

Stories of change



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Farm to fork - improving eating habits and nutritional knowledge

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Key messages

- Obesity in children is increasing rapidly in the Caribbean and efforts to improve dietary intake are needed to avoid escalating health problems.
- Over a 15 month period, menu changes integrated 19,850 kg of fruit and vegetables into the St Kitts-Nevis School Meals Center which feeds 800 children.
- Nutrition messages, in conjunction with new menus, increased children's nutritional knowledge.
- In Trinidad, children in the intervention schools consumed 55% more fruit in a day than those in non-intervention schools, exceeding the World Health Organization's recommended daily minimum for fruit consumption.
- In St Kitts-Nevis, children in the intervention schools consumed 76% more vegetables in a day than those in non-intervention schools.

Context

In Caribbean countries, such as Trinidad and Tobago and St Kitts-Nevis, rates of obesity are on the rise with the adoption of 'developed world' lifestyles characterized by poor dietary habits and physical inactivity. Thirty percent of adults in the Caribbean are obese, with high levels of obesity and overweight also affecting children. This public health and nutrition challenge needs sustainable solutions and suitable entry points to implement them. With many countries providing lunchtime meals to children in schools, this creates an opportunity to offer a healthy meal for approximately one third of their daily intake, to reduce the consumption of high energy unhealthy foods and teach children about healthy eating. This can potentially contribute to a change in eating habits and reduction in obesity levels in the region. In addition, the school lunches provide a market for local fruits and vegetables, enabling farmers to increase and diversify their production with an assured market for their produce, another priority for the region's development agenda.

In St Kitts-Nevis, a free hot meal is provided to approximately 3,200 primary school children each

day by the Ministry of Education and produced in a central School Meals Center. In Trinidad and Tobago, the National Schools Dietary Services Limited (private caterers funded by the Ministry of Education) offers a free lunch to approximately 100,000 children. However, in both countries, fruit and vegetables are only offered in small quantities and imported food is widely used. Sweetened drinks are offered most days and candy sales within and around schools are adding to the problem, despite widespread recognition that diets which are high in sugar and fat and low in fruit and vegetables are associated with weight gain and obesity.

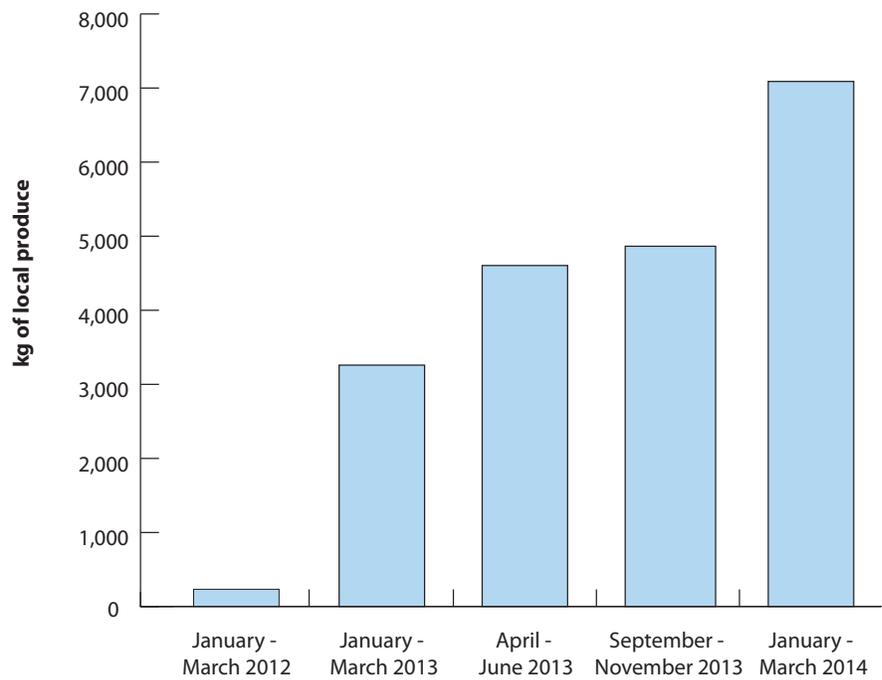


Figure 1: Produce purchased from local farmers for school lunches for 800 children in St Kitts-Nevis

In an effort to reduce the problem of obesity and overweight, the *Farm to Fork* project implemented two interventions aimed at primary school children (aged 5-9) and their parents. These involved menu changes for school lunches (in St Kitts-Nevis and Trinidad) and nutrition education for children and parents (in Trinidad). Schools not involved in the intervention were also studied to provide researchers with a comparison. By collaborating with local farmers and increasing the quantity and diversity of fruit and vegetables used in school lunches, school meals centers were able to offer a more nutritious and balanced diet to the children. Survey data for 489 children and caregivers provided data on dietary intake.

Emerging outcomes

Increasing local food diversity in school lunches

Through the *Farm to Fork* interventions, school meal menus were carefully revised and tested for nutritional quality and acceptance by the children. As a result of these changes, the diversity of vegetables used in school meals has increased over time. In St Kitts-Nevis, the project began with three imported vegetables - carrots, onions and Irish potatoes. Over the course of the project, locally grown varieties of these became available, as well as local tomatoes, cucumbers, string beans, sweet potatoes, cabbage and watermelon. Nearly 20,000 kg of fruit and vegetables were used in meals by the St Kitts-Nevis School Meals Center over 15 months, serving 800 children (Figure 1). In Trinidad, changes included an increase in vegetable serving sizes (typically the addition of half a cup of vegetables per child per day), the addition of local fruits such as watermelon, bananas, tangerines and oranges (typically half a large fruit or one whole small fruit per child, per day), and a serving of fish once a week.



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The diversity of vegetables in school meals has increased

The menus with improved nutritional value were also tested for acceptability, notably their taste, to determine whether children would easily adopt them. Results showed varying rates of acceptance and this helped to inform the development of healthy school menus. As a measure of acceptance of a food, plate waste was assessed. Watermelon, for example, proved popular as demonstrated by a minimum plate waste of only 15%, while some vegetables were less popular: only 50% of children consumed carrots, for example. Overall plate waste decreased from 29% to 12% after the menu change in Trinidad.

Effect on nutrition and health

Project research found that 31% of mothers were overweight and 37% obese. This is a particularly worrying fact given the recognized pattern for overweight mothers to also have overweight children, and given the link between overweight and non-communicable diseases, such as diabetes and cardio-vascular disease, which are on the rise in the Caribbean. Learning to consume better quality local foods is a way of increasing food security, decreasing obesity and the health consequences of obesity.

Overall, project activities led to a 137% increase in children’s total daily consumption of fruit and

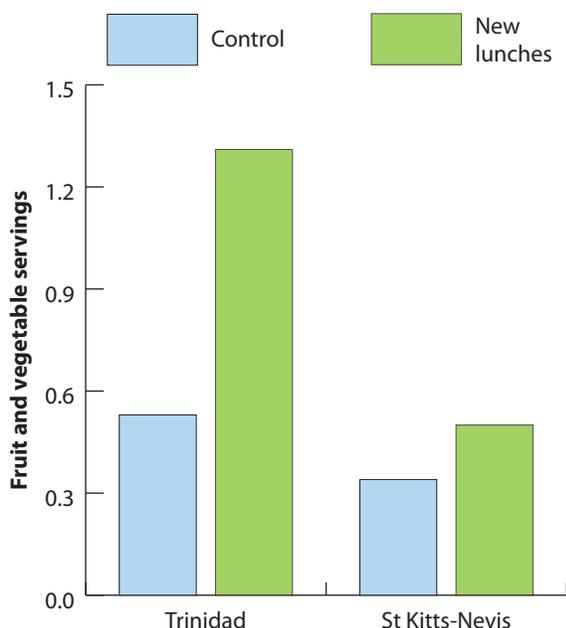


Figure 2: Fruits and vegetables consumed by children at lunch in Trinidad and St Kitts-Nevis at the end of the project



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One school in Trinidad revived its school garden

vegetables; the increased fruit and vegetable serving sizes are shown in Figure 2. The school lunches provided excellent levels of vitamin A, iron and other nutrients, contributing to dietary quality without adding extra kilocalories.

Improved nutrition knowledge

The nutrition education intervention was geared towards the children and parents in Trinidad. Classroom activities were undertaken with 291 children by a registered dietician or teachers trained by the dietitians. These lessons addressed a number of areas, including appropriate amounts from the Caribbean six major food groups, healthy snacking, nutrition label reading, physical activity, home gardening, food safety and hygiene, as well as cooking methods and appropriate portion sizes. One school revived its school garden, providing children with an opportunity to grow their own fruit and vegetables and to consume them. Activities targeted at parents were delivered to 134 individuals and focused on balanced diet and portion control, healthy snacking for school-aged children and managing food costs.

Analysis of changes in nutrition knowledge for children indicated a higher level of knowledge among the group that received both nutrition education and menu changes compared to those in control schools. This suggests that changes to

the school lunch menu alone do not improve nutrition knowledge but must be offered in conjunction with relevant nutrition education. New educational tools developed by the project are now available through the internet.

Conclusion

Influencing dietary change is challenging but can be achieved through improvements in existing food systems, as demonstrated through the *Farm to Fork* project. These emerging outcomes are aligned with studies that demonstrate that reducing energy intake through replacing high energy non-nutritive foods with lower energy foods such as fruits and vegetables, in combination with exercise and healthy lifestyle practices, are important components of managing obesity and overweight (CDC, 2005). Using local foods to improve the quality of children's diets, combined with nutrition education, led to positive changes in behavior towards a more diversified diet, and contributed to improved school performance.

By introducing changes in the school lunch program, the *Farm to Fork* project has helped to increase consumption of fruit and vegetables, improve nutritional knowledge among children and their parents, and create a new market for local production of fruit and vegetables by farmers. This demonstration that use of local produce by school feeding programs can positively change children's diets is an important step in understanding how dietary changes can be made.

The school experience can also serve as a model for other institutions such as hospitals. Based on



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Nutrition education addressed a number of areas, including physical activity

the outcomes of the project, the *Farm to Fork* model can be adopted and scaled up regionally within the Caribbean Community (CARICOM), in a long-term, sustainable manner in order to reduce the level of obesity in the region.

References

- CDC. (2005). *Can Eating Fruits and Vegetables Help People to Manage Weight?* Research to Practice Series, No. 1. Centers for Disease Control and Prevention, Atlanta, USA. <http://1.usa.gov/ZpqqYh>.
- FAO. (2013). *State of Food and Agriculture. Food Systems for Better Nutrition*. Food and Agriculture Organization, Rome, Italy. <http://bit.ly/KAn84P>.
- IDRC. *From Farm to Fork: Improving Nutrition in the Caribbean*. <http://bit.ly/1pj7kQr>.

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This outcome story is one in a series that reports on research supported by the Canadian International Food Security Research Fund (CIFSRF), a program of Canada's International Development Research Centre (IDRC), undertaken with financial support from the Government of Canada, provided through Foreign Affairs, Trade and Development Canada (DFATD). Produced by WRENmedia in October 2014.