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Perspectives on a local food access and nutrition education program from Cooperative Extension nutrition educators

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Abstract

Innovative programming is needed to improve diets among low-income individuals. Incorporating a healthy food access program within existing Extension community nutrition education

programming at the local government level may be an effective approach to improve access and eating behaviors. Program development should be informed by the community nutrition program educators (herein educators) who would implement this type of program. We sought to understand educators' perspectives as part of a formative evaluation to guide the development of a program

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pairing reduced price community supported agriculture (CSA) membership with tailored educational programming. Educators from four U.S. states (one southeastern, two northeastern, and one northwestern) participated in in-depth interviews and focus groups. These were audio-recorded with detailed hand-written notes, transcribed verbatim, independently double-coded using a detailed codebook, and analyzed for themes and salient quotes. Feedback was linked with the Diffusion of Innovations model and RE-AIM framework. Educators had mostly positive initial thoughts of the proposed food access program, suggesting that it would complement current education programming. Educators suggested making the CSA shares reasonably priced. They also suggested offering pickup and education classes at a convenient location. Educators wanted additional training and resources in order to facilitate the program, but thought the existing infrastructure and resources of Extension and local government would help in implementation and sustainability. Local government priorities should seek to meet educator interests and needs given the potential for more successful program outcomes. These findings could be used to inform the development of food access programming within community nutrition education programs.

Keywords

Food Access, Nutrition Education, Behavioral Theory, Formative, Low-income

Introduction and Literature Review

Low-income individuals, particularly those in non-metropolitan areas, have comparatively low levels of financial and physical access to fresh produce. They also may lack the knowledge and skills needed to successfully integrate these foods into typical food preparation (Dammann & Smith, 2009; Drewnowski & Specter, 2004; Haynes-Maslow, Parsons, Wheeler, & Leone, 2013; Leone et al., 2012; Treiman et al., 1996). These barriers highlight a need for innovative programming to improve healthy eating behaviors. Community nutrition educators who work with these populations may be uniquely positioned to inform the development of new programming aimed at

overcoming these obstacles.

Two of the largest nation-wide nutrition education programs are the U.S. Department of Agriculture (USDA)–funded Expanded Food and Nutrition Education Program (EFNEP) (USDA NIFA, n.d.-a) and the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) (USDA, 2012). These programs utilize National Institute of Food and Agriculture (NIFA) Cooperative Extension staff as nutrition educators to deliver a series of interactive lessons of evidenced-based messages to hundreds of thousands of adults per year (NIFA, n.d.b). Cooperative Extension staff are located within the Cooperative Extension System (CES), a nationwide network led by state-designated land-grant universities. These universities provide agriculture and nutrition education and learning activities to communities in partnership with federal, state, and local governments. Community EFNEP and SNAP-Ed nutrition educator staff are located in local CES offices at the county and regional (multicounty) level, and thus are often closely partnered with local county government (USDA NIFA, n.d.-c).

Extension educators teach limited-resource audiences about food choices, selecting and buying food that meets the nutritional needs of their family, physical activity, and health. They also teach skills in food production, preparation, storage, and food budgeting (USDA NIFA, n.d.-a; n.d.-b). Educators may also play a role in connecting low-income community residents to local food systems to improve food access. They do so by providing education to increase familiarity with local foods and local food systems, providing knowledge of access points to local food, raising awareness of and connecting residents to government assistance programs such as the Women Infants and Children Farmers Market Nutrition Program, providing tours of local food direct marketing outlets such as farmers markets, and emphasizing the importance of supporting the local food economy (Abel, Thomson, & Maretzki, 1999; Sharp, Imerman, & Peters, 2002).

Despite the potential to connect low-income individuals to healthier food opportunities, Extension community nutrition efforts to improve community food security have historically focused

more on education and research and less on community policy, projects, and programs aimed at directly improving food access to create a more equitable food system (Hamm & Bellows, 2003). This could be due to the fact that many Extension educators do not think that they can influence those who have the authority to modify the food system in a way that would best address the needs in the communities they reach. It could also be due to the fact that they are discouraged from being change agents because of the perception of being too political for an organization that tries to remain politically neutral (Clark, Bean, Raja, Loveridge, Freedgood, & Hodgson, 2017). Consequently, this lack of food system programming may have limited the effectiveness of the nutrition education programs because many program participants lack access to the healthy foods needed to improve their diet (Bertoni, Foy, Hunter, Quandt, Vitols, & Whitt-Glover, 2011; Hosler, Rajulu, Fredrick, & Ronsani, 2008; Larson, Story, & Nelson, 2009; Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008). Thus, there is a need for new approaches that complement the teaching of knowledge and skills in the classroom while directly improving access to fresh fruits and vegetables.

One approach may be to directly link these established educational programs with the local food system, including the use of a community supported agriculture (CSA) model (Center for Integrated Agricultural Systems, n.d.; Vasquez, Sherwood, Larson, & Story, 2017; Wharton, Hughner, MacMillan, & Dumitrescu, 2015). CSA is a partnership between agricultural producers and customers where customers receive fresh, nutrient-dense local fruits and vegetables, often desired because of perceived increased quality and flavor (McGuirt, Ward, Elliott, Bullock, & Jilcott Pitts, 2014; Thomas & McIntosh, 2013). In this model, members of the CSA pay for the whole season of fruits and vegetables from a local farm upfront and then receive a weekly share (or portion) of fresh fruits and vegetables from the farm. Those participating in CSA shares have reported improved dietary behaviors, including increased fruit and vegetable consumption and decreased consumption of processed foods (Allen, Rossi, Woods, & Davis, 2017; Vasquez et al., 2017).

Modifications of this model have been made to reach lower-income populations, typically using the following approaches: (1) a weekly or monthly payment rather than paying in full at the beginning of the season, (2) the ability to use SNAP benefits, and (3) having a cost subsidy or "offset" to make the produce more affordable. The cost of the USDA Thrifty Food Plan (TFP), a low-cost and nutritious food plan that serves as the basis for maximum food stamp allotments, ranges between US\$128 to US\$147.40 per month for a family of four with two children (based on child age) (USDA, 2015). In this plan, vegetables and fruit account for 22-29% and 17-21% of the TFP market basket, respectively (costing \$16-\$18.37 per week) (Carlson, Lino, Juan, Hanson, & Basiotis, 2007). This potential cost is in line with the typical weekly cost of a CSA in the United States of US\$17.88 (Tegtmeier & Duffy, 2005). Additionally, the average amount of produce in a CSA (North Carolina Cooperative Extension, n.d.) matches typical produce consumption for the TFP reference family of 4 (two kids) (Carlson et al., 2007); therefore, it may represent a viable alternative to typical produce purchasing for low-income families. The potential of this approach has led to the emergence of reduced-priced CSA programs for low-income individuals across the United States (Local Food Research Center, 2013; LocalHarvest, 2008). Many of these programs are run solely by farms or nonprofits, or as a partnership between the two entities.

The growing attention (Vasquez et al., 2017) given to using CSA as an approach to dietary intervention and health improvement warrants consideration of how these potential programs might be successfully implemented with community nutrition education programs. There have been a few successful examples of the integration of CSA programs into Cooperative Extension programming. One of the more formalized examples is the Healthy Food For All program, a nonprofit program of Cornell Cooperative Extension that provides low-income families in New York with access to CSA shares and education resources (Healthy Food For All, 2018). While the few existing programs may serve as models, there remains a gap in the literature of how this type of

program might be viewed by community nutrition educators who may be strategic partners in implementing, facilitating access to, or helping publicize programs like this. Thus, having their input early during program development may improve Extension center uptake, implementation, and overall program effectiveness.

This approach is based on the Diffusion of Innovations model (Glanz, Rimer, & Viswanath, 2015; Rogers, 2003), where innovation development is based on market input in order to design and implement a new program based on the needs and current attitudes of potential adopters. Important factors that influence how rapidly innovations diffuse include (1) attributes of the innovation, (2) environmental context and/or features of the setting, and (3) the characteristics of the individual innovators (Greenberg, 2006). Attributes of the innovation, and their relationship to this project, include (a) relative advantage (is the nutrition education plus CSA program perceived as better than current education-only options?), (b) compatibility (does the new program fill a need for low-income individuals and fit the values of the organizations?), and (3) complexity (is the new CSA plus education program easy to use with participants and implement by the organization?). Environmental context includes spatial and temporal differences, as well as cultural norms and values. Characteristics of the individual innovators include where they land on the adoption spectrum, ranging from innovators and early adopters to late adopters and laggards.

Our approach is also informed by the RE-AIM framework (Glasgow, McKay, Piette, & Reynolds, 2001) for public health planning to improve program implementation and sustainability. This included the following steps: *Reach* (participation of population of interest), *Effectiveness* (impact on participants and program implementers), *Adoption* (organizational support for adoption), *Implementation* (implementation fidelity, time, and cost), and *Maintenance* (institutionalization of program and behavior change).

While a few studies have asked Extension educators about their needs and thoughts regarding general programming (Chapman-Novakofski et al., 1997; Dickin, Dollahite, & Habicht, 2005; Murphy,

Coleman, Hammerschmidt, Majewski, & Slonim, 1999; Clark et al., 2017), to the best of our knowledge, no studies in the literature have sought the perspectives of nutrition educators to inform the development and implementation of a new food access intervention that includes a nutrition education component along with traditional and CSA-oriented nutrition education. Thus, this research aimed to gain an in-depth understanding of the perceptions of Extension educators on the attributes of the innovation and environmental context surrounding diffusion and implementation within the community nutrition education setting using qualitative interviews and focus groups. The ultimate goal was to guide counties and communities in developing such a cooperative program in their own communities.

Applied Research Methods

A purposive heterogeneous sample of Extension educators ($n=5$ per state, $N=20$) from nonmetropolitan areas of four U.S. states (one in the southeast (SE), two in the northeast (NE1 and NE2), and one in the northwest (NW)) were recruited as part of a larger research project (Seguin et al., 2017). The aim of this larger project was to develop and evaluate the impact of a cost-offset community supported agriculture (CO-CSA) intervention. This included the effect of tailored nutrition education (skill-based, CSA-tailored, extension-delivered education curriculum) on dietary intake and weight status among low-income families with children in nonmetropolitan (populations <50,000) communities (U.S. Census Bureau, n.d.). Educators were recruited from each of the four study sites in order to gain a broad understanding from different geographical and cultural perspectives. The goal was to recruit the educators and paraprofessionals who would deliver the educational component of the CO-CSA intervention in each state, plus two to three Extension educators in different geographic regions of each state. Educators were recruited by phone and e-mail to participate in the qualitative research and indicated their willingness by completing an online pre-interview survey. The pre-interview survey asked demographic questions (age, self-reported race via investigator derived checklist, gender, title), as well as questions regarding years of

experience in Extension, direct involvement in educational programming, personal advocacy for local foods, and whether local foods should be a priority for Extension.

Individual in-depth qualitative interviews and focus groups were conducted over the phone (Cooper, Jorgensen, & Merritt, 2003; Krueger & Casey, 2008). Distinct questions were asked in the interview and focus groups. The goal of asking distinct questions within each method was to elicit the richest answers possible based on the topic of interest. Questions seeking in-depth individual feedback were included in the interview script, and questions about topics seeking group discussion and an interchange of ideas were included in the focus group script. One question, regarding “Initial thoughts on the program,” was asked in both to see if responses changed due to the group dynamic. For both approaches, we provided a description of the program to the educators, and then the educators were asked to respond to the accompanying semi-structured interview guides. The Cornell University Institutional Review Board and the University of Vermont Review Board reviewed and approved the study. Informed consent was obtained from all educators.

In-depth Interviews

In November 2015, educators completed interviews ($n=20$) by phone with trained and experienced interviewers ($n=6$) who lived in the state where the educator was located. Topics included their perceptions of a CO-CSA enhanced nutrition education program, the role of Extension in conducting these types of programs, potential barriers and facilitators to implementation and sustainability, and how best to integrate a hypothetical CO-CSA program into existing Extension systems. The interviews lasted 30–45 minutes.

Focus Groups

In February 2016, the same sample participating in the interviews participated in focus group discussions ($n=4$) over the telephone (5 per group, $n=20$), with at least one representative from each state during each focus group for geographic diversity. A trained moderator and note taker led each of the groups. Topics included thoughts on the program,

how to best engage participants in these types of programs, whether it could be sustainable, factors that would improve sustainability, and potential community partners. The focus groups lasted 30–45 minutes. Questions were sent to the educators in advance of the interviews and focus groups to ensure understanding of the goals of the research and willingness to answer questions. It also allowed educators to thoughtfully prepare their responses.

Analysis

The interviews and focus groups were audio-recorded, supplemented with detailed hand-written notes, transcribed verbatim, independently double-coded using a detailed codebook in NVivo 11 (QSR International Pty Ltd., 2015), and analyzed for themes and salient quotes. Data-rich transcripts were reviewed to develop a codebook for both the interviews and the focus groups, complete with operational definitions. Transcripts were coded independently using the codebook. Coders ($n=2$) met to revise the codebook, to resolve disagreements on how to apply the codes, and to add and delete codes. Transcripts were then coded to identify relevant themes and salient quotes. Data reduction was accomplished with deductive (based on study questions) and inductive (based on emerging observations) analysis. A code matrix was used for cross tabulation across characteristics to assess for features of the setting and individuals that might impact diffusion. These characteristics included *Region* (SE, NE1, NE2, NW) and *Years of experience* (5 or more years; 5 or fewer years). Summary tables including illustrative quotes were developed to present findings on themes.

Results

Educator Characteristics

Characteristics of the educators, collected from the pre-interview survey, are displayed in Table 1. The average age was 48 years, with a range of 24–67 years. All were female, and most were white (16/20=80%). Educators had, on average, nine years of experience in Extension. Two (2/20=10%) educators did not currently deliver programs directly but acted in a supervisory role. Two (2/19=11%) of the educators did not personally

Table 1. Nutrition Educator Characteristics

Participant Characteristics	
Number of participants (total)	20
Northeast state 1 (NE1)	5
Southeast state (SE)	5
Northeast state 2 (NE2)	5
Northwest state (NW)	5
Age in average years (range)	48 (24–67)
Race	
White	16 (80%)
Black	1 (5%)
Hispanic	1 (5%)
Asian	1 (5%)
Native American	1 (5%)
Gender	Female (100%) Male (0%)
Experience in Extension, Years (avg.)	9 years (0.5–40)
Local Foods Advocate	17/19 (out of 20, with 1 No Answer)
Local Foods a Priority	17/19 (out of 20, with 1 No Answer)
Currently Deliver Educational Program	18/20

advocate for local foods, and two (2/19=11%) did not believe promotion of local foods should be a priority for Extension.

Diffusion of Innovations

Educators spoke to how the program would address the Diffusion of Innovations framework. A summary of how findings relate to the Diffusion of Innovations framework can be found in Table A3.

Attributes of the Innovation

In-depth interviews. Educators mostly shared positive initial thoughts about the program concept, including the two educators who did not think promoting local foods should be a priority for Extension. The complementary nature of both learning about healthy eating while also having improved access to local fruits and vegetables was a frequently mentioned positive aspect of the program:

I think that will fit into what we're already doing...because I think it's important for people to eat healthier and to eat fresh fruits and vegetables. If we can provide a way to get that, and get local, then I think that's great....

I'm super excited...
(SE PT6)

Educators were also intrigued by the thought of connecting program participants to local foods and eating seasonally: "I think it's wonderful ... People don't know what's grown locally sometimes. And they don't know how to use it...." (NE2 PT1). The educators did share some initial concerns about participation due to lack of interest and attendance: "More difficult than anything is getting people to attend [these types of programs]...." (NE2 PT3).

Perception of factors believed to make low-income participation easier. The top factors educators proposed to make participation easier for low-income clients were "convenient location for pick-ups," "learning preparation skills," "learning new recipes," "offering education on healthy eating," and "SNAP-EBT acceptance" (see Table A1). "Convenient location" was the top factor in every state except NE2, where "preparation skills" was most important. Educators frequently identified low-income housing communities as being a good location for this type of program.

Educators frequently mentioned the value of children being involved in the process, or the importance of childcare being provided so the parents can participate in the educational classes: "...if you can get the children really engaged so that they're nagging their parents to attend and are clearly getting a lot out of the programming, I think that would be really good" (NW PT1).

Focus groups. In the focus groups, there were mixed reactions when educators were asked their initial thoughts on the program in the focus group setting. Many liked the idea calling it "positive" and "needed"; however, a few were concerned the

participants might be overwhelmed by the CSA share, and some thought the program was nice but not necessarily needed in light of other goals.

Suggestions for getting people to participate. The top suggestions for getting people to participate in the program were as follows: making the program “accessible or convenient” for low-income housing communities, providing “child involvement or childcare” to help parents attend, and “surveying potential participants to learn of their interests and desires” so that we learn what participants want and not what others want for them.

Best way to engage low-income populations on diet and nutrition topics. The most commonly mentioned suggestion to get people engaged included parent-child dual involvement, demographically appropriate program delivery, and the use of incentives (particularly food). “If you can get the adults and children together, it’s a lot more beneficial because they work together on it, which brings it into the home.” In regards to demographically appropriate program delivery: “Elderly folks love classes, millennials don’t...[they] prefer to do everything through social media, look things up online. They are not as interested in the classroom settings.”

Environmental Context

In-depth interviews. Incorporating a CO-CSA program into Extension. A summary of quotations to illustrate themes for incorporating a CO-CSA program into Extension can be found in Table A2. Educators overwhelmingly expressed a high level of organizational support from higher level Extension staff for programs like this, including support from supervisors, directors, and state-level staff. The only comments suggesting low organizational support had to do “with having to start the program from scratch,” and “communication issues with the state Extension office.”

Similar existing programs. Most of the educators said they did not know of a CO-CSA program. However, a few educators knew of, or were a part of, similar CO-CSA programs in their community. For example, one participant was part of a similar program: “I would bring samples and then we

would talk about it...Later on in the year when we had the CSA...they would see that and just get excited” (NE2 PT1).

The most commonly mentioned existing Extension resources that could enhance the proposed program included the “other staff within Extension,” the “facilities and equipment” available for use, “existing connections with farmers,” and “knowledge and experience with nutrition education programs.” Educators identified several types of staff members who would be most helpful, including those inside and outside of family and consumer sciences: “...[Having] not just the FCS agent being involved in that piece, but if the county has a horticulture agent, or the ag agent, or small farms agent...Because I could see this being an integrated program for Extension...” (SE PT6).

Perceived advantages of running the CO-CSA program within Extension. The “current programming being implemented through Extension” was by far the most frequently mentioned advantage of running the program within Extension. According to one participant, “I think it’s a continuation of what we’re already doing...We’re doing nutrition education where we support our farmers. Let’s put the two together with our low-income families... it’s a natural progression to me” (NE2 PT1). Other advantages were the “existing relationships with farmers and low-income clientele” and the “availability of trained and experienced nutrition educators.”

Perceived disadvantages of running the CO-CSA program within Extension. The main factors stated as disadvantages of running the program within Extension were “logistics of running the program,” “staff time and availability,” “working within the parameters of current federally funded programming,” “recruitment,” and “attendance.” Educators spoke of the many responsibilities Extension staff members have given budget cuts that have reduced the workforce. They also mentioned that adding another program could be “challenging” and “time-consuming,” and educators might lack the time and resources required to participate.

The most frequently mentioned incorporation problems varied by state, but “logistics of running

the program,” “time,” and “administrative burden” were frequently mentioned across states. Those with less than five years of experience seemed more concerned with attendance and recruitment, whereas those with more than five years of experience seemed more concerned with having enough time for the program.

Focus groups. *Long-term sustainability of the CO-CSA program.* The educators had mixed reactions on whether the program is sustainable. Some thought the program would “absolutely” be sustainable due to its fit with current programming. Others thought it could maybe be sustainable given certain conditions, including allowing time for the program to develop and become known in the community. For those who thought it would not be sustainable, there was a concern that this program might be getting ahead of where program participants are at currently in their movement toward healthier eating, as many had unhealthy diets and lacked basic knowledge of nutrition and food preparation, which may make participation in the program challenging.

Potential community partners seen as important by educators. The educators mentioned several community partners to help with the program, including food banks, community centers, health departments, housing projects, and community development councils. Educators also stressed the importance of collaborating as an interagency team; one suggested, “Get everyone to be on board and everyone to promote it, everyone to help educate” (NW PT2).

Characteristics of Individual Innovators

In-depth interviews. *Perceptions on whether low-income clients would be interested in the CO-CSA program.* Most educators thought the low-income participants would be interested in the program because of a general increase in interest in healthier and local foods, interest in fresh produce, and the potential price savings on produce: “I think a lot of people are paying more attention to having fresh local foods... The cost-offset part of it is wonderful. They’re gonna be getting the fresh, local items at a deal” (NE2 PT1).

The educators often qualified their answers by saying this interest would be conditional, based on factors like having the program at a convenient location or the boxes being affordable. According to one participant, participation would be based on whether “that’s somethin’ that they could afford. Because some folks around here, really they are counting their pennies” (SE PT5). The educators also mentioned that, while there might be interest, getting participants to actually utilize the program might be the challenge: “It’s just a matter of getting those folks to commit, and then to actually follow through” (NE1 PT1).

Perception of factors making participation difficult for low-income clients. The most frequently mentioned factors making participation in the CO-CSA program difficult for low-income participants were (Table A1) “not having enough money and/or having limited finances,” “transportation issues,” “spoilage of produce,” “chaos and/or unpredictability of life,” and “unfamiliar produce.” As one participant expressed, “Yeah, most of the folks live week to week...so having a large amount of cash that they would be investing in for the future would be really difficult” (SE PT4). Across all states, educators frequently mentioned limited financial resources and transportation issues.

Additional skills needed by educators to implement a CO-CSA program. Educators mentioned several additional skills needed to implement this type of program successfully. The most frequently mentioned answers included “training” on the program implementation and CSAs in general, a “manual/curriculum” to guide implementation, “access to new recipes” to match the new foods participants were being exposed to through the boxes, and more knowledge about produce. According to one participant, there should be “Some resource, like some very easy to read, simple attractive resources [about] the vegetables and fruits...so more knowledge about the farm side [of things]” (NW PT1).

RE-AIM

Educators spoke to how the program would address the RE-AIM framework steps of Reach,

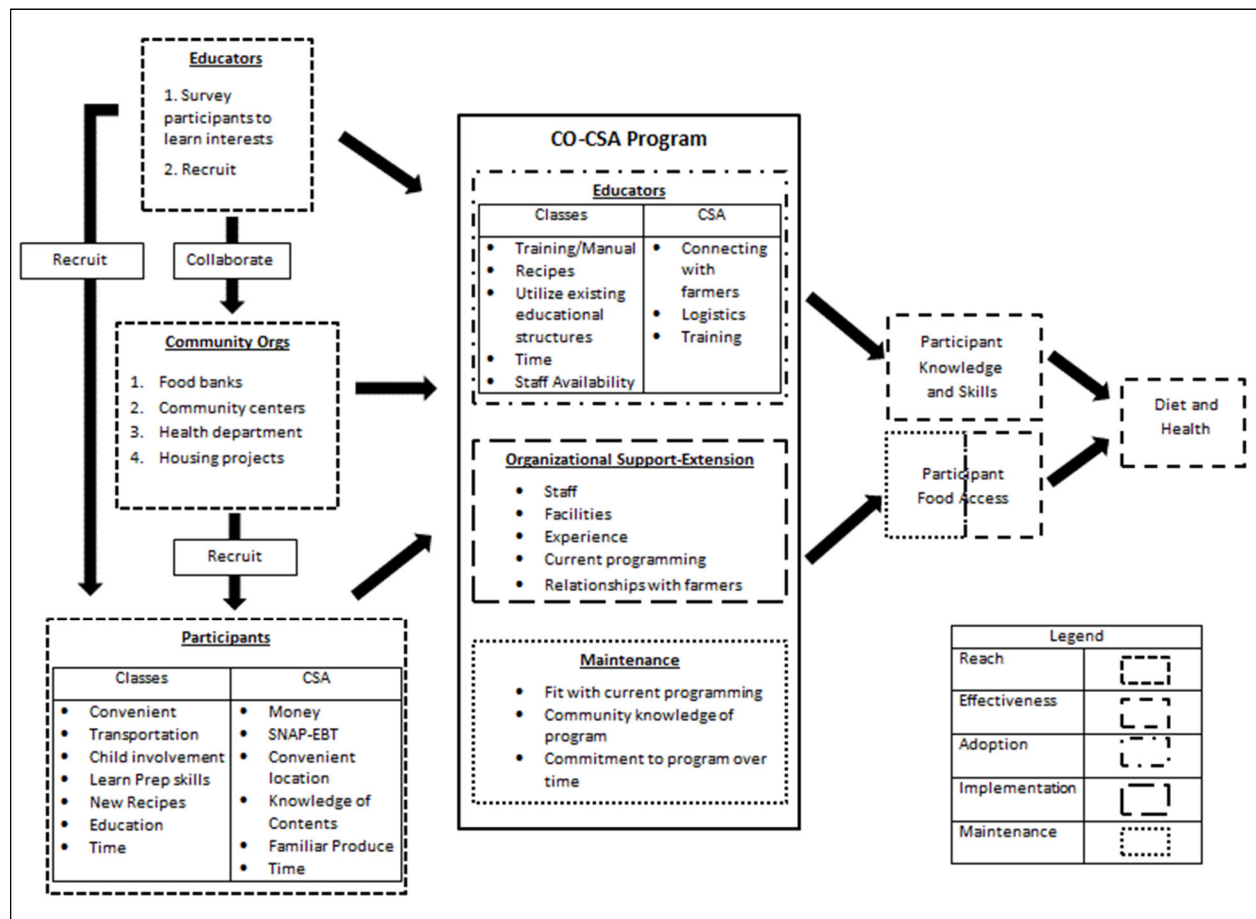
Effectiveness, Adoption and Implementation, and Maintenance. A summary can be found in Table A3 and Figure 1.

Reach. Educators suggested that the program could reach the target population, but it would have to be made it as participant-centered as possible and that certain needs would have to be met to ensure participation. For example, one suggested, “You have to meet people where they are...you have to make it as drop-dead easy as you can” (NW PT1). Another suggested the importance of not only meeting their needs, but also advocating for involving participants in the planning of the intervention: “I would say it’s also about...what do they want? Not what we want to give them. So, if you can engage them at the beginning even before the beginning on what that

community wants from you in terms of nutrition education...I think we really have to focus on meeting people where they’re at” (NW PT3).

Effectiveness. Educators often mentioned that this type of program would address participant’s need for access to healthier foods. For example, one expressed, “I think it’s incredibly exciting... You are addressing some of the biggest barriers that exist for most families... You’re making it cost effective for them...which is a challenge for most families... You’re putting together healthy food for them so they don’t have to go to the grocery store and kind of be puzzled by what, what should I be buying? What is healthy? This is gonna automatically address that. They’re gonna be increasing their fruit and vegetable consumption” (NE2 PT1).

Figure 1. Conceptual Diagram of How Extension Educator Findings Relate to the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) Framework



Adoption and Implementation. Educators mentioned a few important factors to enhance uptake and fidelity, including being provided with adequate training, a detailed manual, and having the right people in place. According to one participant, “It would be a challenge just because it’s something new, you know. But I’m assuming that if I were gonna do this, there would be some kinda trainin’ with it for me...I think I would need training on the program. What your expectations are, what our goals are” (SE PT1).

Maintenance. Educators had mixed reactions on whether they believed that the program could be sustainable over a long term. Those who thought it could be sustainable mentioned the “natural” fit with the program; for example, “I absolutely do think it can easily be sustainable and integrated in. I think it’s a very natural progression and a natural fit” (NE2 PT1). Some, however, suggested the importance of giving it time to develop: “You’re gonna at least have to have it in place for five years to see a really good impact on that and by then, it will be well known in the community” (SE PT1).

Discussion

Given the strong initial educator interest in the proposed program, additional work should be done to more critically examine the integration of this type of program into current Extension programming and into local government nutrition education efforts. Dickin et al. (2005) found that at sites where front-line nutrition educators valued the program, there was higher nutrition behavior change among EFNEP participants. Similarly, our findings regarding educator interest in and need for innovative programming to improve participant fruit and vegetable consumption, and the desire to receive appropriate training, have been found previously among Extension nutrition educators (Murphy et al., 1999). Thus, federal nutrition education program strategies and priorities should seek to meet these interests and needs given the potential for successful outcomes.

Previous research has found that Extension educators are interested in becoming more involved in food system change to reduce inequity, but may not feel empowered to do so, even though

they have the knowledge, skills, and connections to make a meaningful impact (Clark et al., 2017). We found that Extension community educators mostly felt that they had adequate support for programming from upper administration; however, in some cases they perceived that upper administration lacked interest in starting new programs and that communication issues within Extension may make program development challenging. Providing additional supports for empowering community nutrition educators to develop and lead innovative programming at the local level, and improving communication channels for the development and support of new and innovative food system programs, may improve local food system and food access issues.

Linking the feedback provided by Extension nutrition educators with behavioral frameworks, including the Diffusion of Innovations model and RE-AIM, may improve program implementation and effectiveness (Glanz et al., 2015). Overcoming attributes of the innovation that may be challenging, including program cost and complexity, may be particularly important for the adoption and sustainability of the proposed program, given Extension staff and resource constraints. Environmental context, including community partner support (i.e., who can assist with program recruitment, implementation, and logistics), adhering to program parameters, and gaining the support of higher level administration may be critical to the success of any efforts to diffuse and implement this type of intervention within community nutrition programs.

Based on our findings, it may be important to identify early organizational and participant adopters to facilitate the diffusion process, given that certain characteristics of organizations (resources, priorities, support) and low-income participants (financial constraints, skill level) may determine successful diffusion. Future research efforts should also try to assess other factors in the diffusion process, including the trialability and observability of outcomes related to the program. While certain aspects of success or failure may be site-specific, certain themes regarding successful implementation emerged across educators from geographically and demographically diverse sites; therefore, we believe that the findings of this

research are important and likely meaningful across most Extension community nutrition programs. Future research should aim to understand better how organizational readiness for change (Weiner, 2009)—including the factors of change commitment, change efficacy, and organizational capacity (Handler, Issel, & Turnock, 2001; Meyer, Davis, & Mays, 2012) might influence the implementation of this type of program. Future research should also examine the few similar programs incorporating community nutrition education programs with CSA programs to examine factors that led to success and failure.

This research focused on the Extension educator as a key implementer of this type of program. The role of the Extension educator is important given that proper implementation and delivery of this program is likely vital to its success. Further examination of the ideal role of educators and Extension staff in developing and sustaining these types of programs is likely needed given the range of education level and experience across this group, particularly in aspects which may be outside their normal duties, including program development, grant-writing, and some business and operational activities. This may further support the educator-suggested need for a detailed program manual and training to help those who may be less comfortable with taking an active role with certain aspects of the program. Assessing individual educator and Extension staff strengths and weaknesses, as well as those of potential partners, may help properly identify appropriate roles and responsibilities to help this type of program be successfully implemented and maintained.

In the few studies looking at the participation of low-income consumers in CSAs, financial and physical access were also commonly cited factors (Forbes & Harmon, 2008; Quandt, Dupuis, Fish, & D'Agostino, 2013). In a previously evaluated program (Quandt et al., 2013), food items unfamiliar to participants were emphasized, which was something the nutrition educators in our study discouraged. Children were commonly cited as important factors in a participant's interest in the program. Other research has similarly found the importance of including children in nutrition education given their influence on their parents

(Lytle, 1994; Slusser, Prelip, Kinsler, Erasquin, Thai, & Neumann, 2011). Overall, the similarities and differences in perceived factors influencing program participation and implementation across geographic areas support the usefulness of both broad and localized programmatic approaches.

Strengths

Using both in-depth interviews and focus groups allowed for a more complete understanding of the topic, including identifying more skepticism about the program in the focus groups than in the interviews. The educators were diverse in age, experience, and location, which may allow for more generalizability and meaningful translation of our findings across Extension community nutrition education. The use of phone focus groups potentially created more independent answers (the result of less social pressure, group-think, and desirability bias) and allowed for greater participation (Krueger & Casey, 2008). The use of thematic matrices allowed for cross-tabulation of ideas across different factors. Linking findings to behavioral theory and frameworks helped frame results to better inform future program implementation.


Limitations

The inability to witness nonverbal communication in the focus groups was a weakness. The sample of educators, while fairly geographically diverse, may not capture all experiences and opinions from this nationwide program given our relatively small sample size; however, data saturation was reached, and this sample size is similar to other qualitative studies. Qualitative studies typically need smaller sample sizes due to data saturation, concern for meaning, and the fact that they do not make generalized hypothesis statements (Mason, 2010; Ritchie, Lewis, Nicholls, & Ormston, 2013).

Conclusions

This research aimed to understand the perceptions of community nutrition educators on a proposed cost-offset CSA-plus-nutrition-education program for low-income individuals. The findings from this research, may be used to inform the design, integration, and implementation of a CSA-style healthy food access program alongside within existing

federal nutrition education programs at the county level. Designing the program based on formative findings may improve program fit and impact, including improving fresh fruit and vegetable access and consumption. Local government officials and agencies, including county Extension offices and other related agencies, can use these findings to help justify the need for and usefulness of this type of program in order to support low-income residents, enhance current nutrition education efforts, support local farmers, and strengthen local economies by promoting local foods. These findings may also clarify the needs of local government staff to successfully implement these types of programs so that local government funds and time

are not wasted on programs lacking proper support. Collaborations should be considered within and across local government and community agencies to assemble a support network to efficiently and cost-effectively implement this type of program. Local government officials may use the timeframes suggested by the program educators in this study to inform the appropriate amount of time that should be dedicated to program development and implementation. Local governments implementing these types of programs should consider focusing on increasing the awareness of these programs to gain participation among residents and potential collaborators. 

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Appendix

Table A1. Nutrition Educators' Perceived Facilitators and Barriers to Low-Income Individual's Participation in a Cost-Offset CSA Program, from Interviews

CO-CSA Facilitators	Illustrative quotes
Convenient location	NW PT1: "The drop-off point is the most important thing. Getting in your car to pick up a box during a limited time window on a specific day, week after week, definitely gets to be a little bit of an inconvenience...make it extremely convenient...."
Learning preparation skills	NE2 PT3: "It's a matter of can you give them skills in that period of time, that they can truly go home and duplicate it...When we talked to families in homes, we found out that, 'I don't know what to do with a cauliflower. I don't even know how to cut it up. What am I supposed to do with this thing?'"
Learning new recipes	NE1 PT5: "If they had recipes that would help them use what they are getting, [recipes] that are very simple, have very few ingredients."
Offering education on healthy eating	NE2 PT2: "People feel more and more these days uncertain about how to cook food at home, so if we can address that through the education...with the educational component, with some added support to help them identify the things that they're gonna find in their CSA box"
SNAP-EBT Acceptance	SE PT4: "It might be very important for them to use their SNAP benefits....I think that it needs to be a possibility for folks."
CO-CSA Barriers	Illustrative quotes
Not having enough money and/or having limited finances	SE PT3: "I think they would be afraid to commit that much money. What if they realize it wasn't for them, or they could not fit that into their budget, somebody lost their job..."
Transportation issues	NE1 PT1: "Transportation in a lot of different ways impacts people. A lot of people live rurally and it's really hard to get in from somewhere."
Spoilage of produce	NW PT2: "Possibly a lot of food going to waste especially if people aren't able to utilize the fruits and vegetables that are given to them... And also I would worry about the quality of it if it's going to spoil fast..."
Chaos and/or unpredictability of life	SE PT4: "Many of my participants don't even know where they'll be living in a couple months... or what their circumstance might be... if they will have a job. So planning that far ahead is something that is really challenging for my participants."
Unfamiliar produce	SE PT6: "In the beginning, until they are exposed to different types of produce [through educational sessions], then they might be hesitant to be involved in it. Because they can go to the grocery store and buy the same thing that they're used to having or cooking or eating year-round...I think that could be an issue."
Time and commitment	SE PT1: "They talk about time a lot when it comes to scheduling classes...it's like, 'Well I can't meet until after 5:30, whenever I get off.' And it could be an issue as far as pickin' up the boxes, unless it's done in the evening or morning, or a time like that. Or on Saturday."

Table A2. Summary of Thoughts on Incorporating a Cost Offset-CSA program into Extension

Organization Support	Illustrative quotes
High support	SE PT6: "I think we have the support there, as long as Extension is heavily involved...like I've said, local foods is one of our flagship programs with Extension."
Low support	NW PT2: "As far as if we were to introduce something to our state office...it's pretty difficult to get a response back if we have questions from them... And there's always communication issues that might be difficult... It's always a little bit hard trying to establish... to see if they're gonna take on another curriculum."
Additional Skills Needed	Illustrative quotes
Training	NW PT2: "Just be more informed about how CSAs work... how we would collaborate with the farmer on that...If we had a curriculum to follow, and had training on how to teach the curriculum, that would be good to have."
Manual and/or curriculum	NW PT2: "Definitely all of the components of the curriculum that we would need to conduct the program successfully... And having it in an organized manner that's easy to follow."
Access to new recipes	SE PT4: "It's always great to have a good resource for lots of different recipes, so that if you do have different ethnic groups or dietary needs or requirements... You can pull from that. It's also pretty important for those recipes to have few ingredients, or at least have common ingredients that are inexpensive. So developing that I think is going to be key."
Advantages of Extension	Illustrative quotes
Current programming	NE2 PT1: "I think it's a continuation of what we're already doing...We're doing nutrition education where we support our farmers. Let's put the two together with our low-income families...I mean it's a natural progression to me."
Existing relationships with farmers and low-income clientele	SE PT4: "We already have a lot of partnerships in our relationships with area farmers... We also have relationships with the client base, with the limited resources... So in a lot of ways, it is really easy to connect the provider with the consumer... because we know both."
Trained and experienced nutrition educators	NE2 PT4: "We already have federally funded nutrition education programs, so that's huge. We have the staff who is trained in facilitated dialogue and adult education and nutrition basics, and so that's a huge advantage that we have."
Disadvantages of Extension	Illustrative quotes
Staff time and availability	SE PT6: "I feel like it would be very time consuming...that could be a huge disadvantage... not being able to put enough of the time into this program that may be required... Starting next year, it's just gonna be one [nutrition educator] for every two counties...[the] need for maybe a program assistant...."
Logistics of running the program	NE2 PT3: "It might be a bit challenging, and I'd have to work it out...you might not have enough families near that farmer ...We'd have to think about how we would connect something with the farmer ...there's a lot of things to nutrition programming in our county."
Working within the parameters of current federally funded programming	NW PT3: "I have one program where I've got pretty strict parameters, [it is] harder to make sure I fall within all those guidelines."

Table A3. Relation of Findings to Diffusion of Innovations Model and RE-AIM Framework

Diffusion of Innovations		
Factors in the Diffusion Process	Constructs	Illustrative Quotes
Attributes of the Innovation	Cost	<i>Participant Level</i> SE PT5: "If that's somethin' that they could afford. Because some folks around here, really they are counting their pennies. So I suppose it would probably depend on what the cost of it would be."
		<i>Organizational Level</i> SE PT6: "The disadvantage is time consumption. I feel like it would be very time consuming."
	Relative advantage	NE1 PT4: "Having a program that's starting off with education along with access to the foods they're being educated about is a positive thing, and needed at least where we are."
	Complexity	<i>Easy</i> NE2 PT4: "We already have nutrition program...[and] staff who's trained in adult education and nutrition basics...Our agricultural program help people get connected to local foods, so we have a lot of resources in place."
		<i>Not Easy</i> NE2 PT3: "It might be a little challenging...There are a lot of things...It would take resources and commitment beyond what most associations would have."
	Compatibility	SE PT6: "I think it fits nicely...it's an extension of what we are already doing...We teach people this is what we need to be eating, and here is an opportunity for us to actually provide access to those healthy foods."
Characteristics of the setting	Geographic settings	NE2 FG1: "[Combining education and agriculture] has been challenging here in [NE2] ...and needed at least where we are."
		NE 1 FG4: "Some of our counties don't have nutrition staff anymore, and the agriculture has gone regional, so it will depend from county to county on the emphasis on this. I see an important need for it, but it could change and vary depending on the association and their staffing and funding."
	Political conditions	NE2 FG3: "Maybe coordinate with the EFNEP national standards because there's kind of a conflict here...It might not fit into this mold [of] strict guidelines, so maybe the guidelines need to come within alignment with each other."
Characteristics of Individuals	Low-income participants	SE PT3: "Some would, some would not. I have one mom that doesn't eat any fruits and vegetables, and was very clear on that, that she would not be eating fruits and vegetables, so it just depends on the person." NE2 FG2: "If we can remove the barriers that are difficult for people to get through, like child care and transportation [they have to feel like it's worth the financial commitment because for these folks it's tough to even come up with fifty dollars...really, really hard."
	Extension educators	NW PT1: "Some resource, like some very easy to read, simple attractive resources [about] the vegetables and fruits...so more knowledge about the farm side [of things]."

RE-AIM	
Dimension	Illustrative Quote (s)
Reach	<p>NW PT1: "You have to meet people where they are...You have to make it as drop-dead easy as you can."</p> <p>NW PT3: "I would say it's also about...what do they want? Not what we want to give them. So, if you can engage them at the beginning even before the beginning on what that community wants from you in terms of nutrition education...I think we really have to focus on meeting people where they're at."</p>
Effectiveness	<p>NE2 PT1: "I think it's incredibly exciting...You are addressing some of the biggest barriers that exist for most families...You're making it cost effective for them...which is a challenge for most families...You're putting together healthy food for them so they don't have to go to the grocery store and kind of be puzzled by what, what should I be buying? What is healthy? This is gonna automatically address that. They're gonna be increasing their fruit and vegetable consumption."</p>
Adoption	<p>SE PT1: "It would be a challenge just because it's something new, you know. But I'm assuming that if I were gonna do this, there would be some kinda trainin' with it for me...I think I would need training on the program. What your expectations are, what our goals are."</p>
Implementation	<p>NW PT3: "Making sure you have the right person to do the education piece, and the right space, and are you able to provide child care? Um, so that, you know, at some point the parents can just be engaged in the education, but then you could bring the kids to it too. I think you're gonna have to find a day and time that works for your participants, and hopefully then that will also work for the farmer."</p>
Maintenance	<p><i>Yes</i> NE2 PT1: "I absolutely do think it can easily be sustainable and integrated in. I think it's a very natural progression and a natural fit."</p> <p><i>Maybe</i> SE PT1: "You're gonna at least have to have it in place for five years to see a really good impact on that and by then, it will be well known in the community...People know where to access it, how to access it, what it's about...[otherwise] it would just be a waste of money and time."</p> <p><i>No</i> NW PT3: "My initial reaction is no...I don't think it's necessarily addressing the true needs...I just think there's something that's gotta happen before this..."</p>