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Building Community with a Farmers Market, Commercial Kitchen and Community Garden: The Sprouts and Roots Program (SRP) at Lincoln University

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Abstract

The overall objective of the Lincoln University Cooperative Extension (LUCE) Sprouts and Roots Program (SRP) is to improve the well-being of minorities and other underserved communities through gardening and to promote intergenerational activities in Jefferson City and elsewhere in Missouri. To meet this objective, training is offered on nutrition, wellness, and gardening. The effects of gardening and healthy habits on the physical and psychological health of seniors and youth are being evaluated in an ongoing research study. Recruitment was done in schools, senior centers, Boys and Girls clubs, churches, and other locations with the assistance of the LUCE Paula Carter Center on Minority Health and Aging. Flyers, emails, calls, and personal visits were used to contact potential participants.

Children and seniors attended indoor and outdoor classes in spring and fall, and pretests and posttests were provided to determine their change in knowledge of particular topics. Participants practiced their new knowledge to grow their own food at the community garden located on campus. Sixteen adult seniors and 16 children participated in 2012. The farmers market, also located on campus and adjacent to the garden, is offering the opportunity to SRP participants and area farmers to sell produce, baked goods, and other value-added products. An average of 14 vendors, and a total of 43, attended the market in 2012 where fresh or value-added products were sold on Thursdays and Saturdays during the growing season. Some vendors continued selling their products during the winter months. More than 4,000 people of different ethnicities, ages, and genders attended the market on Saturdays in 2012, compared to 1,305 in 2011. The SRP is providing communities the opportunity to develop their own value-added products by facilitating their access to a commercial kitchen recently opened to the public, located next to the market and community garden.

Keywords: urban agriculture, gardening, immigrant health

Introduction

Access to affordable, fresh, and nutritious foods in adequate quantities is important for all populations, especially the young and elderly. Most elderly are on fixed incomes, and their income level is not always enough to support their needs at retirement. Inflation, increased energy costs, increased food costs, and rapidly rising medical costs can reduce available incomes. Yen (2004) reported that 40% of elderly who rely only on their own resources do not receive adequate food and nutrients. Children are the second critical target group; they need exercise, green space, and a source of nutritious food. This seems clear due to the exploding prevalence of obesity in children in the United States (DeMattia & Denny, 2008). Because most people have little or no background or training in agriculture, these two groups can benefit from learning how to grow their own food. At present, less than 2% of the U.S. population is involved in production agriculture.

Program Description

The Sprouts and Roots Program (SRP) was created in 2011 to introduce youth and seniors, 50 or older, to gardening, nutrition, and wellness education to test the effects on their health and well-being in an urban area in Jefferson City. LUCE's mission is to provide educational tools for underserved populations to improve their way of life. A community garden, native plant gardens, farmers market, and kitchen at Lincoln University (LU), all created with funding from a National Institute of Food and Agriculture (NIFA) Capacity Building grant, have provided a sense of community between the university and neighboring communities, and provide a place for participants to grow vegetables, to have access to local, fresh food, and to socialize with people of different ethnicities and ages.

This study has the following objectives: a) determine whether participation in gardening, along with dietary education, improves food choices, decreases obesity, and improves general health, and b) determine whether participating in gardening

and a farmers market results in an improved sense of well-being. We are presenting results obtained in 2012.

Methodology

Indoor and outdoor training is offered at the community garden, farmers market, and kitchen at Lincoln University (LU), and different measures are being taken to gauge the impact of these activities. The LU-Community Garden has been in operation since 2010. It is located at the edge of campus, allowing Sprouts and Roots participants, students, and other members of adjacent communities to grow their own food. Raised beds are available free for Sprouts and Roots participants and for a minimal fee for other members of the community. We are measuring attendance and retention and the amount of produce grown.

The LU-Farmers Market was developed adjacent to the garden. The market provides locally grown healthy foods for communities surrounding Lincoln University and offers opportunities to local farmers, producers, and Sprouts and Roots participants to sell their produce or value-added products. An ongoing survey will determine customer and vendors' ethnicity, age, gender, number, and satisfaction with the market every year.

The LU-Commercial Kitchen recently opened to the public. It is located at the LU campus, across the street from the community garden. Classes and training about food safety and nutrition are offered at this facility by Sprouts and Roots personnel and other faculty at Lincoln University. Usage frequency and types of usage by producers and LU faculty and staff are being evaluated.

In 2012, a total of 12 training sessions with topics related to nutrition, gardening, and wellness were offered once a week from March 22 to May 31 for senior adults. Youth were offered 18 classes, which were held twice a week during the summer session. The target groups were underserved populations including minorities, women, and those of low income.

The efficacy of programming was measured

using three main evaluative techniques, including the overall effect of each program on the self-reported health and well-being of participants, the participants' knowledge about each of the topics presented in the sessions, and how satisfied participants were with programming.

Health and well-being were measured in spring and summer programming during the first session using presurveys and during the last session using postsurveys for both youth and senior adults. Survey results were compared to examine changes in well-being that corresponded with participation in programs. Surveys included demographic questions such as height, weight, gender, and age. Measures of physical health included health-related quality of life, sleep, and exercise habits. Physical health was assessed using questions adapted from the Center for Disease Control (2010) Behavior Risk Factor Surveillance System. Mental health was assessed by examining life satisfaction and depression. Life satisfaction was measured using the Subjective Happiness Scale (Lyubomirsky, n.d.). Depression was measured using questions from the Center for Epidemiological Studies Depression Scale -CES-D- (Radloff, 1977).

Food and nutrition knowledge was measured using scales from the Nutrition Knowledge Questionnaire with multiple-choice questions about nutrition (University College London, 2012). Food quantity knowledge was measured using questions about what nutrition experts recommend that people eat. Food ingredient knowledge was measured using questions which named foods and asked participants to identify whether the foods were high or low in added sugar, fat, salt, protein or saturated fat. Health problem knowledge was examined by asking if participants were aware of health problems caused by various nutritional choices.

Change of knowledge was measured at the beginning and at the end of each session (pretests and posttests). The same five multiple-choice questions were used in both tests. Satisfaction was measured after each session. Participants completed a seven-item Likert-type evaluation (Siegle, 2010) assessing the degree to which they were satisfied with the session (e.g., a) Strongly Agree, b) Agree, c) Uncer-

tain, d) Disagree, e) Strongly Disagree).

Results and Impacts

LU-Farmers Market

In 2012, during the second year of this program, there were 43 vendors in addition to LU groups throughout the season. On average, there were five vendors in 2011 and 14 vendors in 2012 at Saturday markets. Local items included vegetables, fruits, eggs, beef, lamb, pork, chicken, baked goods, flowers, crafts, and services. An average of 139 people came on Saturdays in 2012, and 60 came in 2011. Approximately 4,000 people of diverse ethnicity, age, and gender attended the market on Saturdays in 2012, compared to 1,305 in 2011.

LU-Community Garden

The community garden expanded from 25 raised beds in 2011 to 51 in 2012. Twenty-eight children and adults adopted raised beds in 2012. A native plant demonstration garden was established for native pollinators and other wildlife. More than 80 native plants, including some edible species, were established in demonstration gardens for educational purposes. About 500 lbs of produce, including tomatoes, greens, potatoes, melons, herbs, cucumbers, and peppers, was grown by Sprouts and Roots participants and staff.

Commercial Kitchen

The commercial kitchen was finished in mid-summer and was used for cooking classes for SRP participants and for other programs offered by Lincoln University Cooperative Extension and Research. The kitchen opened to the public in early 2013.

Sprouts and Roots Participants

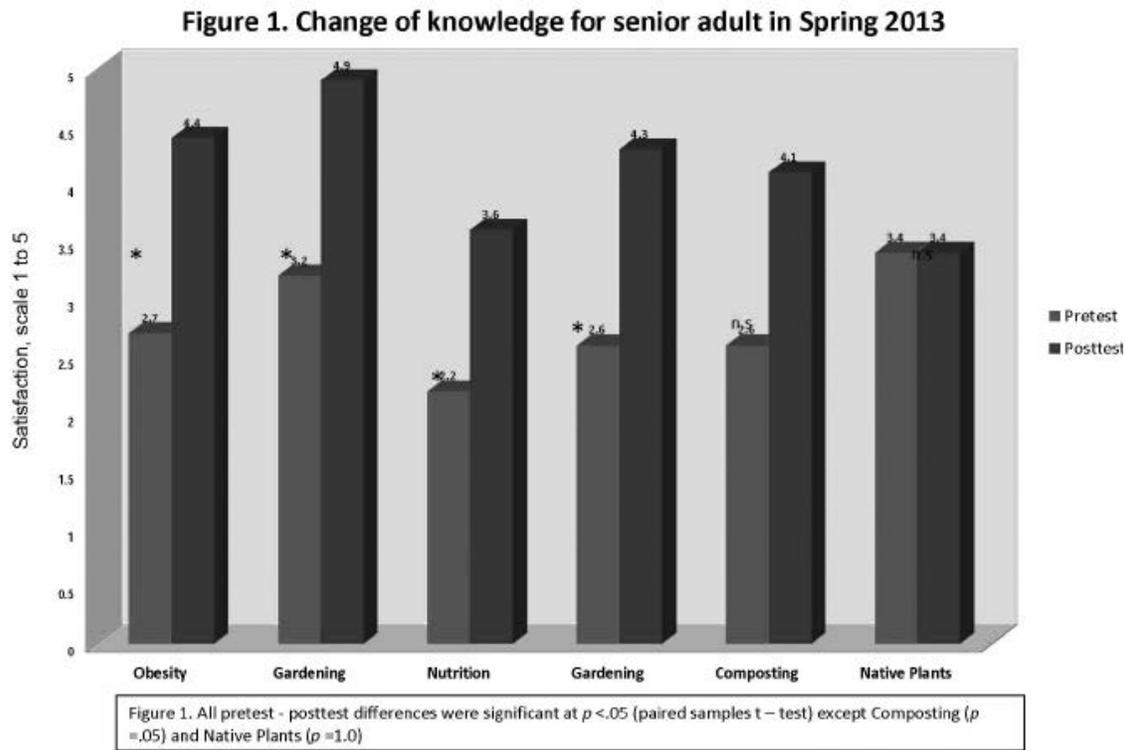
In 2012, 16 adults and 16 children participated in the spring and summer sessions, respectively, and

80% of the participants were minorities. Numbers of both children and adults varied from seven to 16 per session.

Results of Program Evaluation

Presurvey and postsurvey results of Body Mass Index (BMI), weight, subjective happiness, social support, intergenerational interactions, and food and nutrition knowledge were measured using paired samples t-tests. For senior adults participating in the 12-week program in the spring, the results were not significantly different. The children involved in the 9-week summer program showed minor changes

associated with participation in the program. Of all these measures, food quantity knowledge showed a significant increase from presurveys (M = 6.86, SD = 1.77) to postsurveys (M = 8.29, SD = 1.50; $t(6) = -2.50, p < .05$). This indicates that children made slight improvements in the accuracy of their judgments about which foods are high in fat, sugar, and other nutrients. To examine whether participants learned about topics presented in individual sessions, pretests and posttests were done. Adults' scores significantly increased (*) in four of six sessions (Figure 1). Children's scores significantly increased (*) in five of eight sessions (Table 1).



Mean scores from the satisfaction survey administered after each session showed that satisfaction scores for both seniors and children were high (five is the maximum), indicating that participants were pleased with the sessions. Mean scores for adults are presented in Table 2.

Impacts

- Many of our SRP participants and buyers at the farmers market expressed an increased awareness of healthy eating habits and eating local foods.
- Although no significantly different results were

Table 1. Children’s change of knowledge for individual sessions in summer 2012.

Instructor	Number of Participants	Pre Mean (SD)	Post Mean (SD)	Mean Evaluation of session on 5-pt satisfaction scale (SD)
*Gardening	15	3.93 (.96)	4.60 (.63)	4.44 (.51)
*Food safety	16	3.81 (1.64)	5.81 (1.80)	4.41 (.40)
*Native Plants and Pollinators	8	3.12 (.83)	4.75 (.46)	4.79 (.22)
Nutrition	8	4.38 (.92)	4.88 (.35)	4.55 (.44)
*Pasta nutrition	11	3.64 (.81)	4.55 (.52)	4.55 (.44)
Solar Oven	11	4.72 (.65)	4.90 (.30)	4.68 (.44)
Wetzel/Aquatic Insects	8	2.88 (.40)	3.13 (.23)	4.55 (.55)
*Chickens	7	1.57 (.30)	3.43 (.53)	4.80 (.36)

*Significant difference between pretest and posttest (paired samples t-test, $p < .05$)

Table 2. Satisfaction with spring programs about gardening and nutrition for senior adults.

Topic	Number of Participants	Mean Evaluation on 5-pt scale	SD
Fighting obesity through gardening	12	4.65	.42
Introduction to vegetable gardening	9	4.79	.42
Food safety	9	4.61	.46
Rules for the community garden	7	4.65	.43
Improving your garden soil with compost	8	No data	No data
Growing native plants for pollinators	16	4.63	.40

obtained, half of the seniors reported that they lost weight.

- Participants had either never done any gardening before or they had not done it in a long time.
- Many expressed that this program has provided opportunities to socialize with people their own age and that they like the program because it

offers them the opportunity to learn new things.

Future Implications/Plans

- To determine the medium-term effect of gardening, wellness, and nutrition on well-being and health, additional measurements are being

done in 2013 and 2014.

- Since spring 2013, the program was expanded to other regions where Lincoln University Cooperative Extension works, including Kansas City, Saint Louis, and the Bootheel region in Southeast Missouri.
- Native edible plants are being incorporated in nutrition programming.
- Youth summer camps that emphasize the integration of nature and agriculture in urban areas are being offered for children in 4th through 8th grade in 2013 and 2014.
- Entrepreneurial training will be offered to seniors and adults to promote participation in the farmers market and to increase per capita income.
- Additional garden space will be created to accommodate the increasing demand for gardening plots at Lincoln University for students and the community.

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