Volume 43, Issue 1, Spring 2019

Journal of Child Nutrition & Management

Published by School Nutrition Association

CONFIDENCE OF HOURLY SCHOOL NUTRITION EMPLOYEES WITH LOCAL AND FARM-FRESH PRODUCE

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ABSTRACT

Purpose/Objectives: Farm to school (FTS) programs have many benefits, including potential for increased consumption of fruits and vegetables by students. However, there are challenges with hourly school nutrition employees' abilities to successfully process local produce and promote it to students. The purpose of this study was to identify differences in the confidence of hourly school nutrition employees to process and promote local produce, and to determine whether those differences were related to the training received and FTS activity involvement.

Methods: Paper questionnaires were mailed to 39 school nutrition directors and 928 hourly school nutrition employees in 28 FTS-participating school districts. Participants answered questions regarding employee training, involvement with FTS activities, and perceived confidence related to processing and promoting local produce.

Results: A total of 22 directors and 357 employees responded to the survey. Directors reported that training topics for employees included sanitation, nutrition information, equipment use, and processing and promoting local produce. Employees who reported having received training in processing and promoting local produce, and whose schools used FTS activities, indicated higher confidence in preparing local produce and promoting it to students. Promotional skills that had the strongest associations with employee training and FTS activity responses were knowledge about "where local produce comes from and how to promote it," and "the nutritional value of local produce and how to promote it."

Application to Child Nutrition Professionals: School nutrition directors can help their hourly employees successfully participate in FTS programs by training them about processing techniques, promotional strategies for local produce items, and facilitating involvement with FTS activities. Employees who are informed about the origins and nutritional content of local produce and who have access to promotional materials such as banners and signs may be better able to encourage students to try local fruits and vegetables with potential for increased consumption.

Key words: school nutrition, farm to school, school nutrition employee, training, local produce

INTRODUCTION

According to estimates by the Centers for Disease Control and Prevention (CDC), approximately 17% of children and adolescents in the United States (US) are obese (CDC, 2018). A variety of factors can cause childhood obesity including behavior, genetics, and community environment (CDC, 2016). Most interventions for childhood obesity focus on changing children's lifestyle or environment.

One effort to combat childhood obesity is improving the environment of school nutrition programs. Since the establishment of the National School Lunch Program (NSLP) in 1946, several amendments have passed to improve nutritional content of lunches (United States Department of Agriculture [USDA], 2018). The Child Nutrition and WIC Reauthorization Act of 2004 required all schools participating in the NSLP to create and implement a school wellness policy that included goals for nutrition education and guidelines for all foods sold in the school (USDA Food and Nutrition Service [FNS], 2016). In 2010, the Healthy, Hunger-Free Kids Act strengthened nutritional guidelines, established professional standards and minimum annual training hours for school nutrition staff, and allocated $40 million to Farm to School (FTS) efforts (USDA FNS, 2015b).

Researchers have evaluated the effectiveness of these changes to school lunch programs. One study, (Briefel, Crepinsek, Cabili, Wilson, & Gleason, 2009), concluded that increasing amounts of fruits and vegetables served in school lunch was associated with reduced consumption of unhealthy foods at school. Other similar interventions were also found to be successful in improving children's diet quality (Thompson, Ferry, Cullen, & Liu, 2016), and reducing body weight (Hoelscher, Kirk, Ritchie, & Cunningham-Sabo, 2013). The Academy of Nutrition and Dietetics noted that increasing fruit and vegetable consumption is an effective strategy in reducing child and adolescent body weight (Hoelscher, et al., 2013).

FTS programs began in the early 1990s with the goal of providing high-quality local produce for school lunch programs and financially supporting local farmers (Feenstra & Ohmart, 2012). Today, schools in all 50 states participate in FTS programs and 42% of all schools surveyed by the US Department of Agriculture in 2015 indicated some level of participation with FTS activities (National Farm to School Network, 2018; USDA, 2015). FTS programs consist of a variety of approaches and activities. One approach is to increase children's fruit and vegetable intake at school by providing local produce as part of school meals.

Research studies have identified benefits of FTS programs including improvements in perceptions of school lunch and increased school meal participation rates (Joshi, Azuma, & Feenstra, 2008; Joshi & Beery, 2007). Jones, Childers, Weaver, & Ball (2015) found through photographic plate waste analysis that students in schools with FTS programs ate more vegetables and were more likely to at least sample a vegetable rather than leaving the entire serving on their plate. Bontrager Yoder et al. (2014) also determined that FTS programs increased student's access and exposure to fruits and vegetables with greater amounts of fruits and vegetables on student trays. After surveying school nutrition directors, Izumi, Rostant, Moss, and Hamm (2006) found that the directors perceived local produce as fresher and better quality than produce received from a supplier. Stokes, Arendt, & Strohbehn (2015) saw similar perceptions toward local produce among hourly school nutrition employees. Hourly employees also noted their perception that students prefer local produce to non-local produce, and were likely to eat more of it (Izumi, Alaimo, & Hamm, 2010).

Although there are many benefits to FTS programs that involve the school cafeteria, some barriers do exist. School nutrition directors indicated that the higher cost of local produce, additional labor required to process it, and decreased reliability of ordering from a farmer versus a supplier, were all major challenges (Berkenkamp, 2006; Izumi, et al. 2006; Smith, Wleklinski, Roth, & Tragoudas, 2013). Gregoire and Strohbehn (2002) identified seasonality, availability of supply, and safety assurances as perceived barriers to purchasing local produce for schools. Start-up costs of implementing FTS in a school nutrition program, which have been estimated to be between $3,400 to $7,000 per school, can also be a barrier (Joshi & Beery, 2007).

Hourly school nutrition employees, who are less involved with food purchasing and more involved with food preparation, have also identified challenges to using local produce, such as the appearance (Stokes et al., 2015; Stokes & Arendt, 2017). Local produce often arrives to the school unprocessed (in whole and unwashed forms), thus requiring more labor for hourly workers. School nutrition employees also indicated they were not familiar with some types of produce received from local farms or were unfamiliar with methods of processing the produce (Stokes & Arendt, 2017).

DeBlieck, Strohbehn, Clapp, & Levandowski (2010) showed that college and university dining hourly employees' perceptions toward and support of local produce purchasing could be improved through education, training, and involvement. This support is crucial to FTS program success, as previous research conducted among nutrition staff on various operational factors has suggested that employees' attitudes and perceptions may have an even *greater* impact on practices than knowledge or training. Henroid and Sneed (2004) found that school nutrition employees had high knowledge scores regarding food safety, but that this knowledge was not reflected in practice. In a university dining setting, employees' attitudes toward food allergies influenced their food allergy practices (Choi & Rajagopal, 2013). And in a study by Collins, Huggins, Porter, and Palermo (2017), hospital foodservice staff's abilities to perform certain patient services was influenced more by their existing nutrition beliefs than by their skills or psychological processes.

In a review of literature, Stephens and Shanks (2015) identified promoting a positive attitude toward change among employees, having prolonged training periods with several follow-ups, making sure desired changes were realistic, and conducting trainings during normal work hours as keys to successful training programs for school nutrition employees. At the time of this study, no published research on training and motivation of employees to gain the skills and confidence necessary for successful processing and promoting of local produce as part of a FTS program was found in the literature. Thus, the purposes of this study were to: (1) identify differences in school nutrition employees' confidence in processing and promoting local produce, (2) determine whether differences in processing and promoting confidence levels were related to training received and participation with FTS activities, and (3) assess characteristics of selected FTS programs across the United States.

METHODOLOGY

Questionnaire Development

Two paper-based questionnaires (one for hourly school nutrition employees and one for school nutrition program directors) were developed using information from the FTS Census and the FTS Census Administrator survey (USDA, 2015). Questions regarding districts' FTS program characteristics, state and local FTS policies, frequency and types of processing and promoting of

local produce, school nutrition staff training, and basic demographic information were included. Question types included multiple choice, select all that apply, and rating scales.

The questionnaires were reviewed by two experts in the field of school nutrition and FTS programs. Pilot testing with 22 school nutrition employees and seven school nutrition directors occurred in four school districts among three different states. Revisions of questionnaires according to expert and pilot test comments included minor wording adjustments to improve clarity, and an added question regarding how employees identify local produce. The questionnaire was also professionally translated into Spanish, at the request of school districts with Spanish-speaking employees. The translation was reviewed by a native Spanish speaker who is an expert in school nutrition to ensure content validity. This review led to some revisions in wording to make the Spanish version more readable to Spanish-speaking employees in the target population. The final version of the questionnaire for directors consisted of 30 questions and the employee questionnaire had 24.

Sample

School nutrition directors in 11 states from the National Farm to School Network's (NFTSN) southeast (Kentucky, Tennessee, North Carolina, South Carolina, and Georgia) and southwest (Wyoming, Utah, Colorado, Arizona, and New Mexico) regions were invited to participate in this study. These regions were selected due to their similar growing seasons. At least 198 nutrition directors at schools with listed FTS programs in all 11 states were contacted via email and asked if they would complete a director questionnaire, as well as distribute the employee questionnaire to their employees. Directors who agreed (n=39) were sent a packet of questionnaires that they then distributed to staff. A total of 928 hourly employee questionnaires was mailed. Upon completion, each employee placed the completed questionnaire in a sealed envelope, with all collected in a larger envelope. Directors then retrieved the collection envelope and returned it via postage paid envelopes provided by the researchers. Approval from the Brigham Young University Institutional Review Board was received prior to recruitment and data analysis.

Data Analysis

Returned questionnaires were coded for data entry and manually entered into Excel spreadsheets. Statistical Analysis Software (SAS) version 9.4 was then used to analyze the data. Frequencies and means were calculated for both the director and employee survey data. A mixed model analysis was used to identify relationships between employees' indicated experience with workplace training, FTS activities, and perceived confidence levels in skills related to processing and promoting local produce. A mixed model analysis was also used to match directors to the employees in their own districts, and identify relationships between directors' indicated policies for employee training and FTS activity participation, and their employees' confidence levels in the aforementioned skills. A mixed model analysis is similar to analysis of variance (ANOVA), but instead of measuring variance among independent data points, it measures the data in clusters. This method was chosen to allow the data to be clustered by district during analysis, because data within one district were expected to be more similar than data from another district. In this study's case, mixed model analysis protected against false conclusions that might have been drawn from incorrectly treating questionnaire responses as independent of each other. For all analyses, the significance level was set at $p<0.001$ in order to account for bias from multiple comparisons. Data specific to employees' confidence in processing and promoting local produce were reported in a separate manuscript that has been submitted for publication elsewhere.

RESULTS AND DISCUSSION

Director Demographics

Twenty-two directors from 22 districts in nine states returned questionnaires. There were no responses from South Carolina or New Mexico. Of the 22 respondents, all were female (n=22), the majority was aged 50-64 years (n=14) and Caucasian (n=21), with most having completed some college (n=8) or earned a bachelor's degree (n=6) (Table 1).

Employee Demographics

There were 357 useable questionnaires representing 28 districts in 10 of the 11 states returned by employees for a response rate of 38.6%. There were no employee responses from South Carolina. The majority of employee participants was female (n=348, 98%), between the ages of 35 and 64 (n=310, 88.3%), Caucasian (n=271, 75.9%), and had earned a high school diploma or completed some college (n=286, 81.3%).

FTS Program Characteristics

Directors were asked to identify which of the listed FTS activities on the survey had been implemented in their school districts. The most commonly selected activities were "serving local produce in the cafeteria" (n=21), "foodservice staff encouraging students to try local produce" (n=13), and a "school garden program" (n=12). Half of the respondents indicated that visits to local farms were being implemented within their district (n=11) and they "clearly labeled" local produce on the lunch line (n=11). This is consistent with the USDA's FTS Census data (USDA, 2015) which reported serving local food, promoting local food, and taking field trips to farms or orchards as the most common activities in FTS programs. Less than a third of respondents indicated that they provided FTS "cooking demonstrations for school nutrition staff" (n=7) or participated in "training school nutrition staff on farm to school activities" (n=5). This is also consistent with USDA FTS Census data, which stated that 15.9% of school districts that participated in FTS activities reported having provided "training to school food service staff on farm to school" (USDA, 2015) (Table 1).

The majority of the 22 directors reported that the FTS program in their district had been in existence for more than three years (n=13). Four of the districts had operated a FTS program for 2 to 3 years, two districts for 1 to 2 years, and one district reported the program was started in the last year. All responding districts used local produce in their school lunches (n=22), most used local produce in school breakfasts (n=15), and some used local produce in after-school snacks (n=7) or supper programs (n=3). (Table 1)

Table 1: ***Characteristics of School Nutrition Directors and Farm to School Programs (n=22)***

	n
Gender	
Female	22
Male	0
Age (years)	
26-34	3
35-49	4

Table 1: ***Characteristics of School Nutrition Directors and Farm to School Programs (n=22)***

50-64	14
65 or older	1
Highest Education Level	
High school diploma (or equivalent)	3
Some college	8
Associates degree	1
Bachelor's degree	6
Graduate degree	4
Race/Ethnicity	
Caucasian/White	21
Hispanic/Latino	1
Implemented farm to school activities in districts[a]	
Serving local produce in the cafeteria	21
Foodservice staff encouraging students to eat local produce	13
School garden program	12
Visits to local farms	11
Local produce placed on the lunch line and clearly labeled	11
Taste tests of local produce in classrooms	10
Cooking demonstrations for school nutrition staff	7
Training school nutrition staff on farm to school activities	5
Farmer visits to classrooms	5
Farm to school posters in classrooms and hallways	5
Afterschool programs that include farm to school activities	4
School assembly on local produce and where it comes from	3
Curriculum related to local produce taught in classroom	3
Other	2
No farm to school activities are currently being implemented	0
Length of time district has had a FTS program[b]	
1 year or less	1
1 to 2 years	2
2 to 3 years	4
More than 3 years	13
I don't know	1
Which meals in the district use local FTS produce[b]	
School lunch	22
School breakfast	15
After-school snack	7
Other	3

[a] Total responses may exceed 22 due to multiple responses

[b] n=21 due to missing data

Hourly School Nutrition Staff Training

School nutrition staff training was most often provided by the school nutrition director (n=16), followed by a school nutrition supervisor (n=8), or a contracted individual (n=6). (Table 2) When asked about content of the training offered to hourly nutrition staff, directors indicated the most commonly covered topics were "food safety and sanitation" (n=20), "basic nutrition information" (n=18), and "equipment use" (n=17). Eight of the directors indicated that their staff was trained in the promotion of local produce, and seven reported staff was trained in the processing of local produce. Directors' responses to these questions had no associations with their own district's employees' ratings on the Likert scale statements related to confidence levels with processing and promoting local produce. In other words, there was no observed relationship between actual training received (based on directors' reported training topics) and perceived employee confidence in these areas. (Table 2).

Training frequency varied widely between the districts. Over one third of the responding districts offered training to their hourly nutrition staff every month (n=7), while four offered training only twice per year, and five offered training only once per year (Table 2). This finding shows less frequency than reported by Arendt et al. (2014) in their study of school nutrition employees' preferences regarding training which found training frequencies of either less than 5 times per year, or between 5 and 11 times were preferred. In this study, the directors indicated frequency of training also had no association with their employees' confidence ratings.

Table 2: ***School Nutrition Directors' Responses Regarding Hourly School Nutrition Staff Training (n=22)***

	n
Training topics for hourly school nutrition staff[a]	
Food safety and sanitation	20
Basic nutrition information	18
Equipment use	17
Knife skills	12
Recipe development	9
Promotion of local produce	8
Processing of local produce	7
Processing and promotion of other local products	2
Other	1
No training	1
Frequency of training for hourly school nutrition staff[a]	
Every week	1
Every month	7
Every 3 months	1
Twice a year	4
Once a year	5
Never	1
Other	1
Those who provide training to hourly school nutrition staff[a,b]	
School nutrition director	16
School nutrition supervisor	8

Table 2: ***School Nutrition Directors' Responses Regarding Hourly School Nutrition Staff Training (n=22)***

Contracted individual	6
Health coordinator/school nurse	4
Other	4
Dietitian/dietetic intern	1
Community nutritionist	1
Willingness of school nutrition director to implement training program regarding preparation of local fruits and vegetables[c]	
Yes	14
Neutral	5
No	2

[a] n=20 due to missing data
[b] Total responses may exceed 20 due to multiple responses
[c] n=21 due to missing data

Directors' Perceptions of Hourly Staff's Abilities and Attitudes

Directors were asked to rate several statements regarding the hourly nutrition staff in their schools on a scale of 1= "*strongly disagree*" to 5="*strongly agree*." Statements with the highest mean ratings included "the hourly school nutrition staff in my district understand correct portion sizes of fruits and vegetables that should be offered to each student" (M = 4.38), "the hourly school nutrition staff in my district are willing to learn new skills" (M = 4.20) and "the hourly school nutrition staff in my district are capable of using all equipment in the kitchen" (M = 4.19). The directors were neutral (indicated by mean ratings between 3 and 4) for 6 statements, including "the hourly school nutrition staff in my district are committed to serving local produce" (M = 3.67) and "the hourly school nutrition staff in my district have sufficient time to process local produce" (M = 3.43). Overall, these results indicate that the school nutrition directors thought that their hourly employees were very capable when it came to general foodservice skills but that there was room to improve when it came to FTS-specific attitudes and skills. The lowest-rated statement was "the hourly school nutrition staff in my district are included in FTS policy development and implementation" (2.81). (Table 3) Similarly, hourly nutrition staff surveyed as part of this study (n = 196 or 57.1%) indicated that they were not aware of their own district's wellness policy. Bagdonis, Hinrichs, and Schafft (2008) indicated that having FTS stakeholders involved in wellness policy discussions was helpful in improving use of FTS in a specific district. Increased nutrition staff involvement in wellness policy development could be beneficial in moving FTS policies forward.

The fact that most directors agreed with the statement "the hourly school nutrition staff in my district are willing to learn new skills" is good news for the future of FTS programs. Learning to receive boxes of produce from local suppliers, process new kinds of fruits and vegetables, promote them to students, and be knowledgeable about the foods' origins and nutritional value all require work on the part of the hourly staff. In their research with hourly nutrition staff, Choi and Rajagopal (2013) and Collins et al. (2017) found attitudes and beliefs to be very influential in the employees' practices. If school nutrition employees have good attitudes about learning new skills, then training them on those skills will be more likely to result in actual improvements in local produce processing and promotion.

Table 3: ***School Nutrition Directors' Perceptions of Hourly School Nutrition Staffs' Attitudes, Knowledge, and Skills Related to Use of Local Produce***

The hourly school nutrition staff in my district…	Mean[a]	Standard Deviation
Understand correct portion sizes of fruits and vegetables that should be offered to each student	4.38	0.74
Are willing to learn new skills	4.20	0.77
Are capable of using all equipment in the kitchen	4.19	0.60
Received food safety training regarding handling fresh local produce	4.14	0.85
Have the knowledge and skills necessary to prepare local produce	4.10	0.72
Have sufficient abilities to process local produce	3.90	0.70
Have sufficient knowledge to process local produce	3.86	0.57
Have sufficient equipment to process local produce	3.76	0.77
Are committed to serving local produce	3.67	1.02
Have sufficient time to process local produce	3.43	0.98
Understand nutritional information of local produce	3.20	0.95
Are included in FTS policy development and implementation	2.81	1.33

[a]Responses were given on a scale of 1-5, with 1 being "strongly disagree" and 5 being "strongly agree."

Hourly Staff's Perceptions of Own Abilities

Hourly school nutrition employees were asked to indicate whether they had been trained in processing and/or promoting local produce. A total of 85 staff indicated having been trained in the processing of local produce and 93 in promoting local produce. These employees had higher ratings of agreement (scale of 1="*strongly disagree*" to 5="*strongly agree")* with statements related to their abilities to prepare local produce, incorporate it into recipes, know where it came from, and promote it to students than those indicating that they had not been trained. This was consistent with previous research that reported school nutrition staff's understanding of FTS programs increased after receiving training (DeBlieck et al. 2010). These results indicate that school nutrition directors can have confidence that training offered to nutrition staff is likely to be effective in improving staff understanding and skills.

Compared to those who indicated they had not received training on processing local produce, those who reported that they had been trained had higher mean agreement ratings for these statements: "I am comfortable incorporating local produce into recipes" (average increase of 0.473) and "I have the knowledge necessary to prepare local produce" (average increase of

0.422). Employees who indicated that they had been trained on promoting local produce had higher mean ratings compared to those who reported not receiving training for these statements "I know where the local produce comes from and how to promote it" (average increase of 0.702) and "I have access to promotional materials related to local produce" (average increase of 0.719). Previous research has shown that hourly school nutrition employees have identified their unfamiliarity with some types of local produce, especially when received in an unprocessed form, and its non-conventional appearance as barriers to using it (Stokes et al. 2015, Stokes & Arendt, 2017). Findings from this study underscore the importance of training in helping hourly nutrition staff be comfortable with preparing local produce that has not been processed in any way, including fresh cut, convenience forms of fruits and vegetables (Table 4).

Both hourly school nutrition employees and directors were asked to indicate in which listed FTS activities their schools participated in. The hourly employees were also asked to rate several statements related to their abilities to promote local produce using a Likert scale of 1 to 5, with 1= "*strongly disagree*" and 5="*strongly agree*". Compared to employees whose schools did not hang promotional banners and signs as part of FTS, employees at schools that did so had higher mean ratings for "I have access to promotional materials related to local produce" (average increase of 1.065), "I know where the local produce comes from and how to promote it" (average increase of 0.636), and "I know the nutritional value of local produce and how to promote it" (average increase of 0.511). (Table 4).

On the other hand, employees who indicated that their schools didn't use any activities to promote local produce had lower mean ratings than employees at schools which did use promotions for these statements: "I have access to promotional materials related to local produce" (average decrease of 1.175), "I know the nutritional value of local produce and how to promote it" (average decrease of 0.842), and "I know where the local produce comes from and how to promote it" (average decrease of 0.933). These findings indicate that a lack of FTS activities could be negatively associated with an employee's confidence to promote local produce (Table 4).

Table 4: ***Significant Increase/Decrease in Mean Scores for Likert Scale Responses Related to Employees' Confidence and Abilities to Process and Promote Local Produce based on Training and Farm to School Activities.***

If employees indicated that	Employee Likert Scale Response for Confidence and Ability to Process and Promote Local Produce	Mean with Factor[a]	Mean without Factor[b]	Mean Increased by	p-Value
Their school hung banners and signs to promote local produce	"I have access to promotional materials related to local produce."	3.12	4.17	1.065	<0.001
	"I know where the local produce comes from and how to promote it."	3.34	3.97	0.636	<0.001
	"I know the nutritional value of local produce and how to promote it."	3.45	3.96	0.511	=0.002858
They were trained on processing local produce	"I am comfortable incorporating local produce into recipes."	4.25	4.72	0.473	<0.001
	"I have the knowledge necessary to prepare local produce."	4.38	4.80	0.423	<0.001
	"I have the proper equipment to process local produce."	4.34	4.82	0.484	=0.001042
	"I have been properly trained to prepare local produce."	4.26	4.72	0.454	=0.001282
They were trained on promoting local produce	"I know where the local produce comes from and how to promote it."	3.51	4.21	0.701	<0.001
	"I have access to promotional materials related to local produce."	3.38	4.10	0.719	=0.001096
	"I know the nutritional value of local produce and how to promote it."	3.55	4.14	0.583	=0.002533

Table 4: ***Significant Increase/Decrease in Mean Scores for Likert Scale Responses Related to Employees' Confidence and Abilities to Process and Promote Local Produce based on Training and Farm to School Activities.***

If employees indicated that	Employee Likert Scale Response	Mean with Factor [a]	Mean without Factor[b]	Mean Decreased by	p-Value
Their school doesn't use any activities to promote local produce	"I have access to promotional materials related to local produce."	3.82	2.64	1.175	<0.001
	"I know the nutritional value of local produce and how to promote it."	3.86	3.02	0.842	<0.001
	"I know where the local produce comes from and how to promote it."	3.86	2.92	0.934	<0.001
If directors indicated that	**Employee Likert Scale Response**	**Mean with Factor [a]**	**Mean without Factor[b]**	**Mean Increased by**	**p-Value**
Their district used local farm visits to promote local produce	"I know where the local produce comes from and how to promote it."	3.32	4.24	0.916	<0.001
	"I know the nutritional value of local produce and how to promote it."	3.42	4.16	0.747	<0.001
	"I know how to explain differences between local and non-local produce."	3.52	4.29	0.771	=0.001196

[a] Mean score of participants who indicated that they were not trained on the topics or their school did not implement the FTS activities listed in column 1

[b] Mean score of participants who indicated that they were trained on the topics or their school did implement the FTS activities listed in column 1

CONCLUSIONS AND APPLICATIONS

Findings from this study showed that the skills related to promoting local produce that appear to be related to employee training and FTS activity responses were knowing "where local produce comes from and how to promote it" and knowing "the nutritional value of local produce and how to promote it." This suggests that these skills may be influenced by training and activity involvement.

Involving hourly school nutrition staff in FTS activities, such as local farm visits and decorating the cafeteria with promotional banners and signs, could help them be better informed regarding origin of produce items and nutritional values which could encourage them to better promote local produce to students. School nutrition directors who invest in their hourly employees, helping them better understand both the "why" of FTS and the "how" (specific skills related to processing and promoting local produce) may see improvements in employees' abilities to successfully encourage students to select and ultimately consume more fruits and vegetables.

Another area in which school nutrition staff could be more involved in FTS programs is with the district's wellness policy. In this study of two geographic regions in the U.S., both directors and employees indicated a lack of nutrition staff involvement in, and knowledge about policy development. Wellness policy meetings are opportunities for all members of a school district to discuss and decide on any food-related policies, including FTS-specific policies. If more hourly school nutrition employees were involved in these meetings, they might increase their confidence in their ability to promote FTS.

Training is an additional way to increase employee confidence in processing and promoting local produce. While no association was seen between actual training received (as determined by director questionnaire responses) and employee confidence in promoting and processing local produce in this study; associations between employees' perceived training and confidence were seen. These contrasting results suggest a possible disconnect between school nutrition directors and their employees when it comes to assessing the effectiveness of training. School nutrition directors can utilize some of Stephens and Shanks' guidelines, especially offering follow-up trainings and allowing for discussion and feedback, to make sure that messages are being understood as intended (Stephens & Shanks, 2015). Surprisingly, one of the directors in this study reported offering no training at all to their school nutrition employees, and five directors reported offering training only once per year, which is likely less than the USDA's professional standards mandate. The Healthy, Hunger-Free Kids Act ruled that all school nutrition staff working at least 20 hours per week receive a minimum of six hours of training per year starting in the 2016-2017 school year (USDA, FNS 2015a).

If increased amounts of training and employee involvement can help school nutrition employees feel more confident, it is likely that their job satisfaction and attitude toward their work will also improve. The importance of good attitudes among employees and the impact on practice has been reported in the literature. The directors surveyed in this study agreed that their hourly nutrition staff did have good attitudes about learning new skills. School nutrition directors wanting to start a FTS program in their own district, or expand the existing one, should look at their staff as strong partners in this initiative. Hourly nutrition staff, if involved in the cause and provided with needed training, can respond well to change.

The results of this study suggest that school nutrition directors can set their employees up for FTS success by helping them get "on board" with the FTS cause. Directors can explain the benefits of FTS programs to their employees, notably increased acceptance by students of fruits and vegetables, and help them understand the importance of their own roles in improving the health of children and the FTS process.

It is also important for directors to remember Stephens and Shanks' (2015) third suggested key to school nutrition employee training success: making sure the desired changes are realistic. As directors plan trainings, they should keep in mind that hourly nutrition employees may be unfamiliar with and uncomfortable handling local produce (Stokes & Arendt, 2017). Hands-on trainings that allow employees to work with the local produce could help them feel more confident using it in the future, as suggested by the association seen in this study between employees' perceived training and confidence in processing local produce. Directors can avoid discouraging their employees by working on small changes at a time, allowing for questions, and problem-solving discussion during trainings, and by offering follow-up trainings.

One limitation of this study was that the sample was a convenience sample and not randomized. Thus, the results are not generalizable to all school nutrition staff. In addition, several of the Likert scale items in the questionnaire contained two points; for example, whether the employee knew about an aspect of the local produce and also if they could promote it. This could have been confusing and had an impact on staff responses. However, this study provides insights into possible interventions for future research that could result in more confident and involved school nutrition staff. The relationship between employee skills and students' actual fruit and vegetable intake could also be assessed in the future. As more is learned about FTS school nutrition employee training, researchers will be better able to determine "best practices" for establishing successful FTS programs that help children develop healthy eating habits and could reduce their risk for obesity.

ACKNOWLEDGEMENT

This study was funded through an internal grant from Brigham Young University.

REFERENCES

Arendt, S. W., Roberts, K. R., Strohbehn, C., Arroyo, P.P., Ellis, J., & Meyer, J. (2014). Motivating foodservice employees to follow safe food handling practices: Perspectives from a multigenerational workforce. *Journal of Human Resources in Hospitality & Tourism*, *13*: 323-349. doi:10.1080/15332845.2014.888505

Bagdonis, J. M., Hinrichs, C. C., & Schafft, K. A. (2008). The emergence and framing of farm-to-school initiatives: civic engagement, health and local agriculture. *Agriculture and Human Values,* 26(1-2): 107-119.

Berkenkamp, J. (2006). Making the farm/school connection: Opportunities and barriers to greater use of locally-grown produce in public schools. *Leopold Center Pubs and Papers*. 153. Retrieved from https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1153&context=leopold_pubspapers

Bontrager Yoder, A. B., Liebhart, J. L., McCarty, D. J., Meinen, A., Schoeller, D., Vargas, C., & LaRowe, T. (2014). Farm to elementary school programming increases access to fruits and vegetables and increases their consumption among those with low intake. *The Journal of Nutrition Education and Behavior,* 46(5): 341-349.

Briefel, R. R., Crepinsek, M. K., Cabili, C., Wilson, A., & Gleason, P. M. (2009). School food environments and practices affect dietary behaviors of US public school children. *Journal of the American Dietetic Association*, *109*: S91-107. doi:10.1016/j.jada.2008.10.059

Centers for Disease Control and Prevention. (2016). *Childhood obesity causes & consequences.* Retrieved from https://www.cdc.gov/obesity/childhood/causes.html

Centers for Disease Control and Prevention. (2018). *Childhood obesity facts.* Retrieved from https://www.cdc.gov/obesity/data/childhood.html

Choi, J.H., & Rajagopal, L. (2013). Food allergy knowledge, attitudes, practices, and training of foodservice workers at a university foodservice operation in the Midwestern United States. *Food Control, 31*: 474-481. doi:10.1016/j.foodcont.2012.10.023

Collins, J., Huggins, C. E., Porter, J., & Palermo, C. (2017). Factors influencing hospital foodservice staff's capacity to deliver a nutrition intervention. *Nutrition and Dietetics*, *74*: 129-137. doi:10.1111/1747-0080.12344

DeBlieck, S., Srohbehn, C. H., Clapp, T. L., & Levandowski, N. (2010). Building food service staff familiarity with local food. *Journal of Hunger and Environmental Nutrition*, *5*: 191-201. doi:10.1080/19320241003800318

Feenstra, G., & Ohmart, J. (2012). The evolution of the school food and farm to school movement in the United States: Connecting childhood health, farms, and communities. *Childhood Obesity*, *8*: 280-289. doi:10.1089/chi.2012.0023

Gregoire, M. B., & Strohbehn, C. (2002). Benefits and obstacles to purchasing food from local growers and producers. *Journal of Child Nutrition & Management, 26.* Retrieved from https://schoolnutrition.org/uploadedFiles/5_News_and_Publications/4_The_Journal_of_Child_Nutrition_and_Management/Spring_2002/7-gregoire.pdf

Henroid, D., & Sneed, J. (2004). Readiness to implement hazard analysis and critical control point (HACCP) systems in Iowa schools. *Journal of the American Dietetic Association, 104*: 180-185. doi:10.1016/j.jada.2003.11.009

Hoelscher, D. M., Kirk. S., Ritchie, L., & Cunningham-Sabo, L. (2013). Position of the Academy of Nutrition and Dietetics: Interventions for the prevention and treatment of pediatric overweight and obesity. *Journal of the Academy of Nutrition and Dietetics*, *113*: 1375-1394. doi:10.1016/j.jand.2013.08.004

Izumi, B. T., Alaimo, K., & Hamm, M. W. (2010). Farm-to-school programs: perspectives of school food service professionals. *Journal of Nutrition Education and Behavior, 42(2):*83-91. doi:10/1016/j.jneb.2008.09.003

Izumi, B. T., Rostant, O. S., Moss, M. J., & Hamm, M. W. (2006). Results from the 2004 Michigan farm-to-school survey. *Journal of School Health, 76(5)*:169-174. doi:10.1111/j.1746-1561.2006.00090.x

Jones, S. J., Childers, C., Weaver, A. T., & Ball J. (2015). SC farm-to-school programs encourages children to consume vegetables. *Journal of Hunger and Environmental Nutrition*, *10:* 511-525. doi:10.1080/19320248.2015.1007259

Joshi, A., Azuma, A. M., & Feenstra, G. (2008). Do farm-to-school programs make a difference? Findings and future research needs. *Journal of Hunger and Environmental Nutrition*, *3(2-3)*:229-246. doi:10.1080/19320240802244025

Joshi, A., & Beery, M. (2007). *A growing movement: A decade of farm to school in California.* Retrieved from http://scholar.oxy.edu/cgi/viewcontent.cgi?article=1381&context=uep_faculty

National Farm to School Network. (2018). *About: National farm to school network.* Retrieved from http://www.farmtoschool.org/about

National Farm to School Network. (2019). *What is farm to school?* Retrieved from http://www.farmtoschool.org/about/what-is-farm-to-school

Smith, S., Wleklinski, D., Roth, S. L., & Tragoudas, U. (2013). Does school size affect interest for purchasing local foods in the Midwest? *Childhood Obesity*, *9*:150-156. doi:10.1089/chi.2012.0055

Stephens, L., & Shanks, C. B. (2015). K-12 school food service staff training interventions: A review of the literature. *Journal of School Health, 85*: 825-832. doi:10.1111/josh.12338

Stokes, N., & Arendt, S. W. (2017). Identifying farm to school barriers and keys to success: Perceptions of hourly employees. *Journal of Hunger and Environmental Nutrition*, *12*: 495-515. doi:10.1080/19320248.2016.1157544

Stokes, N., Arendt S.W., & Strohbehn, C. H. (2015). Hourly employees' perception about farm to school program barriers and keys to success: Differences by state and number of meals served. *Journal of Foodservice Management Education*, *9(1)*:1-11. Retrieved from https://www.fsmec.org/wp-content/uploads/2015/08/9-1-Stokes.pdf

Thompson, D., Ferry, R. J., Cullen, K. W., & Liu, Y. (2016). Improvement in fruit and vegetable consumption associated with more favorable energy density and nutrient and food group intake, but not kilocalories. *Journal of the Academy of Nutrition and Dietetics*, *116*:1143-1149. doi:10.1016/j.jand.2016.05.002

United States Department of Agriculture. (2015). *Overview: Farm to school census 2015*. Retrieved from https://farmtoschoolcensus.fns.usda.gov/overview-farm-school-census-2015

United States Department of Agriculture. (2018). *National school lunch program (NSLP).* Retrieved from https://www.fns.usda.gov/nslp/national-school-lunch-program-nslp

United States Department of Agriculture, Food and Nutrition Service. (2015a). *Professional Standards for All School Nutrition Program Employees: Summary of the Final Rule Effective July 1, 2015.* FNS-486 Retrieved from https://fns-prod.azureedge.net/sites/default/files/cn/profstandards_flyer.pdf

United States Department of Agriculture, Food and Nutrition Service. (2015b). *Professional Standards for State and Local School Nutrition Programs Personnel as Required by the Healthy Hunger-Free Kids Act of 2010: Summary of the Final Rule.* FNS-2-11-0030 Retrieved from https://www.govinfo.gov/content/pkg/FR-2015-03-02/pdf/2015-04234.pdf

United States Department of Agriculture, Food and Nutrition Service. (2016). *Local School Wellness Policy Implementation Under the Healthy, Hunger-Free Kids Act of 2010: Summary of the Final Rule*. FNS-627 Retrieved from https://fns-prod.azureedge.net/sites/default/files/tn/LWPsummary_finalrule.pdf

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