BerryCare: Blackberry Extension Lessons to Promote Phytonutrient Intake

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Introduction

Kentucky residents, on average, consume 1 fruit serving and 1.5 vegetable servings per day (CDC, 2013). Fruit and vegetable intake of five or more servings a day has been linked with a variety of positive health impacts, from a decreased risk for cardiovascular disease to a reduced risk of developing type 2 diabetes (DGA, 2015). With Kentucky consistently ranked as one of the least healthy states in the nation (State Health Assessment, 2013), innovative projects to encourage Kentuckians to adopt healthy lifestyle behaviors are necessary to the success of our communities.

Preliminary data suggest that older adults have serious concerns about their life-long exposure to daily pollution (Dunn et al., 2017). Phytonutrients – natural compounds found in fruits, vegetables, legumes, nuts, seeds, and whole grains – may play a protective role against inflammation and oxidative damage caused by pollution (PBH, 2012). Previous research suggests that older adults have limited knowledge of phytonutrients. Over half (53.8%) of surveyed participants reported having no previous exposure to the word “phytonutrient” (Dunn et al., 2017). More innovative approaches are needed to introduce older adults to the ways in which diet might protect against the negative health effects of pollution.

BerryCare is a collaboration with Cooperative Extension and seeks to combine a sustainable and (therefore affordable and accessible) source of berries with the increased physical activity of gardening. It provides interested communities with blackberry bushes and an extension lesson series that educates community members on blackberry bush maintenance, the negative impacts of environmental pollutants, the potential protective role of phytonutrients, and healthy blackberry recipes.

Methods

In January 2017 a research team collected anthropometric data (height, weight, waist circumference, physical performance battery) and returned in May 2017 to collect biomedical data (finger stick hemoglobin a1c, finger stick lipid panel, and skin carotenoids). One lesson per month was taught, beginning in February.

Lesson titles:
(1) Building a Blackberry Community
(2) Blackberry Varieties and Planting
(3) Fighting Pollution with Fruits, Vegetables, and Phytonutrients
(4) Blackberry Bramble Maintenance
(5) Protection from Pollution with Phytonutrients
(6) When Blackberries are in Season: Healthy Recipes

In May 2017, 45 blackberry bushes were planted on the grounds of the senior center. As of July 2017, the plants are growing and set to bear edible fruit for the first time in summer of 2018. Follow-up anthropometric and biomedical indicators will be collected in 2018.

All data was analyzed using SAS statistical software.

Results

Approximately 25 seniors participated in all six BerryCare lessons and the pre-study measurements.

Of all participants, 74.1% (n=20) were female; 25.9% (n=7) were male. The majority of participants were white (65%) or African American (35%), and 100% reportedly identified as non-Hispanic. Mean age was 73.47 ± 8.36 years. Mean physical function score was 7.8 out of a possible 12 points.

On average, participants self-reported 2.96 diagnosed disease states. Table 1 shows the distribution of self-reported diagnosed diseases experienced by participants. The top three diagnosed diseases among this population included hypertension (55%; n=15), arthritis (40.7%; n=11), and diabetes (25.9%; n=7).

Knowledge of phytonutrients was low, reflecting previous research conducted among Kentucky seniors (Dunn et al., 2017). When asked, on a scale from 0-10, with 0 being disagree completely and 10 being agree completely, if eating a healthy diet makes a difference to health, the average response was a 3.29. 75% of participants correctly identified 5+ servings. Reported fruit and vegetable intake (NIH EATS quick food scan) was also low, and corroborated by skin carotenoid scans. Blackberry consumption was also low among participants, with 61.5% reportedly never eating blackberries.

Conclusion

Study results showed that rural Kentucky seniors who participated in the BerryCare curriculum are predominantly white females with an average of approximately 3 diagnosed diseases. Knowledge concerning fruit and vegetable intake, the possible protective role of phytonutrients, and the harmful effects of pollutants was low. Since this was the first year of this project and blackberries do not bear edible fruit until their second season, additional data will be collected in 2018 to ascertain if exposure to a sustainable, affordable, accessible source of berries significantly increases fruit and vegetable consumption in this population, specifically blackberry consumption. Additionally, key concepts concerning phytonutrients and the role of diet in mitigating the negative effects of pollution will be re-introduced prior to the harvest season.

Given the low rates of fruit and vegetable consumption across the state, more work needs to be done to find innovative ways to increase healthy living knowledge and behaviors among seniors living in Kentucky.

Demographics

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<table>
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Prevalence of Disease States in a Rural Kentucky Senior Center

References


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