midlands); and Weight Category (Does Not Have an Overweight or Obesity Risk Code).

*Significantly higher than the SC WIC Program, overall (one proportion Z-test), p<0.05 or p<0.0001).

**Significantly higher than the referent group (two proportion Z-test), p<0.05 or p<0.0001).

1. U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. December 2015. Available at <http://health.gov/dietaryguidelines/2015/guidelines/>. Accessed September 29, 2017.
2. U.S. Department of Agriculture, <https://www.choosemyplate.gov/>.
3. Usual Dietary Intakes: Food Intakes, U.S. Population, 2007-10. Epidemiology and Genomics Research Program website. National Cancer Institute. <http://epi.grants.cancer.gov/diet/usualintakes/pop/2007-10/>. Updated May 20, 2015. Accessed September 29, 2017.
4. Kim, S.A.; Moore, L.V.; Galuska, D, et al. Vital Signs: Fruit and Vegetable Intake Among Children – United States, 20003-2010. MMWR 2014;63(31):671-676.