

The Impact of Community Gardens and Public Art on Health and Wellbeing

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Abstract

Increasing evidence suggests that exposure to plants and green spaces, especially through gardens, is beneficial for mental and physical health. Gardens can be enjoyed actively or passively and are sites for both individual reflection and social interactions. The Burton Street Community Peace Gardens were established in 2003 to cultivate a sustainable local economy. The purpose of this study is to analyze the impact of visiting the Burton Street Community Peace Gardens on self-reported health and wellbeing. This study is a cross-sectional survey of adults over 18 years of age who have visited the Burton Street Peace Gardens. A survey, which included both closed- and open-ended questions categorized into basic garden, impact, and personal questions, was administered online from October 2020 to March 2021. The qualitative data questions consider the impact of gardening on the participant's self-reported health, and the effect it has on healing individual or collective trauma. There were also personal questions on the survey that helped gather quantitative data about the participant's race, age, and where they live. Quantitative and qualitative data were analyzed using the SurveyMonkey software and Microsoft Excel Spreadsheet. Survey results suggest that many people use the gardens to walk around and look at sculptures and art that is present throughout the garden. Many respondents report that gardens provide a calming and peaceful environment, and that it provides a good place for reflection and helps them to find perspective on the needs of the community. These findings suggest that local gardens may have a positive impact on individuals, and may even be beneficial for managing health conditions. These results will be used to advocate for more funding for garden space in Asheville.

1. Introduction

1.1. Background

Despite the advancements in agricultural production and nutrition research in recent years, thousands of people in the United States still experience periods of food insecurities and micronutrient deficiencies.¹ Not only do burdens of undernutrition fall on women and young children, they also have important ramifications for communities of color. Communities of color are less likely to have access to healthy foods and healthcare while increasing their risk of contracting infectious diseases. Food deserts are areas where most residents have limited access to healthy and affordable food options.² Food deserts are known to have a negative effect on health, especially diet-related diseases, because they can contribute to health disparities across racial, ethnic, and socioeconomic subgroups. In response to such food deserts, many communities address these concerns by integrating green spaces in food deserts and urban settings.³

1.2. Community Gardens

Community gardens provide an opportunity to repurpose vacant land and other shared spaces into green spaces in urban areas, which are often managed by community members.^{4,8} These gardens are dynamic socio-ecological systems that support, provide, regulate, and benefit the communities around them.

1.2.1. benefits for people

Community gardens improve fruit and vegetable intake, self-efficacy, knowledge about healthy food options, and physical and mental health.⁵ One of the most beneficial impacts of community gardens is their impact on food security and quality, especially in food deserts where access to fresh foods might be limited.⁴ Most gardeners participate with the goal of producing fresh and healthy foods for their friends and neighbors in the community. In addition, community gardens are great areas for recreation and exercise, where there is a noticeable increase in physical activity, reduced body fat, weight loss, and an increase in perceived energy.⁵ For participants that are actively engaged in the garden, gardening can provide many opportunities for increased physical activity, which can reduce the risk of heart disease, depression, hypertension, Type 2 diabetes, and prevent osteoporosis.²³

Additionally, community gardens can promote community building and engagement, beautification, and social well-being.⁸ Not only do community gardens strengthen social bonds between people within the community, they also improve human relationships and promote the exchange of knowledge and information within the community.⁴ Such common spaces in urban settings are a great way for community members to be in nature, to entertain, reduce stress, participate in physical activity, and even maintain cultural heritage.

Moreover, community gardens can also address important issues, such as gentrification and displacement.⁸ Residents of small communities in urban settings may face the threat of disappearance of the neighborhood's identity and history, wishing for a way to preserve it.¹⁴ Introducing community gardens can help facilitate collective practices within communities where they can discuss and reflect on the uneven balance of powers and their determination to not give up hope of a better future.

1.2.2. benefits in nature

Plant biodiversity is also an important part of the community gardens, which can play a significant role in plant conservation.^{4,6} Large varieties of plants in community gardens are excellent for providing refuge to invertebrate and vertebrate populations, pest control, and is essential for pollinators in urban settings.⁴ Large plant diversities in gardens can also provide essential nutrients for communities, which is important for people that don't have regular access to healthy foods and might suffer from malnutrition.⁶ Furthermore, community gardens play an important role in understanding the interaction between organisms and the local environment, along with behavioral characteristics of organisms, such as migration, nesting, and mating.⁷ Lastly, plots managed by community gardens can also help with soil fertility, purifying air qualities in cities, and the regulation of local climate.⁴ In addition to creating green spaces, communities can also create murals and other art that celebrate the community's history.

1.3. Public Art

Available community plots are not only great for starting community gardens, they can also be a great place for self-expression through art, which can encourage social change and improve mental health.⁹ Oftentimes, participation of community members in the collective production of art is an important part of the creative process behind the public display. Participating in such creative activities has shown to reduce stress and depression, and can even help with alleviating the burden of chronic diseases.¹⁰ Health psychologists have found that creative arts can help to heal any mental and emotional trauma, change behaviors, adjust thinking patterns, increase understanding of self and others, and self-reflection.¹¹ In fact, the arts allow humans to connect with each other and create a sense of belonging. Similar to community gardens, public art can improve social networks, self-esteem and self-reliance, and lessen social inequalities within communities. In general, community gardens are a great platform for connecting artists and community groups to help address a range of local issues.

1.4. Asheville, North Carolina

Asheville, is a city located in Western North Carolina, a popular tourism destination.²¹ Its large tourist population is largely due to a vibrant downtown, a recognized cultural scene, and a brand that believes in the importance of both the built and natural environments. This increase in tourism in the city has led to population growth and revitalization of spaces both within and outside of traditional tourism spaces. In addition, Asheville also faces many racial and economic challenges, with much of the city being segregated by race and income.²² A history of urban renewal and accelerated rates of gentrification in parts of the city has forced residents of color to move out of the city due to a shortage of affordable housing.

However, the city is also considered to be the most food insecure regions of the country, with several food deserts existing within the city's public housing communities and other communities with lower wealth.²² Although Asheville is considered to be a food-rich area, one in five people are still likely to experience food hardship. There are many community-based efforts that provide food to the community in Asheville. One such example is community gardens, which focus on nurturing solidarity and creativity in diverse populations, especially for people living in poverty or have limited access to healthy foods. Such gardens provide a way to organize communities around common issues, with many having an impact on economic and environmental problems. A local example in Asheville of combining community garden and public art is Burton Street Community Peace Gardens.

1.5. Burton Street Community Peace Gardens

The Burton Street Community Peace Gardens, located in Asheville, North Carolina, were started in 2003 by DeWayne Barton and Safi Mahaba as a peaceful response to the war in Iraq and the war on drugs in the state and around the world.¹² Like most other community gardens, the Burton Street Peace Gardens contain many rows of flowers and vegetables, but there is much more to the garden than what initially meets the eye. Volunteers grow many different types of seeds in the greenhouse, which are then distributed to neighbors for their own homegardens.¹³ Even during the harvest season, fresh produce is bagged and distributed to neighborhood elders. There are also a variety of plants in the garden that help to feed and foster local pollinators like bees and butterflies. The garden itself started as a vacant overgrown lot in a neighborhood that is constructed from repurposed materials built with discards from around the neighborhood.¹² According to the founders, DeWayne Barton and Safi Mahaba, the gardens aim to grow connections in a community that has a history of being divided.¹³ And it were these connections that allowed Mr. Barton to work with other local artists to create a sculpture park within the garden.¹² Similarly, each of the art installations were created with found/reused items, with each piece of art telling a separate yet compelling story of social and environmental justice along with black history.

The peace garden also actively engages the neighborhood's youth, where they are taught about different types of plants and how to care for them.¹³ In an effort to give teenagers an advantage in the job field, Barton and Mahaba have been teaching youth important gardening skills as well as doing other tasks around the garden and the neighborhood. This teaches kids about the history of their families and their communities, which, in turn, teaches them more about the history of the neighborhood on Burton Street. The garden also focuses on addressing the current issues that exist in today's society, such as the N.C. Department of Transportation's plans for Interstate 26 and that may require the demolition of some homes in the neighborhood. Therefore, the Burton Street Community Peace Gardens are a place that stands for positive action that is designed to create a neighborhood food security, unite the local community, and sustain a local economy.¹² The purpose of this study is to assess the impact of the Burton Street Community Peace Gardens and the sculpture park on self-reported health and wellbeing.

2. Methods

This is a cross-sectional study involving an anonymous survey. The questionnaire was administered to adults aged 18 or older who have visited the Burton Street Community Peace Gardens located in Asheville, North Carolina. Since we were interested in the impact of the community gardens, only the people that had previously visited the gardens were asked to participate in the study. The UNCA Institutional Review Board (IRB) approved this study to be conducted starting in fall of 2020. Participant recruitment took place via email, Instagram, Facebook, and physical posters and cards throughout the Burton Street Community Peace Gardens. Potential participants were asked to follow

the link or a QR code to the SurveyMonkey online survey platform where they could verify their age and fill out the questionnaire.

2.1. Questionnaire

This 21-question form consisted of both closed- and open-ended questions. The questionnaire included three main sections: garden engagement, impact, and demographics. The garden engagement questions were questions about the participant's visits to the garden and their overall involvement in the garden. Questions such as "what did you do in the garden" and "how long did you spend in the garden" were asked in this section of the questionnaire. The impact questions on the questionnaire provided qualitative information that helped elucidate individuals' perceptions of the impact of gardening on the participant's self-reported health and the garden's role in healing individual and/or collective trauma. In this category, questions like "how did the garden address your health concerns" and "to what extent do you think the garden helps with healing from community trauma" were asked. Demographic questions, which were a mixture of both open-ended questions and multiple choice questions, provided information about the participant's age, ethnicity, and their place of residence.

2.2. Data Preparation and Analysis

Data were collected on the SurveyMonkey online platform, exported as a spreadsheet, and analyzed using Microsoft Excel (version 15.0). Individual records were excluded if 5 or more questions were not answered in the questionnaire (n=38). Once records were removed, the data were organized and cleaned. Some data required re-coding from open-ended responses to categorical responses, such as the question on race and ethnicity. Descriptive analyses were conducted for most of the questions, including proportions of the sample that fell into specific categories such as age groups, race and ethnicity groups, and area of residence. All data were coded by one researcher.

When analyzing qualitative data, which were collected through open-ended questions, an inductive approach was used to identify common themes, and then to code the responses. Based on the major themes that emerged, charts were created to display the information quantitatively. In order to understand the association between the perceived impact on healing from personal trauma and the area of residence of the respondents, a bivariate analysis was conducted.

3. Results

3.1. Demographics

A total of 53 participants completed enough of the questionnaire to be included in the analysis. The racial and ethnic distribution of participants varied (Figure 1A). The largest proportion of participants identified as White (71%), with the second largest group being African American (13%). Other races and ethnicities included Multirace (6%), Middle Eastern (4%), Hispanic (4%), and Asian (2%). One participant did not specify their race or ethnicity.

Ages of participants also varied (Figure 1B). The largest age group was 25-44 years (43%), followed by 45-64 years (28%), 18-24 years (27%), and 65+ years (2%). Participants were asked about their area of residence in relation to the garden (Figure 1C). The two largest groups of participants lived in Asheville City (55%) and near Asheville, in Buncombe County (19%). Other participants identified as living outside of North Carolina (17%) and outside of Buncombe County (9%). There was also an option for people that lived in Asheville City to elaborate on the location of their neighborhood. Of the people that reported living in Asheville City, only two participants confirmed to be living in the Burton Street community.

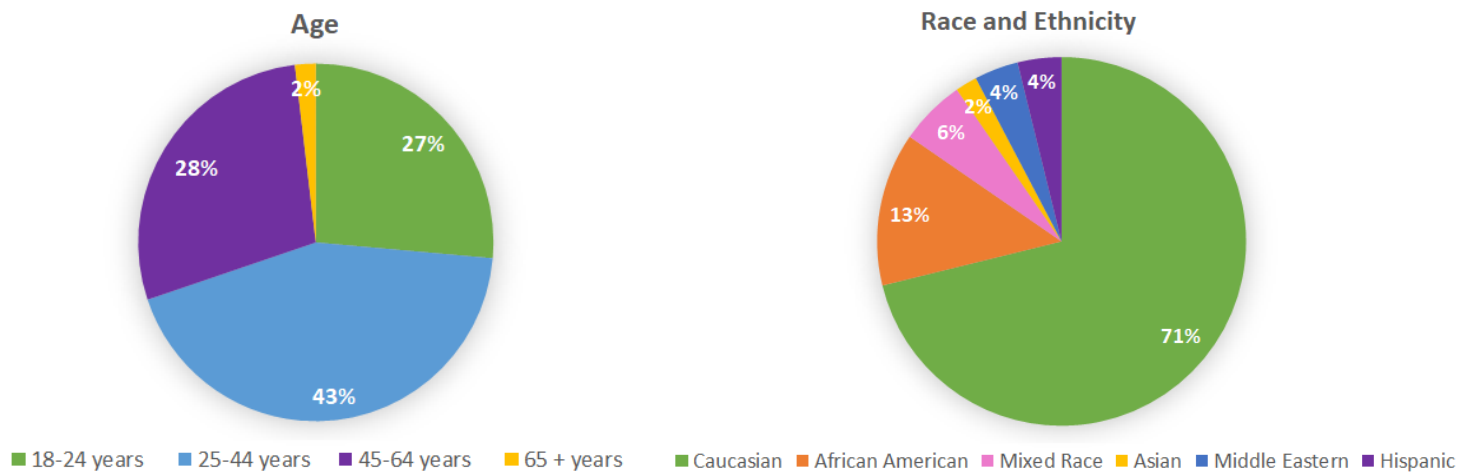


Figure 1A. Demographic data on race and ethnicity

Figure 1B. Demographic data on age

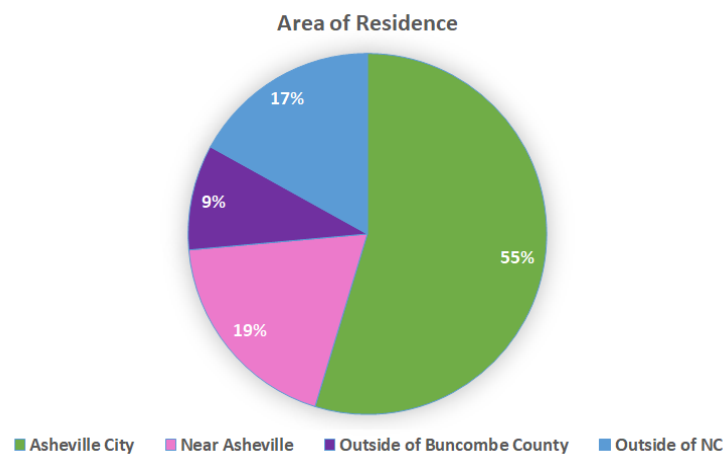


Figure 1C. Demographic data on participant's area of residence

3.2. Engagement in the Garden

To understand the reason why the participants visited the garden and their experience in the garden, participants were asked questions regarding their interest and engagement in the garden (Table 1). When asked about their reason for visiting the garden, just over half of participants (51%) reported to be visiting because of curiosity or because of their participation in the Hood Huggers tour. The Hood Huggers tours are an interactive tour focusing on Asheville's African American resilient history and future in the arts, environmentalism, and entrepreneurship. When examining how people heard about the garden in Asheville, most participants (48%) reported that they heard about the garden from their friends, family, or neighbors.

Participants were asked to select the activities they participated with in an attempt to understand what they did when visiting the garden. The largest number of participants reported walking around the garden (33%), followed by looking at the artwork (31%) and going into the library (13%). When asked about who they choose to bring with them to the garden, most reported that they brought friends (37%). In order to inspect what the participants were able to take home from the garden, most (87%) reported that they were taking with them information and memory of

important experience. For all of these questions, participants were able to select multiple answer choices. The last two questions in this section of the questionnaire were about time spent in the garden and the frequency of visits, as seen in Table 1. These two questions did not allow participants to choose more than one answer choice. When asked about how much time participants spent in the garden, many (68%) reported that they spent one hour or less in the garden. On the other hand, when reporting on the frequency of their visits, only a few participants (10%) reported visiting more than once a month.

Table 1. Survey Respondents' Interest and Engagement in the Burton Street Community Gardens (n=53)

	#	%
Reason for Visiting		
Curious	19	26
Hood Huggers Tour	18	25
Returning member	14	19
Visited as part of a class	10	14
Other	12	16
Hear About the Garden		
Friends	20	31
School	10	15
Online	8	12
Neighbors	7	11
Workplace	5	8
Family	4	6
Other	11	17
Activities in the Garden		
Walked around	48	33
Looked at the artwork	45	31
Went into the library	19	13
Listened to music, poetry, etc.	9	6
Bought something	5	3
Worked in the garden	4	3
Watched a performance	3	2
Got my hands in the dirt	2	1
Helped to clean	2	1
Worked in the workshop	2	1
Ate something made in the garden	2	1
Instructed in the garden	1	1
Other	6	4
Who Did You Bring		
Friends	24	37
Alone	10	15
Family	9	14
Classmates	9	14
Other	13	20

Taking Home

Memory of an experience	44	54
Information	27	33
Plants	5	6
Fruits or vegetables	2	2
Flowers	1	1
Other	3	4

Time in the Garden

Less than 30 minutes	14	26
30 minutes to 1 hour	22	42
1 to 2 hours	12	23
More than 2 hours	5	9

Frequency of Visits

First time	27	51
Once in a while	21	39
1-3 times a month	2	4
Once a week	1	2
More than once a week	2	4

3.3. Assessing the Impact of the Garden

Some of the most important questions on the questionnaire assessed the impact of visiting the garden on health using an open-ended question. As reported in Figure 2., about 33% of 43 respondents believed the garden is a peaceful space in nature. People also reported that the garden was very educating and empowering (26%), a great way to connect with the local community (20%), great for self-reflection (15%), and a safe, healing place (6%). Nine responses were excluded because they were not relevant to the question asked. One participant failed to answer the question. To explore how the gardens affected health, participants were asked which health concerns were addressed by visiting the garden. Most people (79%) believed that the gardens did not address any of their health concerns, with only 11 people (21%) reporting that the garden did.

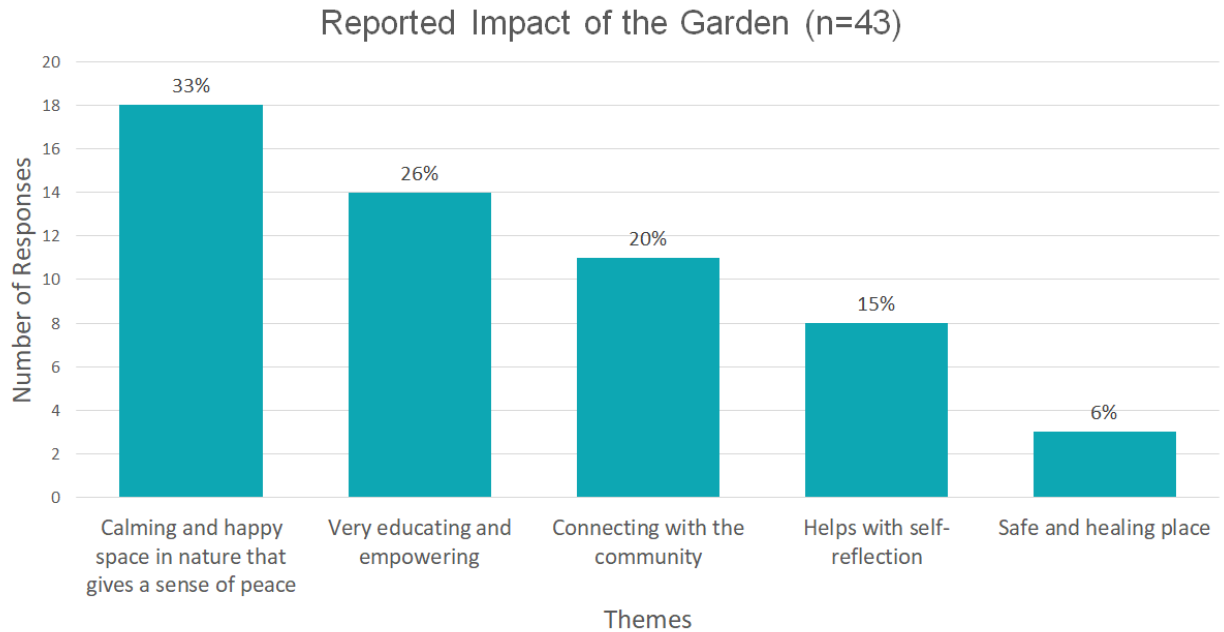


Figure 2. Major themes reported by participants on the impact of garden

As shown in Figure 3, of the 10 respondents, participants claimed that the gardens benefited their mental and emotional well-being (40%), stress reduction (33%), physical well-being (20%), and spiritual wellbeing (7%). One person did not elaborate on why they believed that the garden helped address health concerns.

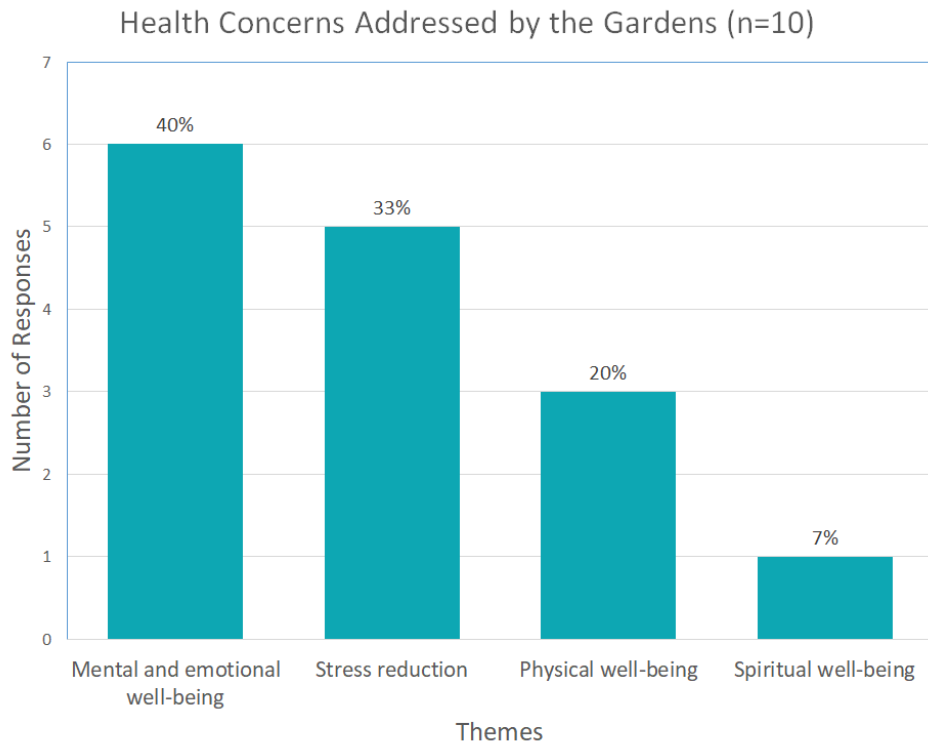


Figure 3. Major health concerns that were addressed by the garden

To understand the impact of the gardens on nutrition, participants were asked to report on any changes in their food behaviors after visiting the garden (Figure 4). Although most respondents (70%) did not report any changes in food behavior, some participants reported eating more vegetables (15%), trying to eat healthier (13%) and becoming a vegan (2%). Seven participants did not respond to the question.

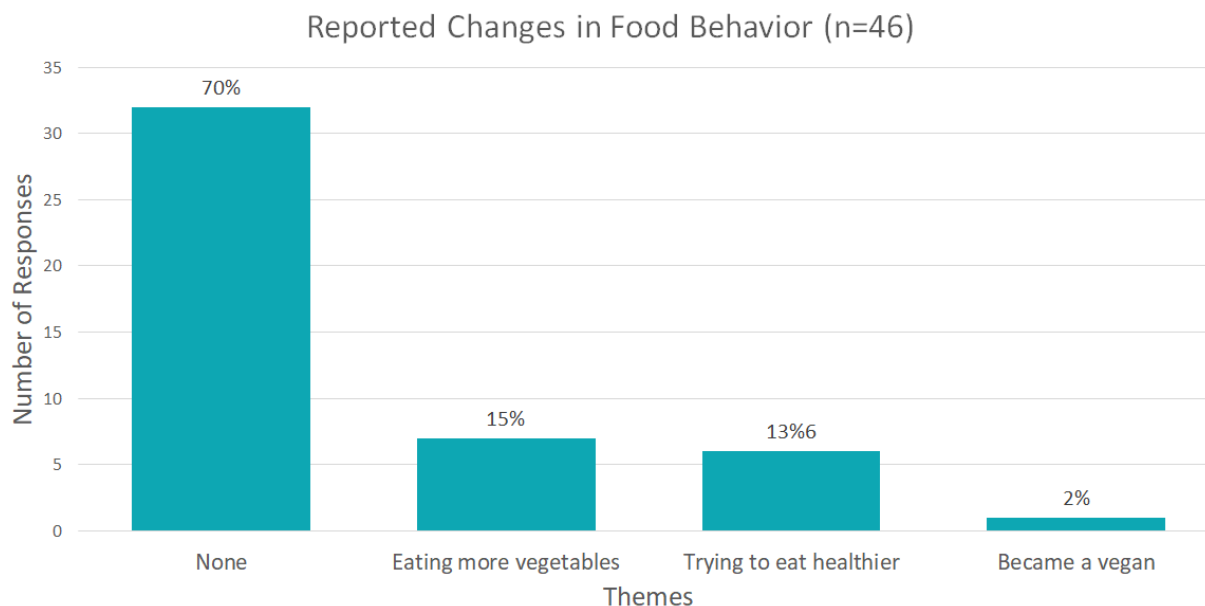


Figure 4. Self-reported changes in food behaviors

Participants were asked to rate how much of an effect the garden had on their personal trauma. Most of the 19 respondents (41%) saw little to no effect of the garden on trauma, with 5 people (10%) saying it had some, 8 people (16%) stating it had a lot, and 17 people (33%) reporting that the question does not apply to them. Participants were able to further explain their answer choice; 19 people chose to elaborate on their choices. As seen in Figure 5, the largest group of comments (33%) reported that the gardens were a healing place. Other major themes that emerged from the participants responses were as follows: provides a safe place to self-reflect (17%), had little to no impact on trauma (17%), gardens helped connect with others to better understand their struggles (12%), it is a positive place that supports growth and education (13%), and it helped understand other people's trauma through art (8%). It is important to note that one participant can have comments that were reflected in more than one theme.

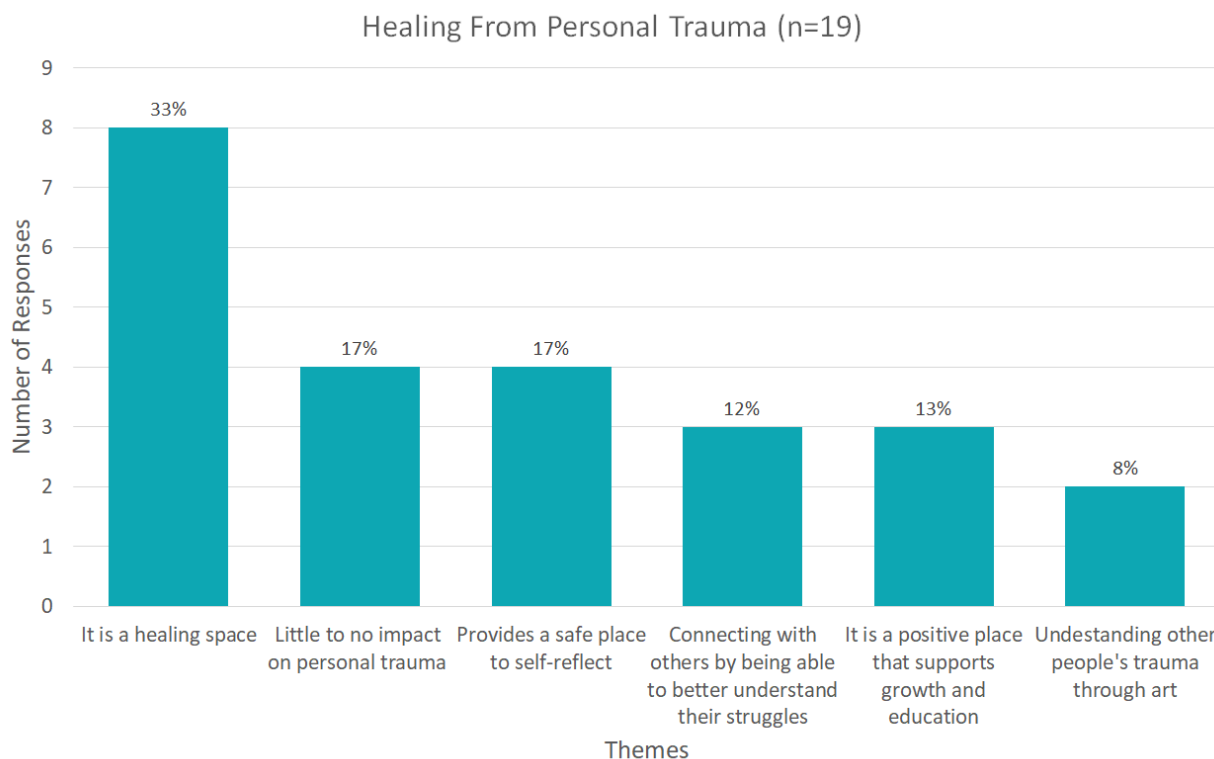


Figure 5. Majors themes that emerged from self-reported data on the impact of garden on healing from personal trauma

A graph was also created to examine the degree to which a participant's place of residence can impact personal trauma (Figure 6). Participants who stated that the question of personal trauma did not apply to them were excluded from this analysis. The greatest number of respondents who reported healing from trauma were from Asheville city or near Asheville. Participants who reported living outside of Buncombe County experienced less trauma related healing than participants from outside of North Carolina. Participants from outside of North Carolina were not asked to elaborate on where they were from.

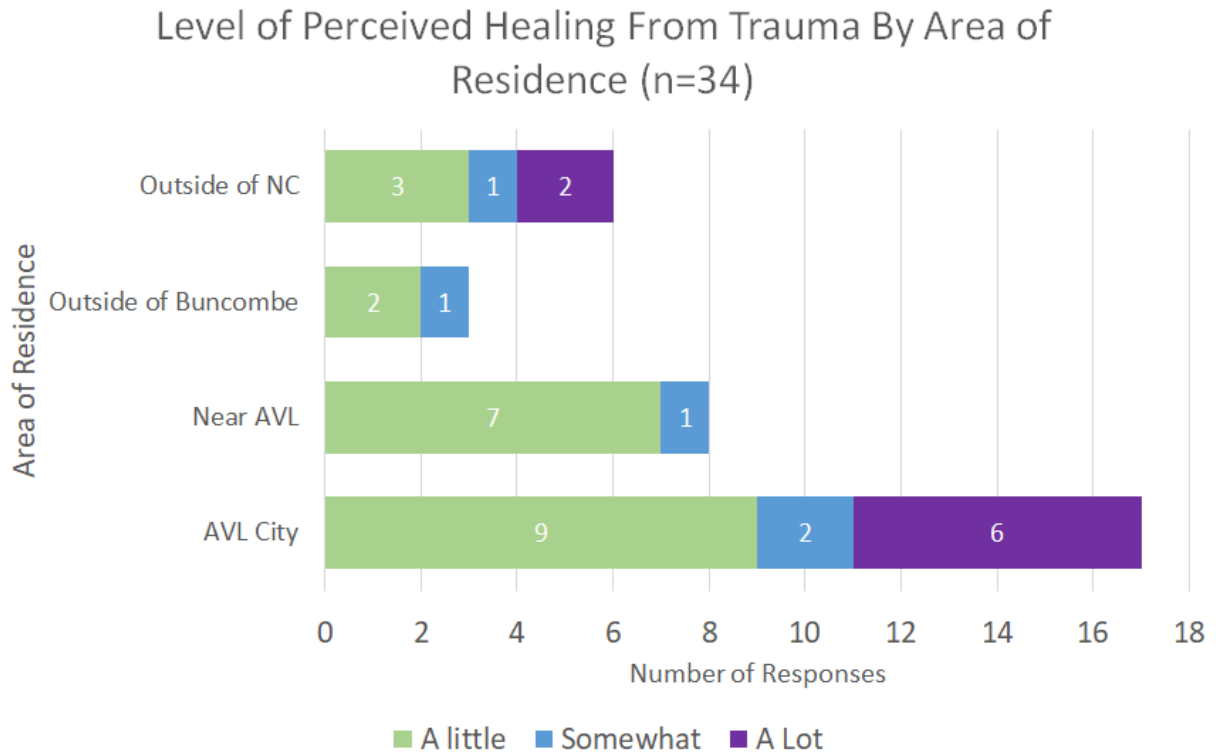


Figure 6. Relationship between the area of residence of participants and their level of healing from personal trauma

The impact of the garden on community/collective trauma was also examined. When asked to rate how much of an effect the garden had on community trauma, 1 person (2%) said it had little impact, 20 people (38%) said it had some impact, and 31 people (60%) said the garden had a lot of impact on healing from community trauma. One person did not provide a rating for the question, but was able to provide an explanation in the open-ended portion of the question. Participants elaborated further and the following themes emerged (Figure 7): gardens helped connect with people and nature (31%), help acknowledge pain and suffering and how to heal from it (29%), good place for reflection and to find perspective on the needs of the community (25%), brings on feelings of peace and positivity (13%), and provides more opportunities for people who are at a disadvantage in the society (2%).

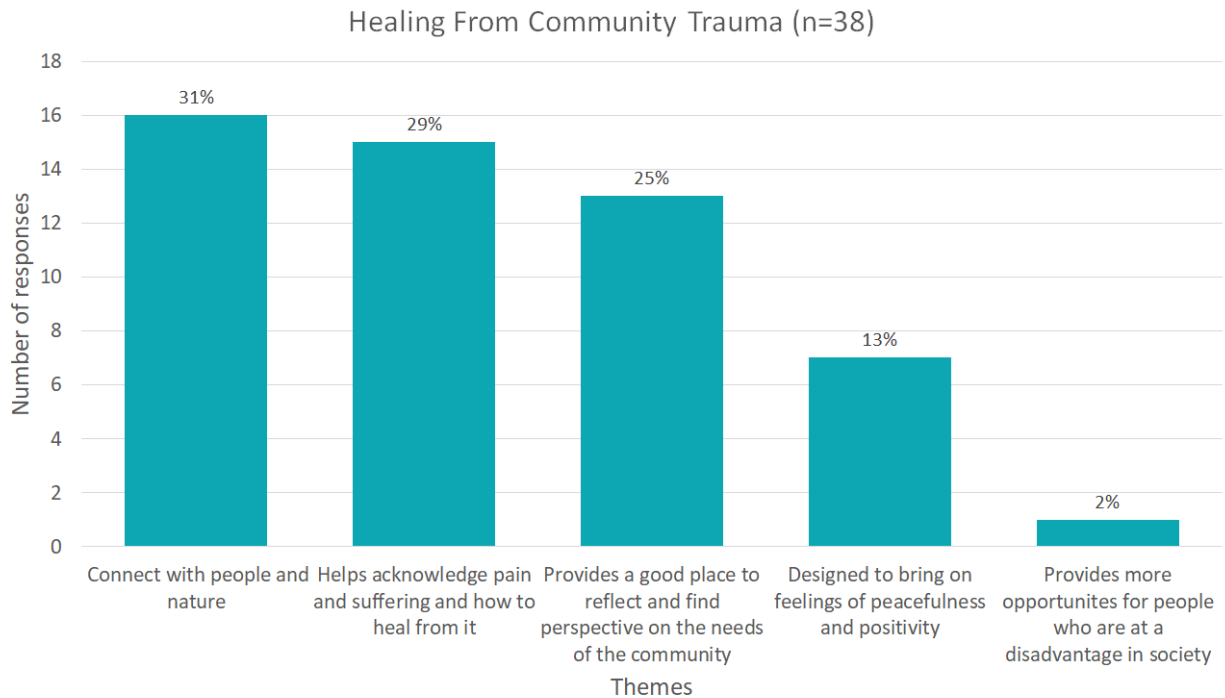


Figure 7. Themes that emerged on the garden's impact on healing from community trauma.

4. Discussion

The results of this study indicate that community gardens provide unique opportunities for participants to interact with the community. Historically, recreational motivations have been considered to be the most important reason to make urban policy-makers promote community gardens.¹⁷ The results of this experiment suggest that participants considered the garden to be a very valuable experience because of its exposure to nature. In fact, many participants expressed feelings of peace and happiness upon entering the garden, believing that it was a great way to retreat from a busy and stressful lifestyle. This would explain why more participants under the age of 65 years visited the garden more frequently, suggesting that the garden might play an important role in the lives of working adults.¹⁸ In addition to stress reduction, participants also saw improvements in mental and emotional well-being, physical health, and spiritual health.

Participant responses indicate that the community gardens did not have a significant impact on their food behaviors. The results show that foods grown in the garden were consumed by many participants, which suggests that the experience of visiting the garden is more meaningful than the quality or quantity of vegetable produced and consumed.¹⁸ However, the results of this study should not be interpreted as showing that vegetable consumption is not important for garden visitors, mainly because the majority of questions asked in the questionnaire did not focus on assessing their food behaviors. Therefore, the results of this study do not conflict with the studies that find a potential positive relationship between community gardens and overall vegetable consumption and improved nutrition.¹⁶

According to the results, it is evident that participants experienced feelings of overall satisfaction and attachment to the garden. The community garden was often described with phrases such as "I treasure these beautiful spaces" and "impressive place that should be preserved and cherished." Such quotes reflect feelings of deep attachment to the community gardens likely because the gardens play an important role in giving community members access to such green spaces.¹⁸ The results of this study are consistent with the findings of Menconi et al., who identified that participants might be oblivious to the benefits of incorporating nature-based solutions in urban planning that can help to reduce heat island effect, runoff from heavy rainfall events, and improve urban biodiversity.⁴ Instead, participants generally view community gardens as places to relax and cool off on hot days.

Additionally, the results suggest that gardens may serve as a positive social influence in communities and may serve as a catalyst for positive action and injustice.¹⁹ In fact, community gardens seem to play a role in making social connections among neighbors who would not otherwise engage with one another. In congruent with other research,

the results of this study show evidence that participants seek to take part in the local community by giving back to it.¹⁸ As the results show, many participants consider the garden as a space for social interaction, either with friends, family, neighbors, or other garden visitors. Such spaces promote solidarity and community cohesion.¹⁷

When examining the role of the community garden on trauma, many participants claimed that the garden was a safe, healing space that allowed for self-reflection. This suggests that community gardens allow participants space to make choices that reflect on their values and preferences to ensure that the community thrives.¹⁸ The artwork observed in the gardens may also help to maintain a sense of cultural identity that may be very educating and empowering for communities. The results suggest that not only do these community gardens provide a space to educate youth on urban agriculture and gardening, it is also a great place to highlight some existing problems in society.²⁰ This is especially important for cities like Asheville where gentrification and privatization of public spaces limits access to educational activities.¹⁷ Thus, community gardens may help foster the need for more green spaces in urban areas for the purposes of education and recreation in less favored areas of the city.

4.1. Strengths

This survey was very cost-effective, easy to make and administer. The questionnaire was administered remotely online, using social media, email, and phones. The SurveyMonkey software was also able to organize the data automatically, create charts, and allow data to be exported to Microsoft Excel. Conducting this survey online helps ensure that everyone is safe and no one is exposed to any diseases, especially COVID-19. Throughout the study, participants were also provided with a lot of privacy, which may help put respondents at ease and encourage them to answer questions truthfully. Diversity in the participant pool was also considered to be a strength of this study.

4.2. Limitations

This study relied on self-reported outcomes from the questionnaire. This means that some answers might be exaggerated, respondents may not be completely honest, or may be embarrassed to answer specific questions. Social Desirability Bias also play a role because participants might choose responses based on what they think is more acceptable rather than reflecting on their true feelings. Some participants also skipped questions, which accounts for missing information.

Another disadvantage of this study is that data were collected from October to March. These are months that typically experience cooler weather, which might influence the number of people that visit the garden. The length of the questionnaire can also influence the response rate, especially when participants are presented with open-ended questions. This was a convenience sampling and encompassed a less representative population. This study was only conducted at the Burton Street Community Peace Gardens, and may not accurately represent other community gardens.

Additionally, individuals and communities have faced heightened social, mental, and physical challenges during the COVID-19 pandemic. This means that researchers had to anticipate higher non-response rates when administering the survey remotely than usual. To improve response rates, researchers would need to establish relationships with community members, which is hard to do with the pandemic. Qualitative data were also coded by only one researcher. Other factors such as access to technology and the internet can also influence response rates.

4.4. Future Research

Future research should be aimed at assessing the relationship between gardening interventions and health outcomes. Such research can be designed where participants are completing questionnaires before and after a gardening intervention. It would be the most beneficial to look at the effect of a gardening intervention on non-gardeners. Designing such a study would help analyze the impact of gardens and gardening on health and wellness. In addition to the questionnaire, a simple test can be done to record participant's blood pressure, blood sugar levels, cholesterol levels, and weight. It may also be worth exploring to analyze gardener's health for a longer period of time, such as over one year. Other aspects, such as mental and emotional health, social health, and nutrition can also be analyzed in gardeners. In order to gather more representative data, future research should aim to increase the sample size of the study. The UNCA Health and Wellness Promotion department also hopes to continue conducting this research in the upcoming years.

4.3. Local Implications

Incorporating community gardens in urban areas can be an effective nature-based solution for urban policies with the goal of promoting human well-being, social interactions, healthy lifestyles, and civic engagement.¹⁷ The results of this study will be shared with funders to help raise more funding for the Burton Street Community Peace Gardens. The results will also play a role in promoting the value of similar garden and art spaces in other areas in Buncombe County. Additionally, the results will help spread more awareness about the impact of such community gardens on race and health.¹⁵ This may help build lasting relationships that cross demographic divides and connect diverse communities.

5. Conclusion

Community gardens provide a wide variety of benefits for not only its visitors but also the neighborhood it is located in. The Burton Street Community Peace Gardens are more than just a gardening space. As the results indicate, sharing a community garden gives people a chance to connect with one another. Such gardens help improve social well-being by strengthening social connections. Additionally, community gardens provide a peaceful retreat from noisy and busy urban neighborhoods, which can help relieve some stress for residents. The community garden also provides a safe, healing space for visitors to acknowledge and heal from any past or current personal or collective trauma.

6. Acknowledgements

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