

**5 A Day and  
School-Age Children:**

**Trends**  

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**Effects**  

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**Solutions**

# Trends in Fruit and Vegetable Consumption

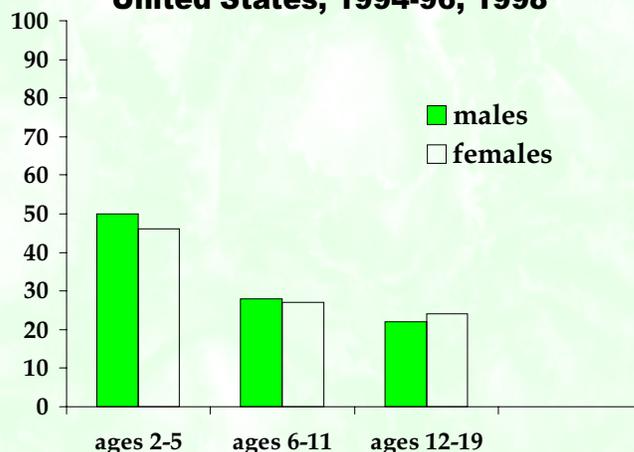
The Dietary Guidelines for Americans, Food Guide Pyramid and Healthy People 2010 all recommend a minimum consumption of two servings of fruits and three servings of vegetables each day, for a combined total of five servings. These recommendations provide the basis of the 5 A Day for Better Health Program. The goal of 5 A Day is to encourage all Americans to enjoy the great taste and health benefits of at least five servings of fruits and vegetables each day as part of a lower-fat, higher fiber eating style.



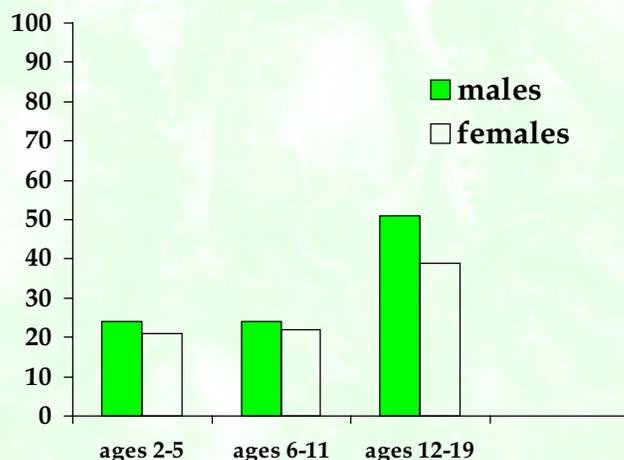
A nationwide food consumption survey indicates that when it comes to 5 A Day, children and adolescents, just like adults, are falling short. For children and adolescents 2-19 years old, an average of only 33 percent are consuming the minimum two daily servings of fruits and an average of only 29 percent are consuming the minimum three daily servings of vegetables.<sup>1</sup> A 2001 survey of North Carolina high school students shows that only 17.8 percent ate five or more servings of fruits and vegetables per day during the seven days prior to the survey.<sup>2</sup> North Carolina youth lag slightly behind the national averages. This is the case for both boys and girls, younger and older students and students of all racial and ethnic groups.

There is also concern with the quality of fruits and vegetables consumed by children and adolescents. We see an alarming trend that shows young Americans are eating differently than the previous generation.

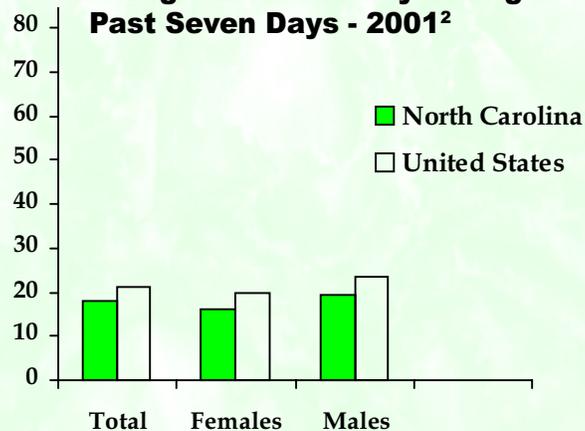
**Percent of Children and Adolescents Eating a Minimum of Two Servings of Fruit Each Day, United States, 1994-96, 1998<sup>1</sup>**



**Percent of Children and Adolescents Eating a Minimum of Three Servings of Vegetables Each Day, United States, 1994-96, 1998<sup>1</sup>**

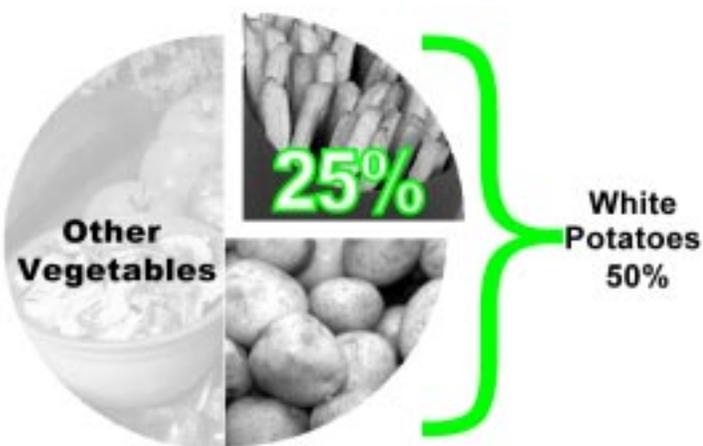


**Percent of North Carolina High School Students Compared to U.S. High School Students Who Ate Five or More Servings of Fruits and Vegetables Per Day During the Past Seven Days - 2001<sup>2</sup>**



## The Health Effects of Fruit and Vegetable Consumption

Raw fruit consumption has steadily declined while fruit juice consumption has increased. Dark green and orange vegetable consumption has decreased. It is recommended that one-third of vegetables eaten be of deep yellow or dark, green leafy color.<sup>3</sup> Children consume an average of 0.2 daily servings of these vegetables.<sup>1</sup> Almost half the vegetables eaten are white potatoes and 25 percent are fried potatoes.<sup>1</sup> The net result is that children and adolescents are consuming fruits and vegetables that are high in fat and inadequate in dietary fiber, antioxidants and a variety of other health-promoting nutrients.<sup>4</sup>



Among the many factors that influence fruit and vegetable consumption by children and adolescents are the availability of vending machines and snack bars in schools and the participation in the National School Lunch and Breakfast Programs. A study in Minnesota indicated that 78 percent of vending machine purchases occurred at school, with the majority of foods being high in fat and sugar, such as snack chips, candy and soft drinks.<sup>5</sup> An analysis of foods served in snack bars showed that 88.5 percent of the snacks were high in fat and/or high in sugar.<sup>6</sup> Children attending schools without snack bars had higher fruit and vegetable consumption than those in schools with snack bars.<sup>7</sup> A study in California suggested that low-income children, who are more likely to participate in school meal programs, were more likely to have higher intakes of fruits and vegetables.<sup>8</sup>

**O**ur mothers and grandmothers were on the right track when they said, “eat your fruits and vegetables, because they are good for you” - and the evidence keeps piling up in their favor.

Eating fruits and vegetables promotes health in many ways. They have been shown to reduce blood pressure without medication, protect against certain cancers, reduce the risk of stroke, reduce plasma lipid levels and improve the control of blood sugar levels.<sup>9</sup> These contribute to reducing the risk of heart disease, stroke, cancer and diabetes - all of which are among the top 10 leading causes of death in the U.S.<sup>10</sup> A simple change such as eating the recommended minimum five servings of fruits and vegetables each day could by itself reduce cancer rates more than 20 percent.<sup>11</sup>

For children, fruits and vegetables are major dietary sources of many nutrients essential to growth and development. These include vitamins A and C, folate, calcium, dietary fiber, antioxidants and phytonutrients, as well as others. Additionally, establishing the habit of eating plenty of fruits and vegetables provides children with a foundation for reducing the risk of diet-related chronic diseases later in life.

Fruits and vegetables are packed with the right balance of nutrients to provide the maximum health benefits. This includes fresh, frozen, dried and canned fruits and vegetables. The following table highlights some of the important nutrients.<sup>12</sup> Dietary supplements of these nutrients are no match for the benefits that come from eating the fruit and vegetable itself. Supplements usually contain only one or two nutrients and have not been proven to be effective or safe.



Nutrient	Function in the Body	Fruit and Vegetable Sources
<b>Vitamin A</b> 	Essential for vision, skin and the immune system. Promotes growth. Protects against some types of cancer.	Cantaloupe, apricots, dark green and deep yellow vegetables such as pumpkin, carrots, sweet potatoes, spinach, greens and bell peppers.
<b>Vitamin C</b> 	Strengthens blood vessels, improves wound and bone healing, increases the resistance to infections and increases the absorption of iron – another important nutrient for growth.	Cantaloupe, honeydew melon, peaches, oranges, strawberries, kiwi fruit, asparagus, sweet potatoes, bell peppers, broccoli, Brussels sprouts.
<b>Antioxidants and Phytonutrients</b> 	Antioxidants are vitamins, minerals, and other substances that fight free radicals, which play a role in the progression of cancer and heart disease. Phytonutrients are the color pigments in the fruits and vegetables that either act as antioxidants or enhance the antioxidant benefits.	Fruits and vegetables bursting with color such as berries, tomatoes, and dark green and deep yellow vegetables.
<b>Fiber</b> 	Important to maintain digestive health, as well as reduce blood cholesterol.	Raspberries, peas, blackberries, Brussels sprouts, parsnips, raisins, broccoli, black beans.
<b>Folate</b> 	Important for normal cell division, wound healing and prevention of birth defects.	Orange juice, dried peas and beans, green leafy vegetables such as mustard and turnip greens, collards and spinach.
<b>Calcium</b> 	Important for strong bones, blood clotting, muscle contraction and nerve function.	Rhubarb, okra and green leafy vegetables such as mustard and turnip greens, collards, kale and spinach.

## Solutions for Increasing Fruit and Vegetable Consumption

Childhood is a good time to establish sound eating habits and a healthy weight. Since childhood eating habits carry on into adulthood,<sup>13</sup> improving fruit and vegetable consumption during childhood sets a healthy pattern for life.

In 1994, the U.S. Congress passed the Healthy Meals for Healthy Americans Act, which required meals served in the School Breakfast Program and National

School Lunch Program to comply with the Dietary Guidelines for Americans. As a result, the United States Department of Agriculture (USDA) established the School Meals Initiative for Healthy Children (SMI) to set and implement nutrition standards for the school Breakfast and lunch programs. Since then, the USDA's school meal programs have made significant progress in meeting the standards based on the Dietary Guidelines.

To promote fruit and vegetable intake, several schools have added salad bars to their cafeterias, which not only increase fruit and vegetable intake but promote the healthy school lunch programs as well. A USDA

study of salad bars in schools showed that middle and high schools with a salad bar available at least once a week had a higher participation rate in the school lunch program, compared to schools without salad bars.<sup>14</sup> In the 2002 Farm Bill, the U.S. Congress added several provisions to encourage fruit and vegetable availability and consumption in schools.<sup>15</sup> A minimum of \$50 million per year is earmarked to exclusively fund the purchase of fresh fruits and vegetables through the Department of Defense Fresh Fruit and Vegetable Program, otherwise known as the Farm to School Program. USDA also funded a pilot program to provide free fruits and vegetables to 25 schools in Indiana, Iowa, Ohio, Michigan and the Zuni Reservation in New Mexico.<sup>16</sup>

## Promoting 5 A Day in Schools

**C**hange can be difficult, especially when lifelong behaviors are concerned. When thinking about strategies for getting children to eat 5 A Day, it is important to know that educational activities alone may not be enough. Lasting changes require supportive environments. The following recommendations aim to create environments that support 5 A Day.

- Serve as role models by eating plenty of fruits and vegetables - all school staff can be involved.
- Encourage all students to participate in the school meals programs.
- Offer a variety of fruits and vegetables to get the greatest benefit.
- Feature a fruit and vegetable of the week in the cafeteria.
- Offer items that are more accessible and convenient like bags of baby carrots, celery, raisins and prepackaged salads.
- Market and promote fruits and vegetables through participation in the Winner's Circle Program.
- Conduct taste tests or survey students about their favorite fruits and vegetables.
- Plan a trip to a farmers' market or local farm.
- Support and buy local produce.
- Offer salad bars in the cafeteria.

- Allow fruit and vegetable preparation and tasting in the classroom.
- Offer 100% juice in vending machines.
- Plant a school garden.
- Form a partnership with local chefs to conduct training on innovative and inexpensive ways to serve fruits and vegetables to students.
- Reduce prices of fruits and vegetables. Lower prices encourage the purchase of fruits and vegetables in school cafeterias.<sup>17</sup>
- Expand 5 A Day education in the classroom.
- Encourage cooperation between the cafeteria and classroom to integrate learning about fruits and vegetables in classroom lessons.
- Teach a class about North Carolina agriculture and taste some of the produce grown in the state.
- Establish school policies that promote fruits and vegetables.
- Reinforce classroom messages with cafeteria tours, tasting parties and special meal events with the 5 A Day theme.
- Participate in the Farm to School Program.
- Encourage greater consumption of fruits and vegetables by limiting the sale of snack items.
- Support fundraising efforts in the school that promote the sale of fruits and vegetables.
- Educate parents, school administrators, PTA and the community about the positive steps your schools are taking to promote 5 A Day.

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## 5 A Day Success in Yancey County Schools

In response to the growing problem of childhood overweight in Yancey County, North Carolina, the Child Nutrition Program and the Yancey County Health Department partnered to increase fruit and vegetable availability and consumption in the school cafeterias. The collaboration takes advantage of the expertise of both partners. The health department nutritionist provides the nutrition and health data as well as recommendations for improvement. The Child Nutrition Director implements changes within the parameters of the Child Nutrition Program and the school system.

One of the most significant changes in the cafeterias was the introduction of baked potatoes as a substitute for French fries on the serving line. At first, the students complained - they wanted their fries back. To spice things up, the food service staff began serving "quick-bake" potatoes. Students also enjoy a potato bar, which is made available on alternate days with the salad bar.

Yancey County has salad bars in the high school, the two middle schools and one of the elementary schools. What makes these salad bars unique is the source of much of the produce. In response to price increases in iceberg lettuce in the spring of 2002, Yancey County sought a more affordable option. They found a local farmer growing hydroponic leaf lettuce. It took the students a while to accept the "different" lettuce, but they did - they now enjoy a mixture of iceberg and leaf lettuces. The Child Nutrition Program now purchases a variety of produce from this same grower. Additional farmers are being identified. The public health nutritionist wrote a newspaper article and held an informational meeting for area farmers. Yancey County also participates in the Farm to School Program through the North Carolina Department of Agriculture and Consumer Services, Markets and Food Distribution Divisions.

## Influencing 5 A Day in Families and Communities

The decreasing quality and quantity of fruit and vegetable consumption by North Carolina's children and teens is one of many barriers to their achieving an adequate and health-promoting diet and lifestyle. It is a trend that parents, schools and communities have the capacity to reverse. This publication focuses primarily on schools; however, schools cannot solve the problem alone.

### Parents can:

- Be role models by eating more fruits and vegetables themselves.
- Help children learn to enjoy 5-9 daily servings of fruits and vegetables.
- Purchase and serve a variety of fruits and vegetables.

### Communities can:

- Advocate for healthful environments that are consistent with classroom nutrition education.
- Secure funding for marketing campaigns focused on healthful eating and 5 A Day.
- Work through community partnerships to ensure that fruits, vegetables and 100% juices are available at community group functions that serve food/beverages.

Decreased consumption of fruits and vegetables is an important issue that provides an excellent opportunity to raise the awareness of the unintended health consequences of personal and group decisions. Successful change in this area can lead to improved policy in other areas that will help ensure a healthy future for North Carolinians.

**For questions or comments,  
please contact:**

**SNAC@ncmail.net**



Developed by the North Carolina School Action Committee (SNAC). SNAC consists of representatives from three state agencies that participate in school nutrition services including the Department of Public Instruction, the Division of Public Health within the Department of Health and Human Services and the NC Cooperative Extension Service. These institutions are equal opportunity providers.