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A Qualitative Study of Rural Low-Wealth Participants' Experiences with Community Gardens

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ABSTRACT

This qualitative study aims to understand how community garden (CG) participants experience the effects of participation on fruit and vegetable (FV) consumption and health behaviors. Semi-structured interviews and focus groups were conducted with a total of 61 CG managers and participants in the fall of 2017, in CGs located in rural low-wealth communities. Five themes were identified: Community gardens influence FV access and consumption, nutritional and agricultural knowledge improve through CG participation, CGs may serve as a kickstart to other improvements to health and wellbeing, CGs have positive impacts on participants' mental health, and successful gardens contribute to community cohesion.

KEYWORDS


United States; community gardens; SNAP; food insecurity; nutrition; fruit and vegetable consumption; qualitative research; food access; health behavior; community cohesion

Introduction

Adequate fruit and vegetable (FV) consumption is associated with many positive health outcomes, including reduced risk of chronic disease, cancers, and all-cause mortalities.¹ Increasing FV consumption is vital as only 12.2% of people aged 18 and older in the United States consumed the recommended amount of fruit (1.5–2 cups/day), and 9.3% consumed the recommended amount of vegetables (2–3 cups/day), in 2015.^{2–4}

Community Garden (CG) interventions have been associated with increased access to and consumption of FV.^{5,6} This association has been particularly strong among participants with limited access to food retailers⁷ and within low-wealth populations.^{8,9} Community Gardens may also help low-wealth communities to cope with the high cost of FV and increase food security.^{10,11}

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While most research on CGs has focused on FV consumption and related behaviors, literature on the broader impact of CGs is growing. Community Garden participation has been associated with increases in physical activity and a higher likelihood of having a normal BMI compared to non-gardeners in the same neighborhoods. However, this evidence has limited causal inference due to the observational nature of much of the literature and potential reverse causation, as people who participate in CGs may have healthier habits compared to non-participants.^{12–14}

Social capital, or the support that individuals get from their informal networks, has been explored in the context of CGs. Alaimo et al. found that having a household member participate in a CG was associated with positive perceptions of social capital among low-wealth residents of Flint, Michigan.¹⁵ Hite et al. argue that community gardens can transform empty spaces into places of engagement and empowerment, increasing social capital, especially within historically marginalized communities.¹⁶ A relevant aspect of social capital to CGs is community cohesion, or the sense of belonging people feel in their communities,¹⁷ which the authors seek to explore alongside perceived physical health outcomes. A systematic review by Dyg, Christensen, and Peterson,¹⁸ found that CGs were often associated with well-being, but noted that more research on vulnerable populations was needed, and that quantitative methods were predominately used to analyze CG health outcomes. This study seeks to fill the current qualitative gaps in the literature by using a multi-site qualitative study of low-wealth participants in CGs.

The purpose of this study is to understand how community garden participants experience the effects of participation on their health. The specific research question is: How do people who participate in a community garden understand its effects on their consumption of fruits and vegetables; community cohesion; and other aspects of their lives?

Methods

Study Design and Setting

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal nutrition program, providing benefits to low-wealth households that can be used to purchase groceries at food retailers. [Institution name, removed for peer review] is an implementing agency for SNAP-Ed, the nutrition education component of SNAP. With SNAP-Ed funding, [institution name] supports 18 CG projects in 6 [state name] counties. These counties were selected due to a combination of unmet need around food access and prior academic presence in the county. [Institution name] partners with local organizations to implement these CGs. These local organizations represent an array of groups such as community centers, religious organizations, and public housing authorities.

A community member serves as a manager for each garden and receives a stipend to coordinate gardeners and logistics. These gardens are in areas with high levels of SNAP eligibility, though individuals do not have to be receiving SNAP to participate in the CG. The open eligibility to participate in the gardens was intentional to create an atmosphere of inclusion. Gardens vary in size and structure based on the availability of land at the partner organization, and 17 of the 18 gardens have communal plots that all participants share. One garden has separate plots for each individual participant or family.

The use of qualitative methodology allows for an in-depth exploration of how and why health behaviors are enacted, which was central to this study's research questions.^{19,20} Further, the research team and community members had observed impacts beyond FV consumption in the garden, but reports of these benefits were anecdotal. Thus, using qualitative methods was ideal to understand the experience of CG participants, and how participants conceptualize benefits of participation, since little was known about this phenomenon.

Participants and Recruitment

To be eligible for this study, participants had to be at least 18 years old and be involved in a CG. There are two types of roles in the gardens: managers and gardeners. Gardeners are community members who are volunteers involved in planting, harvesting, and other related garden responsibilities. Managers are also gardeners and members of the community, and take on additional administrative and leadership responsibilities. They serve as liaisons to the SNAP-ED implementation agency, and receive a stipend for their work.

Data collection was conducted separately for each group given these different roles. Focus groups were used to gather a variety of perspectives on gardener perception of benefits of CG participation, as time with the garden and level of involvement varied among participants. When exploring feelings of community cohesion among gardeners, it was particularly useful to have a group dynamic to allow participants to react to each other's ideas and the questions posed, as well as to discuss their shared experiences as CGers.²¹

Semi-structured interviews were held with managers due to the smaller number of managers (there is only 1 or occasionally 2 managers per garden compared to an average of 15 or more gardeners). Further, as the managers served as key informants, being both members of their communities and managers of the garden, individual interviews allowed for a more tailored conversation based on their experiences. Finally, we wanted gardeners to feel free to critique garden leadership, which would have likely been influenced by social desirability bias if managers were present. As discussed by Tolley et al., using multiple modes for collecting qualitative data can strengthen evidence of relationships as findings can be triangulated.²²⁻²⁴

Trained researchers conducted semi-structured interviews with garden managers (n = 12 interviews) and focus groups with gardeners (n = 6 groups, 48 total participants) in person during the summer and fall of 2017. The focus groups and interviews lasted between 60–90 minutes. All participants received an incentive of 25. USD

For manager interviews, the researchers randomly selected 12 of the 18 gardens, using stratification to ensure that 2 from each county were selected. Managers were solicited for participation by e-mail and phone. One of the gardens had 2 co-managers who were interviewed together, so there were 12 interviews with a total of 13 people. All managers selected agreed to participate in interviews. Such a sampling procedure was not possible for focus group participants, as participation in the gardens fluctuates and a comprehensive list of gardeners was not available. Instead, a combination of purposive and snowball sampling was used to recruit community gardeners. The sample was purposive in that individuals who were active participants in the garden were recruited. One focus group was conducted in each county (n = 6), with gardeners from all 3 gardens in the county invited to participate, to ensure a diversity of perspective. Snowball sampling was employed by asking garden managers to recruit via use of flyers and via word of mouth by other gardeners. All CG members were eligible to participate in the focus groups.

One focus group (the first conducted) was dropped from the sample because of confusion around eligibility for the focus group. Specifically, several members of the community who were not gardeners attended this focus group. Researchers worked closely with garden managers to more explicitly advertise eligibility criteria for the other focus groups, and this problem was not experienced again during data collection.

This study received approval from [institution blinded for review].

Tools and Instruments

The study's first and senior authors, who both have expertise in qualitative research, developed the interview and moderator guides. Instrument design was guided by our research team's interests, based on findings from previous years, as well as current gaps in the literature related to community gardens. The authors also consulted a qualitative methodologist at the university's research support center. Finally, another author (xx) who is also a community member reviewed the guides (this author was not a participant in focus groups or interviews). Sample questions included: How, if at all, has being a part of this CG program affected you (in a good or bad way)? and How has being involved in the garden changed how you feel about your community? Most questions were the same for manager interviews and gardener focus group guides, though some questions were tailored based on type of participant.

The first author trained all data collectors on the semi-structured interview and focus group guides. All data collectors had prior experience in qualitative research and data collection. Study background and purpose were also provided to data collectors to enhance their ability to probe about concepts related to the core research question. The first author also trained data collectors on methods to minimize biases during data collection, and data collectors were selected who did not have close ties to the CG project in order to minimize these biases. One interview and 1 focus group were conducted in Spanish as there was 1 CG with predominately Spanish speaking participants. For these data collections, the interview and focus group guides were translated from English to Spanish by the first author, who is fluent in Spanish. The first author also conducted the data collection in Spanish.

Data Analysis

Interviews and focus groups were audio recorded with permission. Audio files were transcribed verbatim. Spanish transcripts were then translated to English by fluent Spanish speakers and all transcripts were de-identified. Analysis was conducted using Dedoose qualitative software (version 4.7, SocioCultural Research Consultants, Los Angeles, CA).

The qualitative research process described by Tolley et al. was followed, using 5 steps: reading, coding, displaying, reducing and interpreting.²² The coding approach was deductive, meaning that codes were predefined and assigned to qualitative data during the coding process. First author (initials) read through all transcripts before developing a draft of the codebook based on themes previously identified in the literature and project research questions. A community member who is also a staff member at [institution name] (initials) checked the codebook for clarity and applicability. To ensure inter-rater reliability, the team was trained by the first author (initials), who coded the first transcript with all the coders. A meeting was held to discuss the coding process. Discrepancies in coding were resolved by consensus. The codebook was then revised to improve clarity and reliability. The remainder of the transcripts were double-coded by a total of 6 coders who were split into 3 pairs of coders. Discrepancies in coding were resolved by consensus, reached through discussion between the 2 coders in each pairing. Coders read through transcripts fully before coding. The first author (initials) was available if coders could not reach consensus, but this step was not needed. The first author checked each coded transcript and contacted coders with any questions.

Coded data was then displayed and grouped into initial theme and sub-theme pools by the first and second authors. A debriefing meeting after all coders (including authors x, x, and x) had completed coding was held to identify themes and subthemes using an inductive approach (identifying themes and patterns that emerged from the data). Several follow-up meetings

were held with the research team and continued until agreement was reached on specific themes and subthemes.

Thematic analysis, informed by the research questions, was used to group the findings into themes and subthemes. The interpretation stage was iterative, as described by Tolley et al.²² In the final stages of analysis, interpretation was used to contextualize findings and situate the findings in the wider literature on CGs.

Results

Demographic characteristics of the interviewees are shown in Table 1. The majority of participants were female and African American. Race was self-reported by participants from a list that included White, Black, Asian or Pacific Islander, Native American (including Alaskan), and other (please describe). Race was collected as a “check all that apply” question. Latinx ethnicity was measured separately as a binary “Yes/No” question. Demographic characteristics were similar in focus groups and individual interviews.

Five major themes were identified from interviews and focus groups (see Table 2). Themes did not differ by participant type (manager versus gardener), but the participant type is noted throughout for context.

Community Gardens Influence FV Access and Consumption among Participants

Access and consumption of FV was 1 of the primary impacts discussed by participants. Four subthemes were identified: Increase in FV consumption

Table 1. Participant demographic characteristics (garden managers (n = 13) and community gardeners (n = 48), total n = 61).

Characteristic	n = 61	n = 48	n = 13
	All	Focus Group	Garden Manager
Gender, n (%)			
Male	12 (19.7)	8 (16.67)	4 (30.8)
Female	49 (80.3)	40 (83.33)	9 (69.2)
Race, n (%)			
American Indian or Alaska Native	5 (8.9)	4 (8.89)	1 (9.1)
Asian	2 (3.6)	2 (4.44)	0 (0)
Black or African American	38 (67.9)	31 (68.89)	7 (63.6)
White	9 (16.1)	8 (17.78)	1 (9.1)
Mixed Race	2 (3.6)	0 (0)	2 (18.2)
Ethnicity, n (%)			
Hispanic/Latinx	6 (10.2)	4 (8.33)	2 (18.2)
Not Hispanic/Latinx	53 (89.8)	44 (91.67)	9 (81.8)
Age, mean (SD)			
	53.1 (16.1)	52.9 (17.5)	53.6 (9.3)

Demographics were collected by self-report in a short survey prior to interviews/focus groups. Missing values are due to participants leaving demographic characteristics blank. 5 values were missing on race, 2 on ethnicity, and 3 on age.

Table 2. Themes and subthemes of perceived physical and mental health impacts of community gardens in low-wealth rural communities.

Themes and Subthemes		Demonstrative Quotes From Sub-Themes
(1) Community gardens influence fruit and vegetable access and consumption among participants		
1A. Increase in fruit and vegetable consumption associated with garden participation		"As a result [of the community garden], we are seeing kids are eating healthier because they're going to the garden and saying, 'Let's do a tomato sandwich.' Or you know, 'Let's do some some cucumbers and vinegar.'" Garden Manager
1B. Gardens improve access to fruits and vegetables for community members who are food insecure		"Some of the elder people that can't get out to the grocery store, you can take them fresh produce that you have raised like beans, corn, okra, collards, potatoes, or things of that nature and that also helps feed hungry children in the communities where the parents can't afford to go to the grocery store and buy the stuff, and it brings about a community as well." Community Gardener
1C. Gardens provide access to high quality fruits and vegetables		"Garden-grown broccoli for example, just doesn't compare [to store bought broccoli]. The first time I had garden grown broccoli, I was like, this is like a different plant! I've never experienced this." Community Gardener
1D. Gardens help reduce household food costs for some participants		"Vegetables are expensive and cantaloupe and asparagus and stuff like that it's super high. So, I try to get you know it's a benefit when you save money and also you learn how to prepare different things that's fresh . . ." Community Gardener
2. Nutritional and agricultural knowledge improve through community garden		
2A. Increase in gardening knowledge since community garden involvement		"[t the garden] is a learning experience because I never worked in the garden, well I have when I was younger. But I really didn't know too much until I started doing this community garden . . . It is a learning experience, every day you are learning something new." Community Gardener
2B. Gardens enhance connection to cultural traditions around food and farming		"It is very beneficial for our children to learn how to garden because they have been raised here and have a totally different culture. We 3 [other focus group participants] came from agriculture [in Latin America] and we know that back in our days we could grow things and we did the planting with our parents. But here the children are from here have a different culture . . ." Community Gardener
2C. Exposure to new types of produce and increased knowledge around fruit and vegetable preparation methods through gardens		"[We had a] fall festival. And we invited everybody from the community, and we had a chef that came with his little set up, and he was using from the garden things like spinach, and kale, and onions, and you know, all these kinds of things. And you know, it was great. I mean, people were lined up." And I remember this 1 woman saying, 'I've never seen kids eat greens like that!' You know, it was like, they were experiencing, uh, a dish with cooked spinach that they hadn't even had before. And was a huge success I think, because it makes that connection between what we're growing in the garden and what you can do with it. And how to cook it." Community Gardener
3. Community gardens perceived as a kickstart to improvements to physical health and wellbeing		"We're coming from a health perspective where this is what you need, this is what we need, we're dying because there's an epidemic in our community. And through gardening, we can, we can deal with the diabetes, we can deal with obesity, through working manually, you're gon' stay tone. You're gon' keep your weight down, now we can eat healthy. That's, that's central." Garden Manager

(Continued)

Table 2. (Continued).

Themes and Subthemes	Demonstrative Quotes From Sub-Themes
<p>4. Community gardens have positive impact on participants' mental health</p>	
4A. Connecting with nature is a spiritual experience	<p>"We have a lot of elderly people that are ex farmers . . . and it just breathes life back into them to come out and get back down to the mother earth, pick up potatoes, or pick peas, but just to watch someone do it . . . they'll come out and pull up a chair into the row and watch you do it." Community Gardener</p>
4B. Gardens serve as a place of stress relief	<p>"Well, I in the garden, it is very different in the way that, very different in the way that it works here. But for me in the garden, for me it is a de-stressing experience. Because I am stressed and I leave to go to the garden and I destress, I destress a lot." Community Gardener</p>
<p>5. Successful gardens contribute to community cohesion</p>	
5A. Sense of community among gardeners	<p>"[Since joining the garden] I've taken more pride in [community name] . . . it just gives me a feeling of family and I think that's being part of the community." Community Gardener</p>
5B. Gardens bring together different segments of the community	<p>"That garden has done a lot for our community. And you know, any, any time we're working together, I love respecting some of the people that are sitting there watching us work, and telling us what to do. So that, that connection is there, and it just makes that connection stronger. You know, as you, you grow up and you leave, you come back home, or, you know, get on with your life and you connect back with those elders . . . it's just making our community stronger, it makes you be there for each other." Community Gardener</p>
5C. Garden challenges sometimes result in tension between participants and/or community members	<p>Participant 1: "We have had some that volunteered and don't volunteer anymore because they felt sorta like she felt, like you go out there and do all the work, and then everybody wanna come reap the harvest. As a pea pop up, or a collard pop up, or something like that, they asking 'when can we go to the garden and get something?' And you know, it's a community garden so you got to share the garden . . . um, so a lot of them got upset about that."</p> <p>Participant 2: "Maybe I have a different concept of a community garden but, you know, if you don't wanna come and work, but we got it, and you wanna come and get it, please come. How are we gonna get you to know what's going on if you don't come, you know? We have a lot of people that don't work. People come through and get vegetables, we do not know, do not see but 1 time. But you know it's, the joy of it to us is we have enough people to harvest and put it there so people can get it. I love that." Community Gardener</p>

associated with garden participation, Gardens improve access to FV for community members who are food insecure, Gardens provide access to high quality FV, and Gardens help reduce household food costs for some participants.

Increase in FV Consumption Associated with Garden Participation

Participants frequently described eating “more vegetables, more fruit” and for a minority, “less meat” since being involved in the garden. Participants often spoke of their experiences eating produce from the garden:

“For lunch today, we went out and picked some lettuce and tomatoes and we just had a salad . . . I wouldn’t have eaten that ordinarily, but because it’s there, we do pick a lot.”

Garden Manager

Participants described increasing their FV consumption due to the convenience and ease of consuming FV from the garden and noted a similar increase in children who gardened (See [Table 2](#), Subtheme 1A). This increase in FV consumption was seen as 1 of the primary benefits of garden participation and was often discussed alongside increased knowledge around preparation methods (Subtheme 2C) and overall improvements to wellbeing (Theme 3).

Gardens Improve Access to FV for Community Members Who are Food Insecure

Often the increase in consumption of garden produce was also experienced by the wider community. As 1 participant described:

“Some of our shut-ins and seniors didn’t get many fresh vegetables unless people . . . took it to them out of their personal garden. And now they have a means and it makes them feel better to go get it out of the CG.” **Community Gardener**

Several participants described distributing produce to food insecure members of the community through food banks, community groups, or through informal networks as described in [Table 2](#), Subtheme 1B. One manager stated that the garden provided a way to “[combat] some of [the] hunger” existing in their community.

Several garden managers described community-wide events that helped facilitate access, where garden produce was cooked and served to anyone in the community. Seniors and low-wealth community members were often the primary beneficiaries of such events. The distribution of FV to community members in need was often a point of pride for managers and gardeners, who often stated that the garden was “making a difference” for vulnerable members of the community.

Gardens Provide Access to High Quality FV

Alongside an increase in access to FV, 1 of the most common benefits reported by participants was the access to high quality produce. Most participants noted

the quality of the fresh produce they received and enjoyed from their gardens, particularly as compares to retail outlets (See [Table 2](#), Quote 1C). Participants frequently reported relief in understanding “what you are putting into your body and your families’ body is 100% healthy”, especially given the fresh produce was void of “chemicals”, “pesticides”, and/or “steroids”.

Many participants also found that food from their garden tasted better when compared to that of retail outlets. As 1 participant explained:

“The garden [produce] is sweeter, fresher, juicier . . . and more delicious.” **Community Gardener**

Several participants recounted their first experience trying garden produce, noting how different it tasted compared to the produce they were used to. During 1 focus group, most of those gathered strongly affirmed 1 gardener’s experience with garden-grown tomatoes:

“You cannot beat a garden grown tomato. A tomato grown from the garden is quite different from a tomato bought from the store . . . it’s just the way the food tastes coming from the garden.” **Community Gardener**

Gardens Help Reduce Household Food Costs for Some Participants

In addition to the perceived better quality of the garden produce, several participants noted that the CG helped them save money. Most participants perceived vegetables to be expensive when purchased at the grocery store and getting garden-grown produce for free was a benefit of participation. As 1 participant noted:

“It [participating in the garden] saves you a lot of money . . . [compared to the] grocery store, you save a lot more money growing on your own.” **Garden Manager**

Several participants stated or implied that the prohibitive cost of produce presented a barrier to incorporating these fresh foods into their diet (See [Table 2](#), Subtheme 1 D). By participating in the garden, directly or indirectly, those with limited incomes now had access to produce they would like to buy but had not been able to due to financial barriers. Many participants reported not having to purchase any vegetables throughout the summer because of the garden. One gardener also described saving money simply by not having to go to the supermarket as often, since when they went to supermarkets they would frequently buy additional items they did not need.

Nutritional and Agricultural Knowledge Improves through CG

In addition to FV access and consumption, participants also discussed the impact the garden had on food and agricultural knowledge. Three subthemes were identified: Increase in gardening knowledge since CG involvement,

Gardens enhance connection to cultural traditions around food and farming, and Exposure to new types of produce and increased knowledge around FV preparation methods through gardens.

Increase in Gardening Knowledge since CG Involvement

Participants reported gaining gardening knowledge or re-learning what they had learned as children. One seasoned gardener described her experience:

“There’s always something to learn. And I’ve learned a lot about different techniques of growing . . . like this summer, I just learned that when you plant cucumbers, you should trim the vines, so they can really focus on growing the cucumbers. I didn’t know that, and I’ve been gardening for years!” **Community Gardener**

Managers and gardeners alike used phrases such as “always learning” about gardening processes like planting, weeding and harvesting (see [Table 2](#), Subtheme 2A). Garden managers, however, expressed a greater depth of knowledge around timing of planting crops, protection from predators, and other overarching aspects of garden maintenance compared to gardeners.

Gardens Enhance Connection to Cultural Traditions around Food and Farming

For many participants, learning about gardening was important to reconnect communities with their cultural traditions. As most of the gardens were in rural areas, many participants had connections to gardening or agriculture but felt that connection had been lost over time. Participants viewed this experience as particularly important for children:

“I think it [the garden] is immensely educational to them, because if you ask most small children, where does their food come from, they’ll tell you Food Lion or Walmart . . . they have no clue that it’s grown out in the dirt. And, so, it’s just been really educational to our younger um, society, to see where the vegetables actually come from and be able to help harvest.” **Community Gardener**

Participants often spoke of parents or grandparents who had farmed or taught them about agriculture and were happy that they were rekindling this knowledge (See [Table 2](#), Subtheme 2B). Participants also noted the benefits of knowledge being passed down from generation to generation, discussed further in Subtheme 5B.

Exposure to New Types of Produce and Increased Knowledge around FV Preparation Methods through Gardens

Almost all participants noted trying new, unfamiliar produce because of their involvement in the garden. One participant noted she “had never been interested” in the CG as she had a home garden, but once involved, appreciated the opportunity to try new produce:

“I describe it [the CG] as a blessing. Because you try so much, not just tomatoes and chilies as I had [in my garden] before . . . but rather, you try more [produce].” **Garden Manager**

The garden also provided youth with exposure to fresh fruits and vegetables they had not experienced before. Many parents and other adult participants described the youth’s response, noting how they “are seeing kids [eat] healthier” as they frequent the garden for a snack. One gardener recounted the active engagement her son had in going out into the garden and:

“looking around and being able to participate and actually pulling . . . what he would eat, what he’s seen grown and enjoy.” **Community Gardener**

Some gardens also held nutrition education events. Several participants noted that knowledge around produce cooking preparation had facilitated consumption (Table 2, Subtheme 2C). Other gardeners and managers shared information through recipes and preparation advice.

While most participants had a positive experience trying new produce, some preferred familiar produce. One manager noted that she had to plan what to plant with participants so that food would not go to waste:

“We planted herbs and nobody used them. And they wanted us to plant all this stuff, like eggplant. But nobody took it. It just wasn’t something people knew how to use, or to cook . . . That’s why I [now] asked them “what do you want?” . . . I had to find out what they’re gonna eat, what they’re gonna take.” **Garden Manager**

Community Gardens Perceived as a Kickstart to Improvements to Physical Health and Wellbeing

Many participants reported improvements to aspects of their health beyond dietary intake since their involvement in the CG. While these improvements may not be tied exclusively to participation in the CG, participants often attributed the origins of these changes to the CG. Two subthemes were identified: Gardens seen as an intervention opportunity for chronic disease, and Perceived improvements to overall health and wellbeing after garden initiation.

Some participants also cited improvements to existing conditions and chronic diseases. Blood pressure, diabetes, and cholesterol were often discussed in tandem with weight loss:

“ . . . I lost weight because I eat less meat and I eat more vegetables [since starting to participate in the garden]. And that was beneficial to my health believe it or not, my blood pressure went down, and my doctor told me, this was 6 months ago, that when you come back for your 3-month checkup if it’s still down, this would be 3 times it would be down, then I’m gonna take you off your blood pressure medicine. And I’ve been on that since I’ve been like 18.” **Community Gardener**

Participants often framed these comments to attribute causality to the garden intervention providing a way out of a condition they perceived to be irreversible (see Table 2, Theme 3). Respondents also discussed improvements to overall health and well-being. These comments often related to the benefits of being outside, getting out of the house, and getting exercise. These comments were often not tied to a singular health outcome, but rather discussed as intangible benefits to health:

“For me, it is very good to breathe fresh air from being outside, and nature is very good for health.” **Community Gardener**

Comments related to general wellness were often discussed alongside mental health, explored in the following section.

Community Gardens Have Positive Impact on Participants’ Mental Health

There was no dedicated question around mental health benefits in the focus group and interview guides, yet mental health benefits were often brought up by participants in response to questions about how garden involvement affected the participant in good or bad ways. Three subthemes emerged from these comments: Connecting with nature is a spiritual experience, Gardens serve as a place of stress relief, and Gardens provide relief from monotony of daily life.

Connecting with Nature Is a Spiritual Experience

Participants frequently noted that the garden environment was peaceful and meditative. One participant explained her connection with gardening:

“I recently started meditating and getting your hands in the dirt, I don’t know, it just kinda opens your mind up, and you’re more in touch with the earth. I can’t explain it.”

Community Gardener

For some gardeners who had been involved in farming in the past (see Subtheme 2A), having the chance to immerse themselves in that environment again was spiritual. This experience was described as being particularly valuable for the elderly. As noted in Table 2 (Subtheme 4A), although some seniors could not actively participate in regular garden tasks, they still derive benefit from being close to the garden, watching others do the things they remember from their youth.

Gardens Serve as a Place of Stress Relief

Several participants described the sense of relief the garden provides from the “daily grind”, especially for mothers who take care of household tasks while their partners work outside the home. The garden was often seen as a place of

escape, with some participants noting that the garden gave them a reason to get out of the house:

“I agree with what she [another participant] said because I talked with my son and he said “Why do you go to the garden every day, every Saturday?”, when I talk to him about the garden, and I say “because it makes me happy.” Here, I feel suffocated inside my house . . .”

Community Gardener

Others described the pride and sense of well-being derived from the chance to physically beautify a place that often receives little attention in that regard, such as a public housing development.

Some participants discussed the relief from Post-Traumatic Stress Disorder (PTSD) for veterans. One gardener, a veteran, explained:

“I talk to the veterans. It calms us, gives us . . . you don’t know what we’ve seen and what we’ve been through, and, and just working out there in the garden . . . gives you a sense of—as my wife would tell you, I’m, I’m waiting on it to get to the daylight, so I can get to the garden. And I’d stay there all day if I could.” **Community Gardener**

Successful CGs Contribute to Community Cohesion

Participants were asked about their sense of community and whether it had changed since being involved with the garden. Three subthemes related to community cohesion emerged: Sense of community among gardeners, Gardens bring together different segments of the community, and Garden challenges sometimes result in tension between participants.

Sense of Community among Gardeners

Participants often discussed the community among their fellow gardeners using phrases such as “like family” and “building relationships” to describe the group of gardeners and noted that the teamwork involved in the garden allowed them to better get to know community members (See [Table 2](#), Subtheme 5A). Some gardeners described the sense of pride they felt when crops had been successful, which also contributed to feelings of unity among gardeners.

Managers had a more robust perspective on community cohesion, since they had often witnessed the evolution of the garden. One interviewee shared the domino effect the garden had on creating a resident council at a public housing development:

“from digging in the dirt we found that the garden brought people together and they built relationships. And in building those relationships, they found out we all have some common interests, as it relates to how do we, not only feed ourselves and better eat, but how do we make things better in our community. From that we established a resident council . . .” **Garden Manager**

Gardens Bring Together Different Segments of the Community

Participants noted how people came together over the garden who may otherwise not have interacted (See Table 2, Subtheme 5B). Often, the garden involved people from different generations, as this gardener describes:

“There’s a lot of times that adults and teenagers or children don’t get together to learn certain things, certain things that elders can teach younger children. Yes, it is about growing vegetables that is healthier for us that don’t have pesticides and things like that, but I feel like it can also be an effort to learn different things.” **Community Gardener**

Managers also highlighted intergenerational interaction and having “all kinds” of people working in the garden. Participants experienced a sense of pride when their garden was successful, which was often tied to a sense of teamwork and shared success.

Garden Challenges Sometimes Result in Tension between Participants

While most gardeners experienced a greater sense of community through garden participation, a minority expressed frustration when they felt certain gardeners were not contributing enough:

“I just got fed up with the fact that everybody [was] procrastinating so much that you know the garden really didn’t do what it like it’s supposed to . . . Go and come out to the gardens standing there watching folks everybody out there working is not participating. You come out the garden just to see you out there it’s not participating.” **Community Gardener**

Another source of tension concerned who should benefit from the garden produce (see Table 2, Subtheme 2 C). In 1 focus group, some participants were happy to share produce with members of the community who were not gardeners, while others felt a sense of resentment toward community members who did not contribute to the garden but received produce anyway.

Discussion

The qualitative findings of this study support the quantitative literature on the association between CGs and increased FV consumption, particularly in low-wealth communities.^{8,9,25} This study adds to the literature by identifying access to higher quality produce as a perceived benefit of CG participation.²⁶ These findings are consistent with qualitative research by Haynes-Maslow and colleagues who identified quality of available produce as a barrier to FV consumption in low-wealth communities in North Carolina.²⁷ In the Haynes-Maslow study, participants were enthusiastic about garden-grown produce based on taste, but were also interested in having control over how the produce was grown, often emphasizing their desire for organic or minimal pesticide use in production. This points to an opportunity for future studies to explore how

food sovereignty affects diet and health as people take control of decisions around production.

Garden participation was also reported to expose participants to new types of FV and increase likability, sometimes reported alongside improvements in FV quality. This suggests an opportunity for future studies to include quantitative measures of FV preference as well as consumption to capture the stages of change between intervention and consumption, which may be mediated by exposure to new types of FV.

This study's findings are consistent with the literature on cost-saving aspects of FV growing for CG participants.²⁸ It is important that the community gardeners make decisions about what produce is grown, for if produce is grown that gardeners will not eat, the cost-saving benefit will go unrealized. Given that the gardens are in low-wealth communities, some participants may have been food insecure, but participants did not discuss their own food security. They did discuss the increased food security of community members (See Subtheme 1B), which is consistent with other findings on community food security and CG interventions.¹⁰ The literature around cost savings and food insecurity related to garden participation is limited, and quantitative research is needed to further examine changes in FV expenditures and food security before and after gardening is initiated. This study contributes to the growing literature on the impact of CGs beyond FV consumption.^{12,15,16,18} Many participants valued that the garden spurred a return to an agricultural identity and related cultural traditions. It also provided a mechanism for reconnecting with youth and teaching traditions that are being lost.

While the therapeutic value of nature is well-established,^{29–31} it has been explored less rigorously in CG settings. Rather than spending leisure time in nature, participants are working to produce their harvest in CGs. Gardening can involve less relaxing elements such as battling insects and weeds, usually alongside other participants.^{31–33} Despite the challenges of gardening, this study's results indicate that working in the garden offers a variety of mental health benefits. These benefits are consistent with findings from a study of a refugee population in Minnesota, which found that gardens served as a way for this population to manage stress and trauma.⁹

Participants also identified the garden as a successful intervention for other health outcomes, such as weight loss and chronic disease prevention and/or management. There is limited literature related to the association between CG participation and these more distal health outcomes. The researchers asked broadly about how the garden had affected participants, and these health outcomes were often discussed in tandem with FV consumption. Participants frequently attributed causality to the improvement of their condition with involvement in the garden. It is unlikely that such relationships are purely causal, but the perception of the causal effect of the garden on

participants' health is important for a few reasons. Positive outlooks have been associated with improved health outcomes for those with cardiovascular disease,^{34,35} so the combination of improved physical and mental health outcomes (reduced stress and anxiety) may contribute to the participant's improved health status. Community gardens may have a ripple effect of encouraging participants to improve other aspects of their diet and lifestyle. This suggests the importance of future research examining the ways in which garden involvement may contribute to other lifestyle changes.

The decline of normative "joining", or being a part of social, cultural, or religious groups that bring people together on a regular basis, has resulted in the decline of social capital in the United States.³⁶ The results presented herein suggest that CGs can contribute to a critical aspect of social capital, that of community cohesion. Both gardeners and managers frequently reported feeling a stronger sense of community after participating in the garden.

This study's findings are consistent with quantitative research showing that community members participating in gardens reported increased levels of social capital and social support compared to those who did not participate in CGs.^{15,16,37} In addition to improvements to health outcomes such as diet and mental health, the CG can be a fertile space for building strong social ties. This community cohesion is the lubricant for increased social capital.³⁸⁻⁴⁰

Implications for Research and Practice

It should be noted that while most participants reported the benefits of CGs, a minority were frustrated with garden operations and policies. Participants who expressed this discontent often noted that their garden lacked volunteers, leadership, and/or had experienced crop failure. Because CG interventions require active participant engagement, it is critical that gardens are set up to maximize success, in order to achieve health improvements. These findings support the importance of academic and nonprofit partners prioritizing providing technical assistance for gardens for interventions to be successful.

While FV consumption remains an important outcome to measure with respect to CGs, the outcomes discussed above are equally important to evaluate, as they also contribute to well-being. Further, in CG interventions, FV consumption may hit a ceiling after longer periods of intervention, while other outcomes, such as chronic disease prevention or weight loss, take longer to take effect.

Within SNAP-Ed, the funding mechanism for this CG project, there is a growing emphasis on policy, systems and environmental change (PSE) interventions to complement its historical focus on nutrition education. A CG is a PSE intervention, and the impacts to evaluate in PSE interventions are rarely at the individual level. As SNAP-Ed continues to encourage implementation of PSE interventions, data collection and analyses beyond FV consumption will be important to be able to evaluate the full impact of these projects.

Limitations

Participants in this study were generally aware that [institution name] provided funding for their gardens, and [institution name] researchers did the data collection. As such, participants may have felt pressure to report benefits of the CG. Researchers tried to minimize perceived pressure by ensuring that research staff other than the head CG management team collected the data and encouraged participants to speak freely so that any criticism could be used to improve the project. As [institution name] is the implementing agency for SNAP-Ed, it is possible that researchers may carry a bias in identifying benefits of CG participation. However, this research also had an internal purpose of improving technical assistance to CGs, and data collection teams were trained to reduce bias in data collection. The authors' familiarity with the program was a strength in other ways, such as being able to construct an interview guide that was appropriate for the gardens and being able to construct follow-up probes to participants' responses.

Another limitation is not having ascertained whether participants were SNAP-eligible themselves; rather, SNAP-eligibility was assessed at the community level. Such assessment is consistent with the intervention of the garden at the community level. Because this research is qualitative, the researchers cannot quantify the improvements in FV consumption or other reported health outcomes associated with garden participation. This study's findings suggest an opportunity for future research to utilize a mixed methods approach to triangulate findings.

Conclusion

Through this qualitative study of the impact of a SNAP-Ed-funded CG intervention in a low-wealth, predominantly rural population, participants reported a wide range of benefits associated with garden participation. Participants reported increased FV consumption since garden initiation, and reported a variety of other benefits, such as reduced stress and increased physical activity and community cohesion. This study indicates that in evaluating CGs, a combination of both quantitative and qualitative methods is important to assess outcomes beyond FV consumption to capture the cumulative effects of these interventions.

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References

1. Boeing H, Bechthold A, Bub A, et al. Critical review: vegetables and fruit in the prevention of chronic diseases. *Eur J Nutr.* 2012;51(6):637–663. doi:10.1007/s00394-012-0380-y.
2. Lee-Kwan SH, Moore LV, Blanck HM, Harris DM, Galuska D. Disparities in state-specific adult fruit and vegetable consumption — United States, 2015. *MMWR Morb Mortal Wkly Rep.* 2017;66(45):1241–1247. doi:10.15585/mmwr.mm6645a1.
3. CDC. CDC Online Newsroom. Only 1 in 10 adults get enough fruits or vegetables. <https://www.cdc.gov/media/releases/2017/p1116-fruit-vegetable-consumption.html>. Accessed September 28, 2020.
4. Health Gov. Current eating patterns in the United States - 2015-2020 dietary guidelines. <https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines/chapter-2/current-eating-patterns-in-the-united-states/>. Accessed October 12, 2020.
5. Loso J, Staub D, Colby SE, et al. Gardening experience is associated with increased fruit and vegetable intake among first-year college students: a cross-sectional examination. *J Acad Nutr Diet.* 2018;118(2):275–283. doi:10.1016/j.jand.2017.09.005.
6. Ornelas IJ, Osterbauer K, Woo L, et al. Gardening for health: patterns of gardening and fruit and vegetable consumption among the navajo. *J Community Health.* 2018;43(6):1053–1060. doi:10.1007/s10900-018-0521-1.
7. Wang H, Qiu F, Swallow B. Can community gardens and farmers' markets relieve food desert problems? A study of Edmonton, Canada. *Appl Geogr.* 2014;55:127–137. doi:10.1016/j.apgeog.2014.09.010.
8. Barnidge EK, Hipp PR, Estlund A, Duggan K, Barnhart KJ, Brownson RC. Association between community garden participation and fruit and vegetable consumption in rural Missouri. *Int J Behav Nutr Phys Act.* 2013;10(1):128. doi:10.1186/1479-5868-10-128.
9. Hartwig KA, Mason M. Community gardens for refugee and immigrant communities as a means of health promotion. *J Community Health.* 2016;41(6):1153–1159. doi:10.1007/s10900-016-0195-5.
10. Furness WW, Gallaher CM. Food access, food security and community gardens in Rockford, IL. *Local Environ.* 2018;23(4):414–430. doi:10.1080/13549839.2018.1426561.
11. Gregory MM, Leslie TW, Drinkwater LE. Agroecological and social characteristics of New York city community gardens: contributions to urban food security, ecosystem services, and environmental education. *Urban Ecosyst.* 2016;19(2):763–794. doi:10.1007/s11252-015-0505-1.
12. Zick CD, Smith KR, Kowaleski-Jones L, Uno C, Merrill BJ. Harvesting more than vegetables: the potential weight control benefits of community gardening. *Am J Public Health.* 2013;103(6):1110–1115. doi:10.2105/AJPH.2012.301009.
13. Litt JS, Alaimo K, Buchenau M, et al. Rationale and design for the community activation for prevention study (CAPs): a randomized controlled trial of community gardening. *Contemp Clin Trials.* 2018;68:72–78. doi:10.1016/j.cct.2018.03.005.
14. Machida D. Relationship between community or home gardening and health of the elderly: a web-based cross-sectional survey in Japan. *Int J Environ Res Public Health.* 2019;16(8):1389. doi:10.3390/ijerph16081389.
15. Alaimo K, Reischl TM, Allen JO. Community gardening, neighborhood meetings, and social capital. *J Community Psychol.* 2010;38(4):497–514. doi:10.1002/jcop.20378.
16. Hite EB, Perez D, D'Ingeo D, Boston Q, Mitchell M. Intersecting race, space, and place through community gardens. *Ann Anthropol Pract.* 2017;41(2):55–66. doi:10.1111/napa.12113.

17. Chao S-F. Outdoor activities and depressive symptoms in displaced older adults following natural disaster: community cohesion as mediator and moderator. *Aging Ment Health*. 2016;20(9):940–947. doi:10.1080/13607863.2015.1044940.
18. Malberg Dyg P, Christensen S, Peterson CJ. Community gardens and wellbeing amongst vulnerable populations: a thematic review. *Health Promot Int*. August 2019. doi:10.1093/heapro/daz067.
19. Green J, Thorogood N Qualitative methods for health research. 2014.
20. Bourgeault I, De Vries RG, Dingwall R. *The SAGE Handbook of Qualitative Methods in Health Research*. 2010:760.
21. Introduction and conceptual framework - SAGE research methods. <http://methods.sagepub.com/book/advanced-focus-group-research/d2.xml>. Accessed October 12, 2020.
22. Tolley EE, U PR, Mack N, Robinson ET, Succop SM. *Qualitative Methods in Public Health : A Field Guide for Applied Research*. Vol. 2016. San Francisco, CA: Wiley; 2016.
23. McCormack LA, Laska MN, Larson NI, Story M. Review of the nutritional implications of farmers' markets and community gardens: a call for evaluation and research efforts. *J Am Diet Assoc*. 2010;110(3):399–408. doi:10.1016/j.jada.2009.11.023.
24. Jones CL, Jensen JD, Scherr CL, Brown NR, Christy K, Weaver J. The health belief model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation. *Health Commun*. 2015;30(6):566–576. doi:10.1080/10410236.2013.873363.
25. Carney PA, Hamada JL, Rdesinski R, et al. Impact of a community gardening project on vegetable intake, food security and family relationships: a community-based participatory research study. *J Community Health*. 2012;37(4):874–881. doi:10.1007/s10900-011-9522-z.
26. D'Abundo ML, Carden AM. "Growing wellness": the possibility of promoting collective wellness through community garden education programs. *Comm Develop*. 2008;39(4):83–94. doi:10.1080/15575330809489660.
27. Haynes-Maslow L, Parsons SE, Wheeler SB, Leone LA. A qualitative study of perceived barriers to fruit and vegetable consumption among low-income populations, North Carolina, 2011. *Prev Chronic Dis*. 2013;10:E34. doi:10.5888/pcd10.120206.
28. Algert SJ, Baameur A, Renvall MJ. Vegetable output and cost savings of community gardens in San Jose, California. *J Acad Nutr Diet*. 2014;114(7):1072–1076. doi:10.1016/j.jand.2014.02.030.
29. Adevi AA, Lieberg M. Stress rehabilitation through garden therapy. *Urban For Urban Greening*. 2012;11(1):51–58. doi:10.1016/j.ufug.2011.09.007.
30. Ottosson J, Grahn P. The role of natural settings in crisis rehabilitation: how does the level of crisis influence the response to experiences of nature with regard to measures of rehabilitation? *Landsc Res*. 2008;33(1):51–70. doi:10.1080/01426390701773813.
31. Hartig T, Mang M, Evans GW. Restorative effects of natural environment experiences. *Environ Behav*. 1991;23(1):3–26. doi:10.1177/0013916591231001.
32. Ulrich RS, Simons RF, Losito BD, Fiorito E, Miles MA, Zelson M. Stress recovery during exposure to natural and urban environments. *J Environ Psychol*. 1991;11(3):201–230. doi:10.1016/S0272-4944(05)80184-7.
33. Gustafson PER. Meanings of place: everyday experience and theoretical conceptualizations. *J Environ Psychol*. 2001;21(1):5–16. doi:10.1006/jevp.2000.0185.
34. DuBois CM, Lopez OV, Beale EE, Healy BC, Boehm JK, Huffman JC. Relationships between positive psychological constructs and health outcomes in patients with cardiovascular disease: a systematic review. *Int J Cardiol*. 2015;195:265–280. doi:10.1016/j.ijcard.2015.05.121.

35. Sin NL. The protective role of positive well-being in cardiovascular disease: review of current evidence, mechanisms, and clinical implications. *Curr Cardiol Rep.* 2016;18(11):106. doi:10.1007/s11886-016-0792-z.
36. Putnam RD. Bowling alone: the collapse and revival of American community. In: *New York*. New York, USA:ACM Press; 2000:357. doi:10.1145/358916.361990.
37. Filkobski I, Rofè Y, Tal A. Community gardens in Israel: characteristics and perceived functions. *Urban For Urban Greening.* 2016;17:148–157. doi:10.1016/j.ufug.2016.03.014.
38. Cumbers A, Shaw D, Crossan J, McMaster R. The work of community gardens: reclaiming place for community in the city. *Work Employment Soc.* 2017;32(1):095001701769504. doi:10.1177/0950017017695042.
39. Lanier J, Schumacher J, Calvert K. Cultivating community collaboration and community health through community gardens. *J Community Pract.* 2015;23(3–4):492–507. doi:10.1080/10705422.2015.1096316.
40. Glover TD, Parry DC, Shinew KJ. Building relationships, accessing resources: mobilizing social capital in community garden contexts. *J Leis Res.* 2005;37(4):450–474. doi:10.1080/00222216.2005.11950062.