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Short Communication

Low-income adults' perceptions of farmers' markets and community-supported agriculture programmes

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Abstract

Objective: To better understand low-income adults' attitudes towards participating in farmers' markets, community-supported agriculture (CSA) and nutrition education programming.

Design: Focus groups were held with a diverse sample of adults. Interviews were transcribed verbatim and analysed using thematic analysis.

Setting: Three affordable housing communities in Washington, DC, USA.

Subjects: Participants included twenty-eight residents of the three affordable housing communities.

Results: Four major themes emerged across groups, along with several sub-themes within each theme. These included: (i) perceptions of farmers' markets (benefits, barriers, current participation and knowledge); (ii) perceptions of CSA (benefits, barriers and questions/concerns); (iii) need/interest in additional programming (nutrition education, non-nutrition education, qualities of programming and perceived barriers); and (iv) current health knowledge and behaviours (dietary behaviours, health recommendations and health concerns).

Conclusion: Adults living in urban, affordable housing communities desire access to healthy foods, but are limited by cost. Programmes could have a higher likelihood of success if they accept benefits like SNAP (the Supplemental Nutrition Assistance Program), are heavily marketed and incorporate culturally relevant nutrition education components.

Keywords
Qualitative research
Food access
Low-income population

Disparities in risk for obesity and its associated co-morbidities exist by race and socio-economic status[1,2], with ethnic minorities and low-income individuals at heightened risk. The District of Columbia (DC) is one of the most diverse cities in the USA; in 2015 the majority of the population was composed of ethnic minorities with approximately 48·3 % self-reporting as African American, 10·6 % Hispanic or Latino, 4·2 % Asian and 0·6 % Native American[3]. Poverty rates are high in DC, particularly among African Americans (26 %) and Hispanics (22 %)[4], and rates of obesity are significantly higher in African-American residents than White residents (66 *v.* 40 %, respectively). DC is broken up into eight wards or divisions within the city, with each having its own local representation. The poorest wards of the city have significantly higher obesity rates (wards 7 and 8: 35·3 and 44·4 %, respectively) than the wealthiest ward (ward 3: 7·5 %)[5]. Immigrant minority populations in DC are also at heightened risk for health disparities, as these groups are faced with new norms including the 'Western diet' and the convenience and affordability of processed foods that can lead to poor health outcomes[6–8]. Strategies are clearly needed to prevent rising health disparities across low-income racial/ethnic minorities, including recent immigrants, in the DC metropolitan area.

According to the social ecological model[9,10], health behaviour is influenced at multiple levels, including the individual level (e.g. personality, knowledge), the interpersonal level (e.g. parenting behaviours, peer pressure), the organizational level (e.g. grocery store offerings, worksite policies), the community level (e.g. local customs, presence of fast-food vendors) and the policy

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level (e.g. regulations regarding the nutritional content of school lunches). In line with this model, the aetiology of obesity disparities is a complex and multifaceted problem. Generally, research indicates that lower-income individuals and racial and ethnic minorities in the USA have more limited access to places where they can safely engage in physical activity, higher rates of food insecurity (which in itself is predictive of obesity) and less access to affordable healthy foods[1,11,12]. Given these concerns, it appears clear that programmes that target the surrounding environment, allowing health behaviours to become more sustainable, are more likely to be successful than those that target the individual alone[13]. The US Government has several nutrition assistance programmes in place to help those living in poverty purchase food, including the Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Nearly 46 million people receive SNAP benefits across the nation, with approximately 140 000 participants in Washington, DC[14]. An environmental strategy that might reduce obesity-related health disparities involves increasing availability to fresh, affordable produce, in connection with SNAP benefits. A fruit and vegetable SNAP subsidy given to low-income, primarily Hispanic mothers for use at farmers' markets significantly increased their daily fruit and vegetable intake by 1·4 servings over a 6-month period, and these increases were sustained 6 months post-intervention[15]. Similarly, a farmers' market housed within a federally qualified health centre targeting low-income diabetic patients increased total fruit and vegetable consumption by 1·6 servings daily over a 3-month period[16]. However, qualitative research suggests low-income adults may not perceive farmers' markets as appealing or culturally relevant[17]; thus research is needed to best understand how they can be better marketed to a wide range of consumers. Further, more understanding is needed regarding how these environmental strategies can be paired with nutrition education tailored to the needs of low-income households, to facilitate the adoption of healthy food choices and behaviours.

There are dozens of farmers' markets open weekly in Washington, DC and some several days per week. Notably, the majority of the farmers' markets in Washington, DC accept SNAP, WIC and Senior Farmers Market Nutrition Program benefits[18]. Community-supported agriculture (CSA) programmes (in which a network of individuals pays for a share of local farms' harvest that is then delivered at regular time points) are a related resource that could influence the dietary behaviours of low-income individuals and families. CSA programmes originated in Europe and Japan in the 1960s, and were later introduced to the USA in the 1980s[19]. Members of a CSA programme pledge to contribute monetarily to the costs of a farm's operation in return for a share of the foods produced (e.g. vegetables, fruit, eggs and dairy). While most subscribers generally pay a flat fee upfront or monthly subscription in cash, the US Department of Agriculture's Food and Nutrition Service can approve CSA programmes to accept SNAP benefits through a SNAP licence. Similar to farmers' markets, CSA might also have a positive impact on dietary intake; however, the price of most CSA programmes precludes lower-income residents from participation and researchers have yet to examine their feasibility in this population.

The primary objective of the present study was to examine how low-income, minority communities in Washington, DC perceive local farmers' markets and CSA programmes. A second objective was to better understand community members' most salient health concerns and interest in health-related programming, including nutrition education, which might then be paired with local farmers' market and CSA programmes. Through a partnership between a local farmers' market/CSA programme and the surrounding low-income communities, health status of community members could be improved by increasing awareness of the local produce available, providing affordable ways to purchase these items, and enhancing knowledge about healthful food selection and preparation.

Methods

Participants

The study population consisted of twenty-eight low-income adult residents of affordable housing communities (i.e. housing in which residents pay no more than 30 % of their income on rent) within a culturally diverse area of central Washington, DC. Participants were recruited from three separate affordable housing communities chosen because of their proximity to a farmers' market with a planned CSA component that accepts federal benefits like SNAP. In total, four focus groups were held with: (i) Amharic-speaking participants (*n* 4, 100 % female); (ii) English-speaking participants (*n* 11, 91 % female); (iii) Spanish-speaking participants (*n* 3, 100 % female); and (iv) English-speaking older adults (*n* 10, 70 % female). The English-speaking Older Adults group was recruited from an affordable housing community for seniors aged 62 years or older. Participants identified their race/ethnicity as Black/African American (86 %), Hispanic (3·5 %), Asian (3·5 %), American Indian (3·5 %) and Other (3·5 %). The average age among participants was 62·5 years (range 29–79 years) and the modal income level for all four focus groups was under $US 15 000. Among the study population, 89 % received Medicaid, 64 % received SNAP benefits and 11 % received WIC benefits. Table 1 contains participant demographic information for each focus group.

Study design

The study was approved by the American University Institutional Review Board prior to the research start date. Participation in the focus groups was voluntary

Table 1 Demographics of study participants: low-income adult residents (*n* 28) of three affordable housing communities in Washington, DC, USA

Focus group	*n*	Mean age (years)	Age range (years)	Gender (% female)	Race	Countries of birth	Modal income	SNAP (%)	WIC (%)	Medicaid (%)
Amharic-speaking	4	58·5	29–74	100	100 % Black	Ethiopia	<$US 15 000	50·0	0·0	75·0
English-speaking	11	47·6	31–60	91	91 % Black 9 % Other	USA	<$US 15 000	63·6	18·2	81·8
Spanish-speaking	3	69·7	57–78	100	66·6 % Black 33·3 % Hispanic	El Salvador Nicaragua USA	<$US 15 000	33·3	0·0	100·0
Older Adults	10	72·0	63–79	70	80 % Black 10 % Asian 10 % American Indian	Eritrea Ethiopia USA	<$US 15 000	80·0	10·0	100·0

SNAP, Supplemental Nutrition Assistance Program; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

and individuals were recruited through the use of flyers posted throughout each respective community. Focus groups were held inside the community rooms of the three neighbouring affordable housing communities in English, Spanish or Amharic, depending on the preferred language of participants. Upon arrival to the focus group session, each participant reviewed and signed a consent form per standard consent procedures and completed a brief demographics survey in the presence of a member of the research team or community staff member who was fluent in the participant's preferred language (English, Spanish or Amharic). We utilized a primarily open-ended, semi-structured questioning technique to ensure consistency across all group discussions, while still allowing for some flexibility between groups. Some closed-ended questions were incorporated into the interview at the request of our community partner to assess current farmers' market use and knowledge. All focus group questions were developed by five members of the research team (E.W.C., C.T., A.B., K.H., D.S.) and focused on participants' beliefs about and usage of farmers' markets, CSA and other health-related programming. A brief description of the purpose of CSA programmes in general, along with a description of the planned CSA programme for their community, was provided to participants during each focus group as the majority of residents were unfamiliar with them. Two moderators facilitated each focus group, which lasted approximately 30 to 60 min. We opted to use two moderators rather than one so that the first moderator could take the lead on managing the discussion while the second moderator could take notes and ensure the recording equipment was working properly. All focus groups were moderated by members of the research team with the exception of the Amharic group, which also included a moderator who was an employee of the community and fluent in Amharic. At times other members of the research team were present besides the moderators to assist with greeting participants, completing consent forms and setting up the community room. Focus group discussions were audio-recorded and had note takers present. For the Amharic- and Spanish-speaking individuals, moderators who were native speakers of these languages were present. Several members in the Amharic- and Spanish-speaking groups spoke fluent English, and at times they responded in English to the moderator's questions. Food was provided at each focus group and participants received $US 10 worth of local grocery store and farmers' market gift cards at the conclusion of the session as compensation for their time.

Data analysis

The group discussions were audio-recorded with permission of participants during the consent process, translated into English if necessary and transcribed verbatim by members of the research team. All participant comments in the Amharic group interview were translated to English

by an Amharic-speaking staff member of the community during the interview itself, while the Spanish focus group was translated into English after transcription by two Spanish-speaking members of the research team. We utilized a thematic analysis approach[20] to code the data, in which themes or patterns were identified and analysed within the data set using an inductive, data-driven approach. Research team members reviewed the transcripts of participant responses to the open-ended questions and identified patterns within and across the group discussions. After major themes were discovered, sub-themes were created to further identify core ideas within each theme. Once agreement was found regarding initial themes and sub-themes, six research team members worked in teams of two in order to code each participant statement in each of the four group discussions. Each member of a team first coded the transcripts independently and then compared their coding selections with those of their partner. Any discrepancy within these dyads was discussed among the team before a final version was created. Throughout the entire process, the research team consulted with one another until consensus was reached.

Results

The primary aim of the current research was to understand low-income adults' attitudes towards and perceptions of farmers markets, CSA programmes and nutrition education. The results were highly consistent across the four focus groups and were summarized according to four major themes that emerged from the data: (i) perceptions of farmers' markets; (ii) perceptions of CSA; (iii) need/interest in additional programming; and (iv) current health knowledge and behaviours. These themes were then further broken down into sub-themes. Table 2 includes a list of each theme and sub-theme, their definitions and the focus groups that referenced them. Table 3 includes sample quotes from each theme and category.

Theme 1: Perceptions of farmers' markets

Participants' perceptions of farmers' markets fell into four sub-themes: benefits, barriers, current participation and knowledge. Current participation was the most frequently discussed topic related to farmers' markets, as the majority of residents shopped at a local farmers' market at least some of the time (e.g. 'I shop [there] on an every other week basis' (Spanish)). Participants described both the benefits and barriers to shopping at farmers' markets, with slightly more barriers mentioned than benefits. The primary benefit discussed was the quality of the product (e.g. 'I find them much fresher than at the grocery store. A lot of good fruits' (Spanish)). The primary barrier discussed was the cost (e.g. 'It's a bit expensive' (Amharic)).

Table 2 Interview statement themes and sub-themes in focus group discussions among low-income adult residents (*n* 28) of three affordable housing communities in Washington, DC, USA

Theme	Sub-theme	Definition	Focus groups referenced
Perceptions of farmers' markets	Knowledge	Existing knowledge about local farmers' markets (e.g. location, hours)	Amharic, English, Spanish, Older Adults
	Current participation	Current use of local farmers' markets	Amharic, English, Spanish, Older Adults
	Benefits	Perceived advantages of shopping at farmers' markets	Amharic, English, Spanish, Older Adults
	Barriers	Perceived disadvantages of shopping at farmers' markets	Amharic, English, Spanish, Older Adults
Perceptions of CSA	Benefits	Perceived advantages of enrolling in a CSA programme	Amharic, English, Spanish, Older Adults
	Barriers	Perceived disadvantages of enrolling in a CSA programme	Amharic, English, Spanish, Older Adults
	Questions/concerns	Issues participants would want clarified before they would be willing to enrol in a CSA programme	Amharic, English, Spanish, Older Adults
Need/interest in additional programming	Nutrition education	Interest in nutrition-related programming	Amharic, English, Spanish, Older Adults
	Non-nutrition education	Interest in programming unrelated to nutrition	Amharic, English
	Qualities of programming	Preferred characteristics of desired programming	English, Spanish, Older Adults
	Perceived barriers	Perceived roadblocks to beginning new programmes	English, Spanish, Older Adults
Current health knowledge and behaviours	Dietary behaviours	Information about current eating habits	Amharic, English, Older Adults
	Health recommendations	Suggestions on how to improve health	English
	Health concerns	Most salient health concerns for self and family	English, Older Adults

CSA, community-supported agriculture.

Table 3 Sample participant quotes from focus group discussions among low-income adult residents (*n* 28) of three affordable housing communities in Washington, DC, USA

Theme	Sub-theme	Sample quotes
Perceptions of farmers' markets	Knowledge	'Yes, there is one on Columbia Road in Mt. Pleasant.' (Spanish) 'The last time [a farmers' market] was open was on Tuesdays and Thursdays from 9–10.' (English)
	Current participation	'We shop when we get vouchers and when they're in season.' (Older Adults) 'Twice a month.' (Amharic)
	Benefits	[Referring to the vendors] 'They're very friendly.' (English) 'I usually buy my cucumbers, kale … very good I love it … Oh the fruits! I get apples and things like that, grapes and stuff.' (Older Adults)
	Barriers	'Know why we don't buy at the farmers' market? We see that it's expensive.' (Older Adults) 'Because I haven't got [WIC] yet, I have to apply.' (Spanish)
Perceptions of CSA	Benefits	'I'm happy because I don't have to go to the store...' (English) 'Sometimes in the summer it gets real hot and most of us here don't have transportation.' (Older Adults)
	Barriers	'I like to go see what I'm buying. What I want.' (Spanish) 'Farmers will [only] have what's in the boxes. If stuff is really low, it won't be distributed.' (Older Adults)
	Questions/concerns	'About the package that you send, do we pick out the food?' (Older Adults) 'Are any products … like soy milk or any other non-dairy produce available?' (Amharic)
Need/interest in additional programming	Nutrition education	'I am definitely interested in, you know, healthy meals and stuff.' (Older Adults) 'A cooking class.' (Amharic)
	Non-nutrition education	'Zumba.' (English) 'An ESL class … and computer class.' (Amharic)
	Qualities of programming	'Demonstration … taste testing … hands on.' (English) 'Show [residents] exactly how they'll benefit.' (Older Adults)
	Perceived barriers	'The only thing would be if they [the cooking classes] cooked with garlic and onion … that always makes me leave, and the majority cook with it.' (Spanish) '[Residents] not coming.' (Older Adults)
Current health knowledge and behaviours	Dietary behaviours	'I live by myself. So yes, I eat great food.' (Amharic) 'I was raised on pork. Now, maybe if I eat pork, it's once a month.' (English)
	Health recommendations	'And you don't have to eat meat every time we eat at dinner.' (English) 'Frying is not healthy for you.' (English)
	Health concerns	'Diabetes … high blood pressure' (English) 'My brother has diabetes and I have high blood pressure.' (Older Adults)

CSA, community-supported agriculture; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children; ESL, English as a Second Language.

One woman in the English group stated, 'When you haven't got money, and you're looking at them [the local farmers' market] and … you say I wish I could go out there and get that.' Generally, participants perceived that farmers' markets had superior produce in comparison to local grocery stores or food banks (e.g. 'They are the most fresh' (Spanish)), but the associated cost was prohibitive (e.g. 'I just haven't shopped there because I find that the prices were a little steep for me. But I love their product' (Older Adults)). A second barrier discussed was transportation (e.g. 'It's all about the travel and bringing things back here' (Older Adults)). Knowledge of farmers' markets primarily referred to participants' awareness of their locations and hours (e.g. 'Children's Hospital has a farmers' market truck that comes every Wednesday' (English)).

Theme 2: Perceptions of community-supported agriculture

Unlike farmers' markets, few participants were aware of CSA programmes and none of the residents participating in the focus groups had used them. Perceptions of CSA fell into three sub-themes: benefits, barriers and questions/concerns. Given the unfamiliarity with these types of programme, residents primarily voiced questions and concerns (e.g. 'Is it enough for my family though?' (English)). Once residents better understood the nature of these programmes, they perceived a number of advantages to participating (e.g. 'That way I wouldn't have to worry about going to Safeway or any place like that to buy vegetables, I would have them brought here and all I have to do is pay for it once it's here. That's a benefit to me' (Older Adults)). The primary barrier was the unwillingness to prepay for a box, particularly while on a fixed income, without knowing exactly what would be in it (e.g. 'So that means that what would be in the box, if I didn't want it, it's in the box anyway…' (Spanish)). Participants stated that given their limited food income each month, it was highly important that they knew exactly what they were purchasing ahead of time (e.g. 'It depends on what you put in the box' (Older Adults)), to avoid potential waste of money (e.g. 'I'm on a fixed income' (English)). Related to this concern was the amount in each box (e.g. 'If we don't have enough for just

me … and I got three children or two children, I don't need that' (English)). Participants suggested the option to see the list of produce each week prior to agreeing to purchase an individual box (e.g. 'We can see the pack list … that would be very helpful' (English)). Certain participants remained hesitant to commit to a programme that did not allow full participant choice in what could be purchased (e.g. 'I prefer shopping in the farmers' market' (Amharic)).

Theme 3: Need/interest in additional programming

Participants also described their interest in additional programming, which fell into four sub-themes: nutrition education, non-nutrition education, qualities of programming and perceived barriers. Participants were enthusiastic about nutrition education programming that could be paired with farmers' market and/or CSA programmes. Participants mentioned wanting to learn about 'cooking' (Spanish) and 'new and healthy recipes' (English). The English-speaking and Amharic-speaking groups also mentioned an interest in other forms of programming (e.g. 'I want a walking program' (English); 'An ESL [English as a Second Language] class … and computer class.' (Amharic)). When it came to the qualities of programming that residents preferred, overwhelmingly they recommended programming that was interactive and hands-on (e.g. 'Something like this, a round table. Everyone would be hands-on. And what type of dish you prepared on the table people could enjoy' (Older Adults)). The importance of being able to try new things in the moment was highlighted by several participants (e.g. 'Different colors and different flavors' (English); 'A different cuisine' (Spanish)). The majority of participants preferred programming that allowed for social support from community members (e.g. 'In a group [format]' (Spanish); 'We all love each other, let's get together' (English)). Residents also highlighted potential barriers to beginning new programmes, primarily focused on lack of resident participation ('We would hate for you to come and five or six people might show up. Would it be worth that to you to do something like that?' (Older Adults)) and dietary preferences (e.g. 'There's a lot of people that say, "Ew, I don't eat that, I don't like that"' (English)).

Theme 4: Current health knowledge and behaviours

Participants also discussed their present health-related habits and recommendations, which emerged under the following sub-themes: dietary behaviours, health recommendations and health concerns. Generally, regarding dietary behaviours, participants expressed an awareness of eating habits they would like to improve upon (e.g. 'I waste a lot of food. I'm a big girl, but I do waste a lot of food because when I cook, it's just for me' (English)). Participants also discussed aspects of their diet that were positive, such as regular consumption of produce (e.g. 'Tomatoes, jalapenos' (Amharic); 'Green peppers are very good. I love them' (Spanish)) and healthful cooking approaches ('We so used to salt … but we don't want that any more. We've flipped the page. And the food tastes so good' (English)). Interestingly, health concerns related to diet were mentioned only by the English-speaking and Older Adults groups (e.g. 'Yeah, because with senior citizens, you have people here that have high blood pressure, diabetes, and certain things' (Older Adults); 'The only health concern that I have is cancer in my family' (English)). Discussion of dietary behaviours in the English group led to brainstorming of health recommendations and ways habits could be improved (e.g. 'We don't have to eat all those heavy foods anymore, because we're already thick. The fruits and vegetables will make us come and lose all that weight' (English)).

Discussion

The purpose of the present research was to examine how residents of low-income, affordable housing communities in Washington, DC perceive farmers' markets and CSA programmes in order to better understand their interest in and preferences for nutrition-related programming. Four group discussions were held with adults living in three affordable housing communities near an established farmers' market with a planned CSA and nutrition education component. The planned CSA component would involve the enrolment of residents of the participating affordable housing communities into a weekly programme that allows payment through their SNAP benefits at a reduced cost, in which participants would receive one box of produce per week. The general consensus was that participants were highly interested in farmers' markets and CSA, despite some stated concerns. Participants reported being motivated to find cost-effective, convenient options for incorporating more fruits and vegetables into their diet. Although some reported regularly buying a variety of produce when financially feasible and enjoying healthy foods, the cost of fresh produce was the biggest barrier expressed, in line with past qualitative research among low-income communities[21–23]. Because of this barrier, participants were enthusiastic about the ability to use SNAP benefits at local farmers' markets and CSA.

Unfortunately, benefit options at these venues were not currently well understood by participants; many were not aware they had the option to use SNAP benefits at their local farmers' market. This aligns with past research suggesting that lack of awareness is a barrier to farmers' market use by SNAP recipients[17]. Furthermore, past research by Haynes-Maslow and colleagues[21] indicates that even when low-income adults are aware of this opportunity, they might not believe shopping at farmers' markets is a wise use of their food benefits, given perceived higher prices compared with the grocery store.

Indeed, participants in the current study raised similar concerns related to the local farmers' market, as well as the proposed CSA programme. Regarding the CSA programme, residents questioned whether or not they would receive a fair amount of food, if they would be able to select their produce each week (and/or decline the delivery if they did not like the options) and whether they could pay weekly *v.* monthly. This speaks to the importance of being as clear and transparent as possible about programme rules and prices when implementing farmers' markets and CSA programmes in low-income communities and highlighting the ability to use SNAP and any other cost-saving strategies available. For example, regarding CSA, programmes should highlight what the risks of potential crop failures might be for participants, along with the consequences of missing a pick-up, as repercussions denying food access would be particularly detrimental to low-income families who are food insecure.

Marketing might be a critical strategy to make residents more aware of their options. This could come in the form of signage around the community, visits from farmers' market and CSA representatives, or social media campaigns to enhance awareness. Wilson and colleagues[24] developed a social marketing campaign promoting walking in a low-income community based on motivators stated by community members in focus groups, and further research is needed on how to best develop such a campaign to promote healthy eating. One existing model is the Food Hero campaign, created by Tobey and colleagues[25]. The goal of that campaign is to increase fruit and vegetable consumption in SNAP-eligible families in Oregon by using the Internet and local grocery stores as channels of communication. Initial results indicate the campaign improved participants' positive beliefs about fruits and vegetables, providing evidence that social marketing campaigns are feasible and efficacious strategies for communicating to low-income households about dietary behaviours. Campaign developers might want to focus on motivators like convenience, freshness or savings associated with SNAP benefit use, incorporating images of culturally similar individuals and culturally relevant foods.

Results also highlight the importance of choice and flexibility for participants of CSA programmes who are low income. Although there may be some inherent difficulties given limitations based on farm product availability, it is clear that low-income adults do not consider the dollars invested in a CSA programme to be a trivial amount of money and therefore appreciate some control in what they will receive. Participants in the focus groups were thoughtful about their produce purchases and would be unlikely to participate if they believed there would be produce they were unlikely to use. One option for overcoming this barrier might involve programmes offering recipes or cooking workshops that can teach participants how to use CSA produce they are unfamiliar with, to reduce waste and increase programme interest. Another option, suggested by the Zenger Farm, involves using a 'trade basket', in which members can leave vegetables they don't want in exchange for something left by another member that might be preferable[26].

Given the general community interest in farmer's markets and CSA, we believe partnerships between affordable housing communities and these programmes may be a particularly successful and feasible method of increasing low-income households' access to fresh produce. The majority of affordable housing locations have a community room, which provides a single, convenient location for CSA produce drop-off. Further, these communities generally have staff members who can assist with outreach and enrolment in both farmers' markets and CSA programmes. Given the number of unique questions and concerns that we faced in the focus groups, we suggest that programmes take the time to have individual conversations with each potential member, if possible (e.g. via door-to-door recruitment or an informational meeting). A particularly successful method of outreach could involve peer-to-peer education via the sharing of stories from low-income residents who are already using the farmers' market or are enrolled in a CSA programme and have benefited.

Interestingly, although past research has indicated that low-income African-American adults might believe farmers' markets are not culturally congruent[17], this did not appear to be the case for our participants. Indeed, most were familiar with local farmers' markets (although few were familiar with CSA programmes) and voiced a strong desire to buy produce using these options, pending acceptable prices. This may be indicative of the relative diversity of farmers' market shoppers and vendors in the Washington, DC area, compared with other regions of the country. Participants across the four groups were also generally supportive of and interested in a nutrition education component, were it to become available in conjunction with the farmers' market or CSA programme. This in line with past research in low-income communities[23] suggesting nutrition education is a desired resource, particularly if it is hands-on and experiential (i.e. cooking classes). Participants particularly showed interest in nutrition programming that would be hands-on, practical, and allow them to develop new skills and techniques. They wanted to be active participants rather than passive observers, in line with social cognitive theory principles of observational learning and the provision of opportunities for mastery experiences[27]. Given that two of the four groups did not express health concerns, it might be particularly important for nutrition education classes to provide information about the link between diet and health, and diet as a risk factor for particular diseases. It was also determined that some effective recruitment techniques for nutrition-related programming could include going door to door and/or holding an

event in the community room immediately following the CSA drop-off. Participants reinforced the idea that providing food is a great way to encourage participation in such events.

The present study has several limitations that should be noted, including the use of a convenience sample from one urban location in Washington, DC. Research is needed with low-income adults from other regions of the country, particularly those in rural areas who have different needs and barriers compared with people living in larger cities. For example, residents of rural low-income communities generally have reduced access to chain supermarkets than those living in metropolitan areas and are even more likely to rely on convenience stores with limited variety[11]. Additionally, two of our group samples (Amharic and Spanish) were relatively small in size, indicating we were unable to fully examine the opinions of Amharic- and Spanish-speaking adults living in these communities. Further, the Amharic speakers' responses were translated into English during the focus group itself, and it is possible that some meaning may have been lost during this process. In particular, there were instances when the translator paraphrased what residents said (e.g. 'She said she likes going there because of the variety of vegetables') rather than directly translating participants' statements word for word. We were also limited by time, resources and the number of residents who elected to participate in the focus groups, and future research should attempt to recruit larger samples. In addition, social desirability might have influenced participants to respond in ways they believed would be agreeable to the interview facilitators, such that not all opinions were shared openly. Despite these limitations, we believe our study yields important implications for both research and practice regarding food accessibility and nutrition education in low-income communities.

Conclusion

In summary, focus group discussions with a diverse sample of low-income adults living in affordable housing indicated that most residents are motivated to eat healthfully and are interested in using SNAP benefits at local farmers' markets or CSA programmes (although some concerns exist related to cost). They are also interested in participating in experiential nutrition education programming, which could be tied to the other programmes to encourage use of produce purchased. Participants who reported unhealthy eating habits generally linked this to lack of accessibility and cost, not their unwillingness to engage in healthy eating. With support and culturally relevant, community-driven programming, farmers' markets and CSA programmes could increase low-income community members' access to healthy foods and reduce their risk for obesity and its co-morbidities.

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