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Siew Guan Lee
University of Idaho, siewguanl@uidaho.edu

Gretchen Manker
University of Idaho, gretchenm@uidaho.edu

Nav Ghimire
University of Idaho, nghimire@uidaho.edu

Laura Foist
University of Idaho, laurafoist@uidaho.edu

Julie Buck
University of Idaho, jhbuck@uidaho.edu

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School Pantry Cook-Off: An Approach to Educate Youth on Food Insecurity

Siew Guan Lee[1], Gretchen Manker[1], Nav Ghimire[1], Laura Foist[1], and Julie Buck[1]

AUTHORS: [1]University of Idaho.

Abstract. The "School Pantry: Mystery Food Box Cook-Off" is a program designed to increase awareness of food insecurity among youth and teach strategies to prepare healthy foods on a budget. A pre-and-post survey showed a statistically significant difference in participants' overall knowledge, skills, and confidence level after the program compared to before the program. Findings revealed a hands-on nutrition education strategy via cook-off could educate youth on food insecurity and increase their knowledge and confidence to make healthy and affordable meals at home. Other Extension educators seeking to address food insecurity and food preparation skills among youth can replicate this program.

INTRODUCTION

An estimated 37.2 million Americans lived in food-insecure households throughout 2018, and 11.2 million of those were children (Coleman-Jensen et al., 2019). Food insecurity refers to an inability to acquire adequate and nutritious food to sustain a healthy and active life due to a lack of money or other resources (Coleman-Jensen et al., 2019). In Idaho, one in six children is struggling with hunger or food insecurity (Feeding America, 2020). Children living with food insecurity experienced a reduction in the quantity, variety, and frequency of food intake, which may result in an increased risk of negative health, development, and socialization outcomes (Coleman-Jensen et al., 2019; Nord, 2009; U.S. Department of Health and Human Services, 2020). Hence, food insecurity among children is critical because it affects not only children's current health status but also their future well-being.

Youth involvement in food preparation is associated with healthful food choices and better diet quality (Chu et al., 2014; Woodruff & Kirby, 2013), which may have long term implications that last into adulthood (Utter et al., 2018). Hands-on cooking and nutrition outreach programs that equip youth with knowledge and skills for healthy eating behaviors are a successful approach to restoring our nation's health (Condrasky & Hegler, 2010). In recent years, Extension has developed and implemented many programs to teach youth about cooking and nutrition (Condrasky et al., 2015; Haynes-Maslow et al., 2020). Yet, the connection between understanding food insecurity and food preparation isn't often made when teaching youth. Additionally, nutrition outreach programs aimed at food-insecure populations often target adult pantry clients (Hardison-Moody et at., 2015; Rublee et al., 2019), even though food insecurity can occur in parents and children within the same households (Coleman-Jensen et al., 2019). While most parents attempt to protect their children from food insecurity, teenage children in such households may experience more detrimental effects of food insecurity than their younger siblings (Coleman-Jensen et al., 2013; Nord, 2009). Therefore, providing teenagers with educational programs that connect food insecurity with food preparation may be beneficial.

PROGRAM OVERVIEW

The "School Pantry: Mystery Food Box Cook-Off" is a youth program designed to increase awareness of food insecurity among youth and teach them strategies to prepare healthy foods on a budget. The program was developed by University of Idaho Extension educators and personnel specializing in nutrition education and culinary skills by adapting the MyPlate: Healthy Eating on a Budget resources provided by the U. S. Department

of Agriculture (2021). To implement the program, we collaborated with the family and consumer sciences (FCS) teachers at local middle and high schools. The program consisted of three components: three nutrition education sessions, a tour to the school food pantry, and a mystery food box cook-off with time allotted for each session listed in Table 1.

To assess program outcomes, organizers conducted an end-of-session evaluation with approval from the University of Idaho Institutional Review Board. Parents signed informed consent forms, and students signed written assent forms.

PROGRAM PARTICIPANTS

In 2019, the program was implemented in three counties in Southern and Eastern Idaho. Participants were students in grades six through twelve. Of the four participating schools, three of them had 43–49% student participation in the free or reduced National School Lunch Program, and one school participated in the Community Eligibility Provision (Idaho State Department of Education, 2019). A total of 97 students participated in the program.

INSTRUMENTATION, DATA COLLECTION, AND ANALYSIS

A retrospective pre-and-post survey was used to assess program outcomes. The survey included three statements related to knowledge and skills and seven statements related to level of confidence, which were measured using a 5-point Likert-type scale (1= *Very low* to 5 = *Very high*). Demographic questions were also included in the survey. The data were analyzed using Statistical Package for the Social Sciences (SPSS version 25.0). Means, standard deviations, and paired sample *t* tests were computed from the data to identify changes in participants' knowledge and skills, as well confidence levels, before and after participating in the program.

Table 1. School Pantry: Mystery Food Box Cook-Off Program Components

Program components	Description
Nutrition education sessions (50 minutes each)	Students participate in three in-class sessions: Session 1: Food insecurity • Introduction to program • Definition of food insecurity (low and very low food security) • Prevalence of food insecurity in Idaho • Impacts of food insecurity on individuals and families • Local resources for individuals and families in need Session 2: Preparing healthy foods on a budget • Healthy eating patterns using MyPlate • Meal planning for healthy and balanced meals • Comparing food costs to save dollars • Reading Nutrition Facts labels and ingredient lists Session 3: Food preparation skills • Cooking basics using sensory characteristics (appearance, flavor, texture, temperature) • How to select and read recipes • Safe food handling and preparation (clean, separate, cook, and chill, based on the core four Fight BAC! practices by the Partnership for Food Safety Education, 2021)
School pantry tour (15 minutes)	Students visit food pantry to learn about available resources for people in need
Mystery Food Box Cook-off (50 minutes)	Students are randomly assigned to a team for the cook-off Each team receives a mystery box containing typical pantry foods and at least one food item from each MyPlate food group (such as canned fish, chicken, or beans; pasta or brown rice; canned fruits, and canned vegetables) Students work in teams to plan, prepare, and present a dish to judges using foods from the mystery box

RESULTS

Of the 97 participants, 72 completed the survey for a 74% response rate. Results showed that 66% of participants were female. Students were White (75.3%), American Indian (9.6%), African American (2.7%), and Asian (2.7%); approximately 20% were Hispanic. Table 2 shows that participants had higher mean scores after program participation than before for all statements related to knowledge and skills as well as their confidence level.

The paired sample *t* test (Table 3) shows a statistically significant difference in participants' overall knowledge and skills before and after program participation [t (df = 68; **α** = .005) = 7.91, $p = .001$]. There was also a statistically significant difference in participants' overall level of confidence in applying the practices [t (df = 69; $\alpha = .005$) = 9.59, $p = .001$]. This indicates that the program could significantly increase the participants' knowledge and confidence about food insecurity, Nutrition Facts label reading, and at-home meal preparation.

Table 2. Mean Ratings for Knowledge, Skills, and Level of Confidence in the Program

	No. of respondents	Pretest *M (SD)*	Posttest *M (SD)*
Knowledge and Skills			
I am aware of food insecurity and understand its impact	70	2.80 (1.15)	4.00 (1.01)
I can identify healthy food using MyPlate	70	3.44 (1.14)	4.23 (0.78)
I understand the cost savings of preparing meals at home versus eating out	68	3.46 (1.17)	4.31 (0.76)
Summated mean score		3.23 (1.15)	4.18 (0.85)
Level of Confidence			
I am confident using Nutrition Facts label to select healthy foods	72	2.75 (1.18)	4.10 (0.88)
I am confident using Nutrition Facts label to make smarter food choices for dollar	72	2.79 (0.98)	4.00 (0.93)
I am confident practicing safe food handling	72	3.46 (1.19)	4.46 (0.69)
I am confident using sensory characteristics in cooking	72	3.19 (1.16)	4.26 (0.73)
I am confident gathering and reading recipes	72	3.63 (1.07)	4.51 (0.65)
I am confident organizing cooking station	71	3.38 (1.15)	4.46 (0.69)
I am confident making healthy and balanced meals at home	72	3.13 (1.10)	4.35 (0.77)
Summated mean score		3.19 (1.11)	4.31(0.76)

Note. Very low = 1, *Fair* = 2, *Modest* = 3, *High* = 4, *Very high* = 5.

Table 3. Paired Sampled *T* Test for Mean Ratings of Knowledge, Skills, and Level of Confidence

	Paired difference			
	M	*df*	*t*	*Sig.*
Knowledge and Skills	.95	68	7.91	.001
Level of Confidence	1.12	69	9.59	.001

LIMITATIONS

This educational program was not conducted using an experimental design with control and intervention groups; therefore, the results cannot be generalized. It was not a part of the program objectives to determine if students changed behaviors following the program. Yet, findings from the reported changes in self-confidence, knowledge, and skills are promising and warrant further evaluation in future programs.

CONCLUSIONS

The School Pantry Mystery Food Box Cook-Off is an innovative approach to increasing awareness of food insecurity among youth and teaching them strategies to prepare healthy foods on a budget. Data reveal that

students in the program gained awareness about food insecurity, increased knowledge about how to identify healthy and affordable foods, and gained confidence in making healthy and affordable meals at home. We also observed that student participants looked more favorably on visiting the school food pantry and discussing the availability of the food with peers. These changed views could reduce the social stigma of using the food pantry and seeking food assistance. Future programs could use these findings to design an experimental study to quantify this behavior change. The program can be replicated to increase the reach of Extension's best practices for encouraging a healthier and more food-secure future.

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