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Cultivating Community Collaboration and Community Health Through Community Gardens

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It takes commitment, innovation, and action from various sectors of the community to champion changes that ultimately build healthy communities. This study sought to identify the perceived benefits of community gardens to organizations, garden volunteers, and populations served. Researchers explored how a local coalition assists organizations in using community gardens as a strategy to build social capital and foster community health and community collaborations. A mixed-method approach was utilized that included site-visits and a web-based postsurvey. The results support community gardens as a strategy to create sustainable positive change in the community by building social capital and fostering community health through collaboration.

KEYWORDS *community coalitions, community gardens, community health, environmental change, social capital*

INTRODUCTION

Over the past 20 years, physical inactivity and unhealthy eating have led to an epidemic of obesity and chronic disease across the United States.

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The epidemic is harming the health of millions of Americans and contributing significantly to rising health care costs. (McLean County Wellness Coalition, 2013, p. 2)

Individual health choices are inherently affected by the environments in which one lives, works, and plays. For example, if there is a lack of grocery stores in an area, this may affect a person's ability to make healthy eating choices (US Department of Agriculture Economic Research Service, 2009). If a neighborhood is perceived to be unsafe or lacks the infrastructure to walk or bike safely, this may affect a person's ability to be physically active (Humpel, Owen, & Leslie, 2002). "Policy, systems, and environmental (PSE) change is a way of modifying the environment to make healthy choices practical and available to all community members" (Cook County Department of Public Health, 2010, p. 1). There are many factors that affect health, but if the goal is to have the largest impact for the population, a focus on changing the context through PSE change strategies is designed to make default decisions of individuals healthy ones or make the healthy choice the easy choice (Frieden, 2010). Community gardens can be seen as a PSE change strategy that has the potential to promote public health by increasing physical activity and access to fresh fruits and vegetables as well as improve social capital (Teig et al., 2009). Our study sought to explore further the potential benefits of community gardens on community members and how a local coalition can assist organizations in using community gardens as a strategy to build social capital and foster community health and community collaborations.

After a critical review of the associations between the intake of fruits and vegetables and the risk of several chronic diseases including obesity, Boeing et al. (2012) found, from a scientific point of view, that the promotion of fruits and vegetables is a preferable strategy to decrease the risk of disease. A significant impact toward reducing chronic disease can be made by changing laws and shaping physical landscapes (Halpin, Morales-Suárez-Varela, & Martin-Moreno, 2010), and community garden programs are a way to engage citizens in tackling social issues in their community (Henderson & Hartsfield, 2009). Community gardens often start by the want to improve food access but may become a focal point for community organizing around the promotion of neighborhood revitalization, community pride, and increasing a sense of community ownership. Bringing community members together through gardens can build trust and build leaders to tackle other social issues such as crime in their neighborhoods (American Community Gardening Association, 2014). To shape the physical landscape with community gardens and sustain these changes over time, it takes the collective efforts of social organizations coordinating their efforts toward a common goal. (Teig et al., 2009). Social organizations include those organizations that are vested in and serve the community in some way. Organizations such as faith based organizations, community groups, nonprofit organizations, neighborhood

associations, schools, and healthcare agencies. Collective impact through the collaboration of such organizations can create lasting solutions when they work on a common agenda to solve a complex social problem, like increasing food access through community gardening (Tieg, et al., 2009).

Collective impact to make change can empower community members to take active roles in the development of their communities. The network of volunteers and groups coming together for a common purpose can be seen as investments in the social capital of communities (Newton, 2001). Social capital has been defined in the literature in a variety of ways. In the simplest of terms, social capital tells researchers that relationships, networks, and having shared purpose are important to build thriving communities (Putnam & Goss, 2002). Social capital builds trust so that collective work, like community gardens, can be done successfully. Community gardens are ways to bring people together through grassroot networks to invest in their neighborhoods to build healthy communities. Improving the well-being and health of individuals can be seen as a by-product of the development of social capital (Valenzuela, Park, & Kee, 2009). As noted by Glover (2004), "Community gardens can serve as potential sites for community building which is a common indicator of the presence of social capital" (p. 144). Investments in social capital are necessary to build healthy and sustainable communities. Community coalitions can help to build this investment in social capital by providing resources and support to community members and community agencies.

According to Draper and Freedman (2010), "community gardens are on the rise in the United States and are producing much more than food (p. 459). Emerging research on community gardens suggests that there are numerous benefits including increasing the consumption of fruits and vegetables, increasing physical activity, contributing to psychological well-being, reviving and beautifying green space, and providing opportunities to establish and build community relationships (Armstrong, 2000; Bremer, Jenkins, & Kanter, 2003; Sherer, 2006). McCormack, Laska, Larson, and Story (2010) wrote, "Community gardens offer important opportunities to partner with public health programming efforts aimed at improving an array of nutrition-related outcomes, including nutrition knowledge, attitudes, and/or dietary intake" (p. 399). Community gardens have also been found to build and nurture community capacity, which can in turn increase a community's propensity for health (Firth, Maye, & Pearson, 2011; Mayer, 1996). Some of the first community gardens started at the turn of the 20th century in response to the scarcity of food (Twiss et al., 2003). Today, community gardens not only increase access to fresh produce, but also offer communities and community health professionals a promising environmental strategy to build a culture for community health and sustainable change (Schukoske, 2000).

Results from an investigation of the impacts of community gardens in Toronto, Ontario, found that along with health benefits from gardens,

challenges were also raised. Insecurity of the land was a primary concern as the gardeners did not directly own the land and hoped decision-makers would consider their garden needs against redevelopment of housing issues (Wakefield, Yeudall, Taron, Reynolds, & Skinner, 2007). Gardeners need to communicate the outcomes and importance of community gardens with decision-makers to improve support and general awareness (Wakefield et al., 2007).

Some may argue that evaluation of important outcomes such as the physical benefits of gardening and community connectedness are difficult to measure and use as a convincing arguments when resources such as land and funding are at stake. However, given both the opportunities and challenges, support through long-term investments such as policymaking and strategic planning are necessary in the implementation and ultimate evaluation of community gardens (Twiss et al., 2003). As Mok, Williamson, Grove, Burry, Bardker, and Hamilton (2014) discussed, communities should recognize that there is no single solution to the reducing chronic diseases and increasing the availability of fresh produce. Although community gardening may not be the silver bullet, it should be considered as a viable contributor.

MCLEAN COUNTY WELLNESS COALITION'S COMMUNITY GARDEN PROJECT

Understanding that community gardens offer a potentially tangible way to cultivate positive change, the McLean County Wellness Coalition (MCWC) in Illinois developed an initiative to help support and expand community gardens in the county. Much like the rest of the country, chronic diseases plague McLean County with heart disease and cancer being the leading causes of death. Obesity rates continue to rise in both county adults and children. Currently, more than 60% of adults are overweight or obese and 16% of children are overweight or obese. In response to the obesity crisis, several key stakeholders came together in late 2008 to establish the MCWC. Their mission is to “reduce chronic disease by improving the overall well-being of the community through the promotion and adoption of healthy lifestyle PSE changes” (MCWC, 2013, p. 1). This mission and subsequent PSE change goals focused on increasing physical activity and fruit and vegetable intake were outlined in a community action plan as a way to combat the growing obesity epidemic in the community. One such strategy in their plan included increasing fruit and vegetable access and intake by providing opportunities to increase community gardens.

MCWC (2013) outlined their approach by stating, “evidence based strategies create long-term sustainable change and support healthy behaviors for many citizens. It takes commitment, innovation, and action from various sectors of the community to champion policy, system, and environmental

changes that ultimately builds healthy communities” (p. 1). Thus, engaging several community sectors including, business, nonprofit organizations, schools, and community-based organizations, is necessary to cultivate change through community gardens. A community garden in this study was defined as a piece of land (public or privately held) that is cultivated by a group of volunteers. The gardens in this study were focused on growing fruits or vegetables. The produce grown was used by the volunteers or the members of the organization that the land resides, or donated to local food pantries.

In February 2013, mini-grants up to \$500.00 were made available to local agencies who wanted to either initiate a community garden project or expand an existing community garden in some capacity. The funding for the mini-grants was made possible through an initiative from the YMCAUSA called Action Communities for Health, Innovation, and Environmental change (ACHIEVE). The MCWC’s community garden project aimed to connect organizations to community resources to build a culture for community health and create sustainable changes in the community while supporting the availability of fruits and vegetables and promote physical activity through gardening. Information about applying for the grant was publicized on the coalition web site, through a news release, and was sent via e-mail to local agencies and churches through coalition members. A description of the grant was also sent to a local information clearinghouse to add to their weekly newsletter. A grant selection committee reviewed all the submissions and scored them based on eight criteria that included alignment of project to mission of coalition, project description, sustainability, budget, innovation, technically well written, compelling argument for funding, and contribution to making the community a healthier place to live.

In April 2013, the MCWC awarded funding to 17 out of the 19 organizations who applied for the grant to support their community garden efforts. Each organization received approximately \$500, and the funded organizations included schools, early learning centers, faith-based organizations, and other nonprofit community-based organizations. All grantees had to identify where the garden produce would be donated or how it would be used. Expectations were that a garden would be developed and garden administrators would be available for two site visits and a follow-up survey regarding the implementation process. Who the garden administrators were varied but most of the administrators were volunteer representatives from the organization where the garden site was located. For example, principals at school or childcare sites, pastor at faith-based site, and administrator at assisted living site. Free technical assistance was available upon request from the University of Illinois Extension Horticulture specialist and the Master Gardeners. The Horticulture Specialist also developed a gardening binder that was delivered to each garden administrator. In addition, a list of resources in the community related to gardening and a list of local food pantries and organizations

that serve low-income populations as an outlet for donating surplus produce was provided. The Wellness Coalition also provided the opportunity for the 17 garden administrators and their volunteers to connect with one another through a learning community that included sharing contact information and holding several meetings, before, during and after the growing season.

The chair of the grant selection committee was in weekly contact with the garden grant administrators to ascertain any difficulties or successes to share with the group. For example, one of the church gardens was in dire need of a large water tank, but had limited funds available. Through the coalition members, the chair was made aware of an individual selling a large water tank at a reduced rate. The church garden used some of their grant funds to purchase the water tank. The grant chair also sent on any additional grant opportunities and local garden/nutrition workshop information on a regular basis.

This study sought to identify the perceptions of garden administrators on the benefits of community gardens to the sponsoring organizations, garden volunteers, and populations served. It also sought to identify how a local wellness coalition can assist organizations in using community gardens as a strategy to foster community health and collaborations among organizations and the community. By the local wellness coalition offering support and resources, it was hypothesized that investments were being made in the social capital of the community. Thus, these investments will help to build connectedness and healthier people in healthier communities through community gardens. By identifying the potential benefits of the community gardens on the organizations, volunteers, and populations served, future initiatives may be planned utilizing this strategy. This identification may also aid other communities in creating sustainable change toward a healthy community through community gardens.

The following research questions guided this study:

1. What do garden administrators perceive to be the benefits of community gardens for sponsoring organizations, garden volunteers, and populations served?
2. How can wellness coalitions assist organizations in building social capital and fostering community health and community collaboration through community gardens?

METHODS

Study Design and Procedures

A mixed-method approach was utilized for the study so as to capture insight into the study questions in a comprehensive way with both qualitative

and quantitative data (Creswell, 2013). Site visits during the project and a survey at the conclusion of the project were used to collect data to answer the research questions. In summer 2013, site visits with grant administrators at all 17 community gardens were conducted to explore issues related to the physical layout and development of the garden, perceived benefits, barriers, and contributing factors related to the garden. Each community garden was visited twice, with visits lasting approximately 30 to 60 min each time. Due to feasibility of study design, the primary contact during the site visit was with the garden administrator. Questions asked included what was planted, how much was planted, how much was harvested, what were the barriers and contributing factors related to the community garden, and how had the organization, the volunteers, and population served benefited from the garden. Detailed notes were taken and later transcribed. Interview data was then analyzed to identify common themes among responses. The first phase of the study provided the basis for the development of the survey instrument administered at the conclusion of the growing season.

In fall 2013, an invitation was sent via e-mail to the garden administrators to complete a web-based postsurvey via SurveyMonkey[®]. To answer this study's research questions, the survey was directed at garden administrators. The survey contained 25 questions, a combination of open- and closed-ended. The survey was reviewed by experts who considered interpretability, clarity and construct, and face validity of the instrument. The experts had earned doctorates in health related sciences and have utilized survey instruments in many of their published studies. The questions focused on exploring perceptions surrounding the reasons for participation in the community garden project; perceived benefits of the community garden to the organization, volunteers who worked the garden, and populations who were served by the garden; perceptions regarding meeting the Wellness Coalition community garden project aims including collaboration and connecting to resources; helpfulness of resources provided by Wellness Coalition; interest in sustaining garden and continuing to partner with Wellness Coalition; excess produce donation; organizational partners; engagement of youth; and types of produce planted and harvested. To address nonresponse bias in the web-based survey, several techniques were employed. A clearly written e-mail explained the purpose of the survey, researchers' contact information was provided, several e-mail reminders were sent, and a clear and easily navigated survey was created. Finally, telephone reminders to each community grant administrator was employed to remind them to complete the survey. Fifteen of the 17 (88%) garden administrators completed the web-based survey.

A secure database was used to store all responses to the surveys and site visits. The database included survey results, transcribed notes from site visits, gathered documents and pictures from site visits, notes on documents

reviewed, reflections and notes of researchers, and researchers meeting notes. Each of the 17 gardens was assigned a number, and identifying information remained secure and confidential.

Data Analysis

The site visit and survey instrument each contained open- and close-ended questions. For open-ended items, a coding frame was generated based on a thorough examination of all output (Miles & Huberman, 1994). Two analysts were involved in identifying themes. The data was focused and organized around the main research questions. All the data from each question was aggregated, after which consistencies and differences were isolated. The detailed notes from site visits were systematically read to identify common themes and to form conclusions related to the study questions that included the benefits to organization, volunteers, and populations served by the gardens, and connecting organizations and fostering collaboration. Additional categories were added through the iterative process of reviewing the data. Illustrative text-based quotes were gathered related to each of the study questions. For closed-end questions, the frequency and percent of occurrence of each concept was tabulated manually. Cross-tabulations were appropriate when the item responses were categorical in nature. Ultimately, a synthesis of the findings from both open- and closed-ended items formulated the summary in the results.

RESULTS

The participants included 15 of the 17 (88%) community garden grant administrators of the community gardens funded through the MCWC. The sponsoring organizations included three (18%) schools, three (18%) early childhood facilities, three (18%) faith-based communities, two (12%) neighborhood groups, two (12%) cooperative extension program locations, and four (23%) other community nonprofit organizations. Participants cited many reasons why their organization participated in the community garden initiative, including a way to give back to the community, fresh produce tastes better and they enjoy nature and gardening. The most common reason was that volunteering with the garden provided a learning opportunity for members of their organization. Site visits supported this finding as a main theme arose that this initiative was so much more than growing food, but more about the educational opportunity it provided to the organization and members and a way to positively contribute to the community. One garden administrator said the following:

The garden is more than just a place to grow food, it is a place to learn about fresh foods, how to cook and prepare foods and meals. It makes the younger organizational members proud of what they accomplished and makes them see what they can accomplish not just in the garden, but what they can accomplish in life.

See [Table 1](#) for illustrative quotes from garden administrators.

About half (53%) of the community gardens surveyed donated their produce to food pantries, community health clinics, or other nonprofit organizations. Garden administrators repeatedly noted how great it made their members feel to be able to give back to the community and help others. The other (47%) used the produce within their organization.

All garden administrators perceived that their community garden offered benefits to the sponsoring organization, the garden volunteers, and populations served. The most significant benefits for the organizations, as noted in [Table 2](#), included improving participants' knowledge of gardening and its benefits, providing an opportunity for the organization to contribute to the health of the community, and connecting the organization to other community organizations, people and resources. When asked to specify which organization partners provided support to their gardens, garden administrators reported gardening and horticulture specialists, grocery stores, garden stores, extension office, area universities, a national home supply store, and restaurants.

The garden administrators also perceived numerous benefits to volunteers that worked at the organizations' community gardens. The top four reported benefits included understanding and learning how to build and tend a garden, fostering a sense of giving back to the community, promoting support for healthy living, and increasing physical activity through gardening. Increased knowledge of gardening by volunteers and its benefits was

TABLE 1 Illustrative Quotes From Garden Administrators at Site Visits

<p>“The garden is more than just a place to grow food, it is a place to learn about fresh foods, how to cook and prepare foods and meals, and make the younger organizational members proud of what they accomplished and make them see what they can accomplish not just in the garden, but what they can accomplish in life”</p>
<p>“It’s always wonderful to see our youth engage in healthy activities such as gardening and then harvesting the vegetables with other family members. It’s more than just the food though, it’s also teaching them discipline, teamwork, responsibility, dependability and the importance of community service.”</p>
<p>“We all have benefited from the garden in so many ways . . . by planting, tasting, and tending to the garden and learning techniques and growing strategies from these experiences.”</p>
<p>“I could not have done this all without the wonderful grant I received and support of the coalition. It has enabled me have a better start. Again, thank you so much from the bottom of my heart.”</p>

TABLE 2 Perceived Benefits of Garden Administrators to Sponsoring Organizations, Garden Volunteers, and Populations Served ($n = 15$)

Benefit	<i>n</i>	%
Sponsoring Organization		
Improved knowledge of gardening	11	73.3
Provided an opportunity for organization to contribute to community health	10	66.7
Connected organization to other organizations in community	9	60.0
Improved knowledge of the benefits of gardening	9	60.0
Enhanced sense of community throughout organization	8	53.4
Built new support for community gardening among members	7	46.7
Helped support a movement toward healthy living	7	46.7
Increased collaboration among members	7	46.7
Connected organization to other resources in community	5	33.3
Helped to fulfill organization's mission	3	20.0
Garden Volunteers		
Learned how to build and tend a garden	11	73.3
Fostered a sense of giving back to community	10	66.7
Increased physical activity	9	60.0
Fostered support towards healthy living	9	60.0
Fostered new friendships	9	60.0
Increased fruit and vegetable consumption	7	46.7
Increased willingness to try fruits and vegetables	7	46.7
Increased a sense of wellness and belonging to community	7	46.7
Learned the benefits of community gardening on community	7	46.7
Population served by the garden produce		
Increased fruit and vegetable consumption	14	93.3
Fostered support towards healthy living	11	73.3
Increased willingness to try fruits and vegetables	10	66.7
Introduced them to benefits of gardening	8	53.3
Helped to contribute to alleviating hunger and food insecurity	6	40.0
Introduced them to organization's mission and community work	5	33.3

a common theme noted from the site visits. Additional perceived benefits for garden volunteers included increasing fruit or vegetable consumption, increasing willingness to try fruits or vegetables, learning the benefits of community gardening, and fostering new friendships (Table 2).

The garden administrators' most perceived benefits for the population that the garden served included increasing fruit and vegetable consumption, fostering support toward healthy living, and increasing willingness to try fruits and vegetables. Garden grant administrators noted that introducing the benefits of gardening, helping to contribute to alleviating hunger or food insecurity, and introducing community members to the sponsoring organization were additional perceived benefits of community gardens to the populations served (Table 2).

Collectively, the garden grant administrators agreed ($M = 4.0$, $SD = 0.65$; on a 5-point scale) that their community garden connected their organization with others in the community. Additionally, participants agreed ($M = 4.0$,

$SD = 0.65$) that the community garden fostered collaborations with other organizations. Garden administrators agreed ($M = 4.0$, $SD = 0.75$) that the wellness coalition's garden initiative helped sustain their gardens by connecting their organization to other community resources. Participants tended to agree ($M = 3.53$, $SD = 0.83$) that the garden initiative helped bring people together from a wide variety of backgrounds (age, race, culture, social class). Site visits supported findings from the survey with many garden administrators noting how helpful it was to connect with other organizations working on community gardening to learn what worked well and what did not. One respondent noted, "I could not have done this all without the wonderful grant I received and support of the coalition. It has enabled me have a better start." It was reported that 10 (67%) of the respondents engaged youth (K-12) in their community garden work. Such work included planting, tending, and harvesting in the garden. See Table 3 for a complete list of participants' perceptions of their garden meeting the aims of the wellness coalition's community garden initiative.

One-third (33%) of the participants were interested or very interested in *paying it forward* and helping another organization start a community garden and nine (60%) would maybe consider. When asked how the wellness coalition could assist garden administrators in sustaining their community garden, 12 (80%) responded with the need for additional funding. However, independently, 11 (73%) stated that they would be able to sustain their community garden in the future. Additional ways participants noted that the wellness

TABLE 3 Level of Agreement From Garden Administrators on Degree to Which Community Garden Initiative Aims Were Met

Community Garden Initiative Aim	Mean	SD
This initiative increased our organizations collaboration with other organizations	4.00	0.65
This initiative helped to connect our organization to other organizations in the community	4.00	0.65
This initiative helped to improve knowledge of gardening by participants	4.62	0.49
This initiative helped to improve knowledge of the benefits of gardening by participants	4.33	0.62
This initiative provided a good opportunity to contribute to health of our community	4.33	0.49
This initiative helped our organization connect to other resources in community to sustain our garden	4.00	0.75
This initiative helped bring people together from a wide variety of backgrounds	3.53	0.83
This initiative contributed to increasing the health of McLean County	3.87	0.64
This initiative fostered neighborhood ownership and civic pride	3.47	1.06
This initiative helped to strengthen our community	3.87	0.64

Likert Scale: 1-Strongly Disagree, 2-Disagree, 3-Unsure, 4-Agree, 5-Strongly Agree.

coalition could help sustain their community gardens were by continuing collaborative learning opportunities for community garden caretakers, helping organizations find additional funding or garden resources, and establishing online connections with other community gardeners and supporters.

In an open-ended question regarding additional benefits and the impact that the community garden had for the community, garden administrators stated that the experience of gardening was a meaningful and rewarding experience for not just the garden volunteers, but for the families and community members who received the garden produce. As one participant stated,

It's always wonderful to see our youth engage in healthy activities such as gardening and then harvesting the vegetables with other family members. It's more than just the food though, it's also teaching them discipline, teamwork, responsibility, dependability and the importance of community service.

DISCUSSION AND IMPLICATIONS FOR PRACTICE

This study explored the perceptions of garden administrators on the benefits of community gardens to the sponsoring organizations, garden volunteers, and populations served. It also recognized the role of community gardens in connecting organizations to foster collaboration through healthy community initiatives. Additionally, this study investigated actions a local wellness coalition could take to assist organizations to use community gardens as a strategy to build social capital and foster community health and community collaboration.

This study found that one of the most frequently reported benefits of community gardens to the sponsoring organization included connecting the organization to other community organizations and resources. Similarly, this study reported the garden administrators' perceived benefits to the volunteers and population served included fostering new friendships. These findings are consistent with other research that suggests benefits of community gardens include providing opportunities to establish and build community relationships (Armstrong, 2000; Bremer et al., 2003; Sherer, 2006). Investments in networks and relationships build social capital and thus, help to build the trust necessary to work towards the common purpose of a healthier community.

Community gardens generate community capacity, which enables people to work together for the health of the community (Firth et al., 2011). Likewise, the perceived benefits of garden volunteers in this study also included fostering a sense of giving back to the community. As data from site visits suggest, community gardening is much more than about growing produce, it is about cultivating the opportunities to learn, connecting with

organization members, and giving back to the community in a positive way. Promoting support for healthy living, specifically by increasing physical activity through gardening and increasing fruit and vegetable consumption, were additional perceived benefits of volunteers which mirrors previous literature (Armstrong, 2000; Bremer et al., 2003; Sherer, 2006).

The community garden initiative created an environmental change that brought people together for a common purpose. This created opportunities for connections, collaborations, and relationships. As Henderson and Hartsfield (2009) noted, community gardens can empower community members to tackle social issues by increasing the availability of fresh produce while improving the environment with more green spaces. These sustainable changes can be steps toward a healthier community. In this study, 67% of the gardens engaged youth in their community garden. Weltin (2013) supported this and believed that introducing children to gardening is one simple and fun way to improve the health of a community.

PSE changes such as increased community gardens can have a significant impact toward reducing chronic disease (Halpin, Morales-Suárez-Varela, & Martin-Moreno, 2010). As this study demonstrated, community gardens can be made with minimal resources by supporting initiatives that shape physical landscapes of the community. The MCWC's garden grant initiative made it possible for 17 community gardens to enhance the community. However, as noted by the participants of this study, community gardens need volunteers and/or workers to create productive gardens.

Wellness coalitions or other community leaders can support community gardens through a variety of ways. As revealed through this research, additional funding is always appreciated by organizations to start or enhance a community garden. However, other ways of support include collaborative learning opportunities for community garden caretakers, helping organizations find additional financial or garden resources, and establishing online connections with other community gardeners and supporters. As the participants in this research study suggest, the sense of community through collaboration, support, and connections becomes a key ingredient of a successful community garden.

LIMITATIONS AND OPPORTUNITIES FOR FURTHER STUDY

Due to low numbers in each of the types of garden sponsoring organizations, minimal statistical tests were run on data set. This study indirectly measured community garden benefit to the organizations, the volunteers, and populations served based on the perceptions of the garden administrators only. The issue of response bias could be present in that there may be a tendency for participants to answer questions in the way they think the questioner wants them to answer rather than according to their true

beliefs. Assuring anonymity when completing the survey and removing identifying information before analyzing helped to control for this potential bias. Only the contact information of the site administrators was available and collected at the time of the study. Thus, the garden administrators were the main point of contact and relied on to convey thoughts from their volunteers and populations they served. Utilizing data by conducting interviews or surveys of the other organizational representatives, volunteers, and populations served through the garden would strengthen the findings. In addition, future research should focus on the development of tools to directly measure benefits such as increased community collaboration and connectedness, increased fruit and vegetable consumption, and increased physical activity to help assess the usefulness of community gardens as a PSE strategy to reduce chronic disease.

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