

A School Gardening and Healthy Snack Program Increased Aboriginal First Nations Children's Preferences Toward Vegetables and Fruit

Lucila Triador, MSc¹; Anna Farmer, PhD, RD^{1,2}; Katerina Maximova, PhD³; Noreen Willows, PhD¹; Jody Kootenay, MEd, BA⁴

ABSTRACT

Objective: The researchers evaluated the impact of a 7-month gardening and 4-month vegetable and fruit snack program on Aboriginal First Nations children's home consumption and preferences toward vegetables and fruit.

Methods: The intervention was based on the Social Cognitive Theory. Children in grades 1–6 planted and tended classroom container gardens and prepared and ate what grew. At baseline and 7 months later, children tasted and rated 17 vegetables and fruit using a Likert scale and indicated whether they ate each food at home.

Results: Data were collected from 76 of 116 children (65.5%). Preference scores for vegetables, fruit, and vegetables and fruit combined increased over the 7 months ($P < .017$). Self-reported home consumption did not change.

Conclusions and Implications: School interventions have the potential to increase children's preferences for vegetables and fruit. Family participation is likely required, along with increased community availability of produce, to promote home consumption.

Key Words: North American Indians, aboriginal, intervention studies, health education, gardening, food preferences (*J Nutr Educ Behav.* 2015;47:176–180.)

Accepted September 8, 2014. Published online October 29, 2014.

INTRODUCTION

In Canada, chronic diseases attributable to excess body weight are highly prevalent among persons of Aboriginal First Nations (ie, Native American Indian) heritage. The age-standardized prevalence of type 2 diabetes among First Nations living on-reserve (17.2%) is 3 times higher than that among the non-Aboriginal population of Canada (5.0%).¹ First Nations living on-reserve are also at high risk for cardiovascular disease and hypertension.² The prevalence

of obesity (12.8%) among First Nations children living on-reserve² exceeds that of the general pediatric population of Canada (8.2%)³ owing to the effects of high-calorie diets and insufficient physical activity.⁴ There is thus an urgent need for life-style strategies to assist First Nations children to have a body weight within the healthy (ie, non-overweight and obese) range so that they can avoid the development of chronic diseases associated with obesity.^{4,5}

Canadian children and adolescents who consume < 5 servings of vegeta-

bles and fruit daily are more likely to be overweight or obese compared with children and youth who consume ≥ 5 servings daily.³ The many First Nations children who do not meet the dietary recommendations for vegetable and fruit consumption also have an increased risk for obesity.⁴ Increasing children's exposure to vegetables and fruit can promote their preferences for these healthy foods.⁶ School-based gardening is a strategy that has been successful at increasing children's preferences for vegetables and fruit and their consumption.^{7,8} However, there is little research on the effects of school gardening interventions in Canadian First Nations communities.

This study took place in a First Nations school in the Province of Alberta that participated in the EarthBox Kids garden education project. Alberta Agriculture and Rural Development initiated this project in schools throughout the Province in 2009. In Alberta the weather is too inclement to grow food outdoors during the school year, so indoor gardening is

¹Department of Agricultural, Food, and Nutritional Science, University of Alberta, Alberta, Canada

²Centre for Health Promotion Studies, University of Alberta, Alberta, Canada

³School of Public Health, University of Alberta, Alberta, Canada

⁴Alexander First Nation Education, Morinville, Alberta, Canada

Address for correspondence: Noreen Willows, PhD, Department of Agricultural, Food, and Nutritional Science, 4-378 Edmonton Clinic Health Academy, Mailbox #54, 11405 87 Ave, Edmonton, Alberta T6G 2P5, Canada; Phone: (780) 492-3989; Fax: (780) 492-5884; E-mail: noreen.willows@ualberta.ca

©2015 SOCIETY FOR NUTRITION EDUCATION AND BEHAVIOR

<http://dx.doi.org/10.1016/j.jneb.2014.09.002>

necessary. Schoolchildren participating in EarthBox Kids grew vegetables and berries in EarthBox⁹ container gardens and then prepared and ate what they grew. An EarthBox is a self-contained, water-efficient food-growing system designed to enhance the growth of vegetables in a small space. The EarthBox has a water reservoir and the system includes fertilizer and dolomite, which enhance the growth of plants.

Teachers and administrators tailored EarthBox Kids strategies to the unique circumstances of each participating school. In the First Nations school, EarthBox Kids was developed around Social Cognitive Theory (SCT), which states that human behavior is the product of reciprocal determinism, the dynamic interplay of behavioral, personal, and environmental factors.¹⁰ As such, EarthBox Kids in the school integrated behavioral (eg, skills at growing and preparing food, and consuming food), personal (eg, knowledge of healthy foods), and environmental (eg, classroom and library gardens) factors in shaping children's food preferences. The administrators of the First Nations school elected to engage with university researchers to document outcomes of EarthBox Kids. The primary objective was to evaluate changes in children's self-reported preferences for vegetables and fruit in response to the school gardening intervention. The secondary objective was to evaluate the effect of the intervention on children's self-reported home consumption of vegetables and fruit.

METHODS

Community Characteristics

The study took place in Alexander, a rural First Nations reserve with a population of about 1,000 persons living in 236 households. Kipohtakaw Education Centre, grades kindergarten to 12, is the community school. A small convenience store with a limited selection of perishable food is the only place to purchase food in the community. The community is approximately 20 km (12 miles) from the nearest town with grocery stores. In 2006 the median (after-tax) family income in Alexander was almost 31,000 Canadian

dollars lower than the provincial median (after-tax) income for families.¹¹

EarthBox Kids

EarthBox Kids in Alexander incorporated community-based participatory research founded on inclusivity and partnership that reflected the social and cultural norms of the community. The initiative was based on collaboration between University of Alberta researchers and school staff; the school principal and teachers were consulted throughout the process to make this project simple for teachers to implement and compatible with the school environment. All children in grades 1–6 attending Kipohtakaw Education Centre participated in EarthBox Kids, which included a 7-month classroom gardening activity combined with a 4-month weekly snack program offering a vegetable or fruit to each child. EarthBox Kids was initiated in the school in November, 2010. A total of 25 EarthBoxes were assembled by children in a central area of the school under the supervision of school staff, a community Elder, and an agriculture education specialist. Assembled EarthBoxes were then planted by children with the seeds of tomatoes, green beans, beets, lettuce, carrots, green peppers, zucchini, chives, and dill. To celebrate the planting of the EarthBoxes, a ceremony was held in the school auditorium, at which time the Elder blessed the planted container gardens. Children wore handmade paper hats decorated with drawings of vegetables and fruit. A newspaper reporter from the nearby town took pictures at the ceremony and interviewed school staff and researchers.¹²

After the ceremony, 2 planted EarthBoxes were placed in each grade 1–6 classroom and 3 were placed in the library. All EarthBoxes were positioned under grow lights for indoor cultivation. Children were encouraged to take care of the plants. The project coordinator from the University of Alberta visited the classrooms and library at least 2 times each month to reinforce correct maintenance of the EarthBoxes.

Teachers individually decided how EarthBoxes were implemented into the curriculum as an educational

tool. Teachers in grades 1–4 and 6 incorporated what children were growing into discussions of healthy food choices and Canada's Food Guide.¹³ The librarian used the EarthBoxes to engage children to read garden-themed books. Several teachers used the harvested vegetables in classroom taste-testing activities. The yield of lettuce and carrots in some of the classrooms was large enough to serve salads to the entire class. Extra produce and herbs were directed to the school lunch program. In all classrooms, insufficient watering over the December school break meant that tomatoes did not grow well and resulted in an inadequate yield of vegetables and herbs for regular use in the school lunch program.

A healthy snack program ran in the school from February to May, 2011. The school chef purchased, prepared, and distributed 7 vegetables (carrots, celery, cucumbers, cauliflower, peas, tomatoes, and peppers) and 7 fruits (grapes, bananas, oranges, cantaloupe, strawberries, watermelon, and apricots) to children. One raw food was offered weekly to all children.

Parents and community members were made aware of EarthBox Kids in several ways. The newspaper story about the EarthBox plantings provided community members with media information about the intervention. Information sheets as well as produce and herbs not used in the school lunch program were sent home with children. Planted EarthBoxes were on display at the school for parents to view at parent-teacher meetings. Knowledge was also disseminated informally to the community by virtue of the fact that many school staff were from Alexander.

Instruments and Outcome Measures

Children's vegetable and fruit preferences and their self-reported home consumption of vegetables and fruit were measured using an adaptation of a vegetable preference survey for children.¹⁴ The survey was modified to include foods found in grocery stores in the nearest town to the community and to have 3 negative and 3 positive response options about vegetable and fruit preferences.

Download English Version:

<https://daneshyari.com/en/article/361465>

Download Persian Version:

<https://daneshyari.com/article/361465>

[Daneshyari.com](https://daneshyari.com)