



The impact of Royal Botanic Gardens'
Community Greening
on perceived health, wellbeing, and social
benefits in social housing communities in NSW

RESEARCH REPORT

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The impact of Royal Botanic Gardens' Community Greening

on perceived health, wellbeing, and social benefits in social housing communities in NSW

Mixed-method research findings from six new Community Greening (CG) gardens

6 new CG gardens in NSW

23 questionnaire participants over seven months

42 focus group participants

4 open-ended questionnaires with staff on site



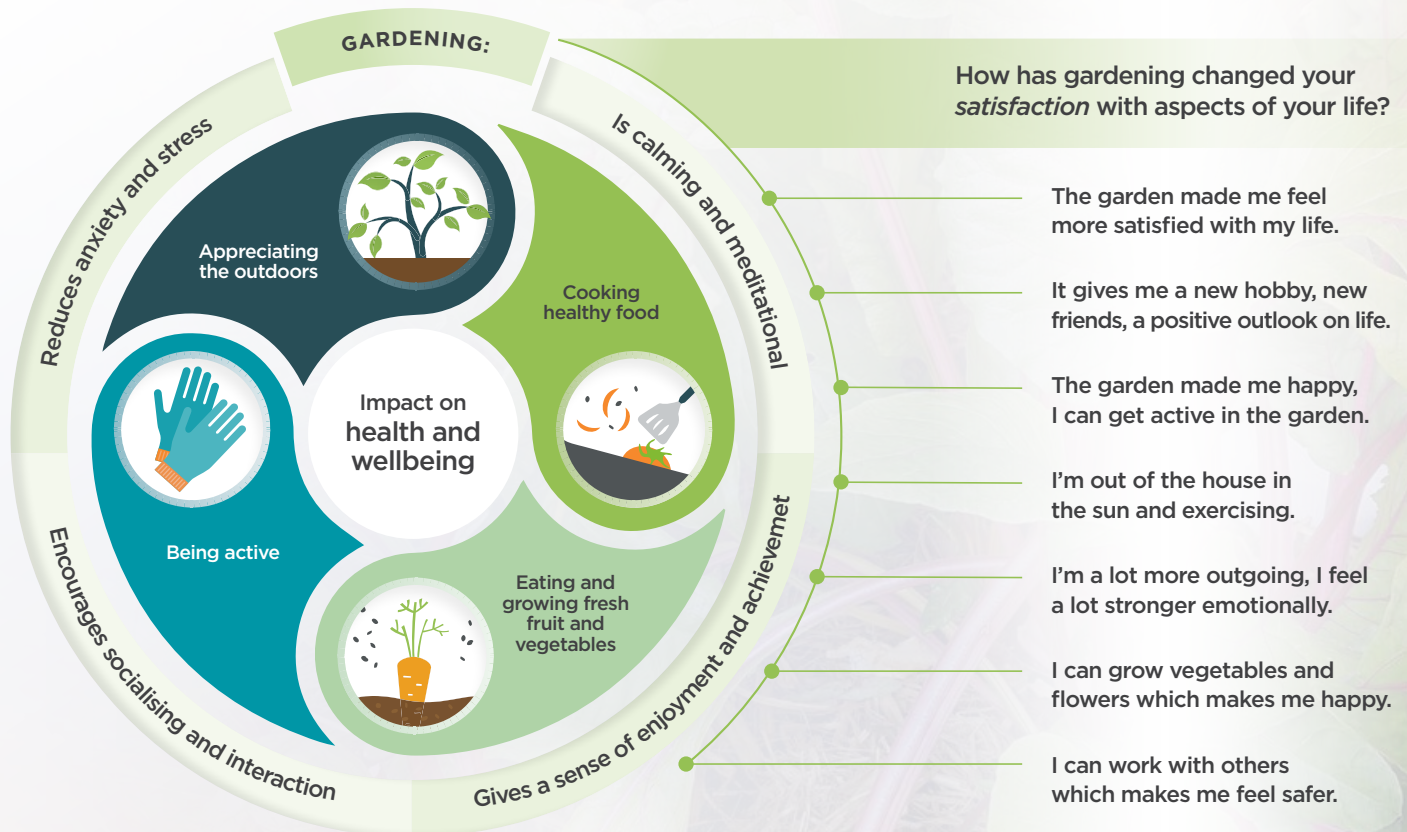
RESEARCH QUESTIONS

What is the impact of participation in CG on **intrapersonal** outcomes?

What is the impact of participation in CG on **interpersonal** outcomes?

What are **participants' perspectives** of participation in CG?

Individual self-reported impact on health and wellbeing



Self-reported skills changed since coming to CG (in order of most change)

- Gardening
- Listening
- Teamwork
- Organisation
- Problem solving
- Decision making
- Leadership
- Allocating people to tasks
- Conflict resolution

On the post questionnaire, participants were presented with a list of skills and asked, "What skills have changed since coming to the community gardens?" Response options included:

1 = skills decreased, 2 = skills stayed the same, 3 = skills increased



According to focus groups, CG can:

- Enhance social connection
- Enable inclusivity: Intercultural and intergenerational interaction
- Cultivate a sense of community pride and achievement
- Build social capital
- Foster safety and security
- Encourage aspirational change and community development
- Change self-reported beliefs about public perceptions and stereotypes regarding social housing

"...I feel like I'm part of the community now, and I didn't feel like I was a part of it until now."

"The garden's been a success... It's changed the stereotype... We're a valuable part of the community and we are a positive part of the community."



Changes between pre and post-questionnaires indicated an increased sense of **emotional connection** with the community.



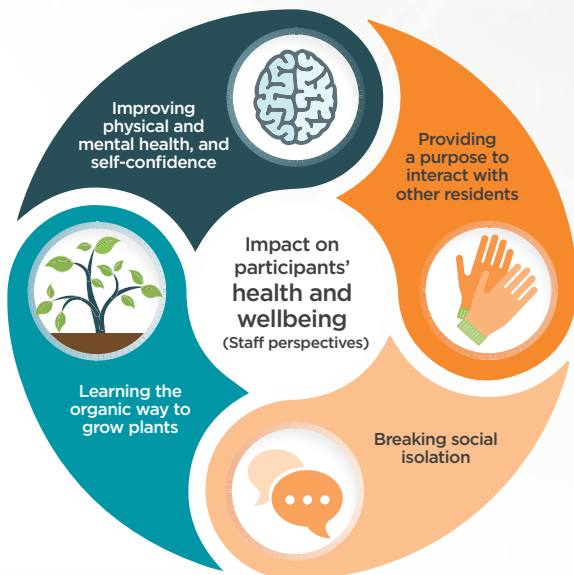
Individuals' perspectives of participation in CG



Commonly identified *best features* of the garden:

- Process of growing fresh produce from start to finish
- Aesthetic appeal of the garden beds
- Accessibility and ease of working with a raised garden bed
- Attracting wildlife
- Increased social interaction through the introduction of a communal activity and space

■ Make positive contribution ■ Eat more healthily ■ Learn about gardening



Suggestions for improvements:

PARTICIPANTS

- More users and garden beds
- More opportunities to learn
- Improved community organisation and communication
- Adequate funding and resources

STAFF MEMBERS

- Keep communicating with gardeners and improving their skills
- Support community-led initiatives
- Establish a bigger volunteer base to take 'ownership' of the space
- Encourage inclusion of other neighbours and residents

Recommendations

The **CG** program and staff were recognised by participants for their valuable knowledge and resources.

Continuation and expansion of **CG** program based on participants' self-reported impact of participation.

The **CG** approach was viewed as effective for relationship building and community education. It is recommended that **CG** continue to grow these strengths and pursue resources and partnerships to support the growth of the gardens and provide more educational workshops for local capacity building.

Developing a detailed program logic and best-practice model to support upscaling and differentiated goals for diverse communities. It is recommended that **CG** undergo more robust and long-term efficacy evaluation in the future.

Executive summary

Community gardening is one of myriad ways in which humans and nature interact. A primary objective of the study was to ascertain the impact of the Community Greening program on new participants. Of specific interest was the inherent need to better articulate both the self-perceived and observed benefits in terms of physical, social, emotional and social health. Based on this premise, we conducted a mixed-method study, which utilised qualitative and quantitative methods to gain deeper insight into the diverse experiences of participation in Community Greening. Through these dual lenses, the research captured the gardeners' self-reported impact on wellbeing, social engagement, and educational outcomes. These findings were then triangulated alongside data obtained from the garden site staff who were administered an open-ended questionnaire at the conclusion of the study.

Research Questions

The impact of Royal Botanic Gardens' Community Greening program on the perceived health, wellbeing, and social benefits in social housing communities in NSW, was guided by three overarching research questions:

What is the impact of participation in the Community Greening program on intrapersonal outcomes?

What is the impact of participation in the Community Greening program on interpersonal outcomes?

What are participants' perspectives of participation in the Community Greening program?

Research Design

A mixed-method design with six new Community Greening gardens underpinned the study. Data collection included a pre and post questionnaire over a period of seven months; conducting post focus group interviews with community garden participants, and open-ended questionnaires with staff working at the community sites.

Findings are based on the questionnaire results from 23 participants, focus group interviews at each site with a total of 42 participants, and staff questionnaires from four participants. Both pre and post questionnaires included the use of two measures: The Sense of Community Index 2 and the Personal Wellbeing Index.

Open-ended questionnaires were sent by email to the site managers six months post construction of the garden beds. Focus group interviews with participants were held on the same day as the administration of the post questionnaire at six community gardens.



Findings

The findings offer essential feedback for the strategic growth and sustainability of Community Greening, and contribute to this significant yet underexplored area of research. The quantitative data collected in the participant questionnaires at pre and post test did not show improvement across all measures, as discussed in the further detail in the full report. However, positive gains were apparent in participants' sense of community, particularly the shared emotional connection, with 79% reporting that the community gardens had impacted their community. Participants who were not eating any fruit and vegetables or cooking healthy food upon commencing at the community garden had indeed changed these behaviours at the post test. Over the period from pre- to post-test, some improvements in sense of community and self-reported health behaviours for those most needy, became evident which is a reassuring outcome in and of itself.

Highlights arising from the study include:

1 Intrapersonal outcomes

While mixed-methods research can strengthen findings, the present study was unable to utilise a control group which reduces the ability to attribute reported changes from the pre- and post-test explicitly to the Community Greening program. In focus groups, participants conveyed a range of intrapersonal benefits, such as increased physical activity, a greater appreciation for the outdoors, and the affordances associated with growing and eating fresh vegetables, including a sense of enjoyment and achievement. The gardening experience was described by participants as calming and meditational.

In certain instances, participants shared that gardening reduced anxiety and stress. As an experiential activity, gardening also served as an opportunity to socialise and interact with neighbours. There was a shared motivation amongst participants to learn and seek new knowledge about gardening. Additionally, the development of life skills associated with community gardening became increasingly apparent.

2 Interpersonal outcomes

The interpersonal outcomes identified included social connection generated through engaging in shared activities, a sense of community pride, and motivation to continue to grow the garden. Many of these outcomes were also observed by social housing staff members who completed the open-ended questionnaire. Overall, the qualitative data supports the finding that engagement with Community Greening resulted in a number of positive intra and interpersonal outcomes for a diverse group of participants. The gardens themselves were viewed as beneficial, but also served as a catalyst towards cultivating social capital and a stronger sense of community.

3 Participants' experiences and recommendations

Participants in this study shared that engagement with the Community Greening program has a positive impact on intra- and interpersonal outcomes. Participants' self-reports suggest that community gardening is associated with an *elevated sense of community*, in tandem with health, wellbeing, and social engagement in social housing communities.

The key recommendations for Community Greening emanating from this study include:

a

The continuation and expansion of the program is overwhelmingly supported. The program is held in high esteem by the community participants who have personally witnessed changes in their lives. Many attributed these changes to their program involvement.

b

The staff were recognised for providing valuable knowledge and resources to contribute to the construction and maintenance of the community garden. It is recommended that the program continue to cultivate these strengths.

c

To augment the program's expansion, sustainability, and enduring impact it is recommended that a best-practice model and program logic be created in an effort to standardise and formalise the operations of the program across sites.

d

The current goals of the program may benefit from differentiation based on the target participants. Although the delivery should be more standardised where possible, stated goals of the program must be sensitive to the needs, circumstances, and characteristics of the participants.

e

It is recommended that future research incorporating a more rigorous design is pursued, such as an efficacy evaluation, which utilises a larger sample size, a control group, specific program goals tailored for specific participant groups, and measures of program fidelity.

4 Alignment with Contemporary Priorities in Social Housing

In *Future directions for social housing in NSW*, Family and Community Services New South Wales¹ articulates a 10-year vision for social housing that emphasises three strategic priorities, including:

1. More social housing
2. More opportunities, support, and incentives to avoid and/or leave social housing, and
3. A better social housing experience.

The findings from this study indicate that the Community Greening program makes direct contributions towards the achievement of this vision, and in particular, the third strategic priority area of creating a better social housing experience.

Collaboration with the Community Greening program represents a strategic and cost-effective partnership to support a quality social housing experience for community members. Participants reported that the construction of the garden beds encouraged *getting out of the house in the sun and exercising* and contributed towards the overall landscape of the site. The commonly identified best features of the garden included the aesthetic appeal of the garden beds, the accessibility of working with a raised garden bed, and attracting wildlife. Participants consistently reported on the benefits of learning from the Community Greening staff through on-going visits and workshops, as well as assistance with maintenance, including provision of supplies when available, and the upkeep of compost bins and worm farms. Lastly, Community Greening was also viewed as an entry point into addressing other community development issues and connecting with stakeholders and service providers.

The findings from this study support the view that participation in Community Greening promotes social cohesion and sense of community, resulting in the development of social capital. This finding highlights the ways in which the Community Greening program contributes towards a "place-making" approach to building communities.

¹ Family and Community Services New South Wales (FACS NSW) (2016b). *Future directions for social housing in NSW*. Retrieved from <http://www.socialhousing.nsw.gov.au/?a=348442>



Context and background

2.1 Overview of Community Greening

In 1999, the Royal Botanic Garden in Sydney joined with Housing New South Wales (NSW) to establish a partnership called 'Community Greening' to serve the broader community through innovative outreach programs that promote community garden projects (see Royal Botanic Garden Sydney, n.d.). The program has reached almost 100,000 participants since 2000, and established 627 community gardens and youth-led community gardens in NSW. Community Greening also provides mentoring and support for participants, delivers horticulture and Indigenous education, generates opportunities for disadvantaged youth, and promotes wellbeing and sustainability. The model also includes "outreach horticulture" through hands-on learning and capacity building with Community Greening horticulturalists and educators. In 2017, the program was recognised with three honours: first, the Community Program of the Year from Parks and Leisure Australia; secondly, the Australian Institute of Horticulture Award of Merit; and third, the Community Environment Achievement Award from Keep NSW Beautiful.

2.2 Overview of the Study

This study extends from the *2004 Community Greening Program Evaluation Final Report* (Urbis Keys Young, 2004) and reconsiders community gardening within the rapidly changing urban and peri-urban landscape of metropolitan NSW. In addition to examining program impact, the study

analysed the findings in relation to community wellbeing. Wellbeing is understood as dynamic and consisting of a range of domains, including individual, family, community, and societal wellbeing (La Placa, McNaught, & Knight, 2013; Okvat & Zautra, 2011). This framework enabled an in-depth understanding of how community members view and experience community gardening, and its broader impact on health, wellbeing, and sense of community.

The project was funded by the Royal Botanic Gardens & Domain Trust (RBG&DT) and tracked six new garden sites in 2017 in NSW. A pre- and post-test research design was utilised to examine community members' perceived benefits of community gardens.

Global and national trends towards urbanisation and loss of green space have sparked concerns regarding population health and wellbeing, leading to a growing body of research on the impact of community gardens on adults and children (see Guitart, Pickering, & Byrne, 2012; Lovell, Husk, Bethel, & Garside, 2014; Mintz & McManus, 2014; Nettle, 2010; Okvat & Zautra, 2011). The emergence of scholarly literature in this field over the past decade provides a convincing backdrop for additional robust empirical research to investigate the relationship between green spaces and social cohesiveness, health, and wellbeing (Lee & Maheswaran, 2010; Maas, Verheil, Groenewegen, de Vries, & Spreeuwenberg, 2006; Roe, Aspinal, & Ward Thompson, 2017), particularly in the Australian context where relatively less research has been conducted to date (Guitart et al., 2012).

Research aims

The purpose of this study is to better understand:

If community gardening is associated with an elevated *sense of community*, in relation to health, wellbeing, and participation in low-income communities;

If the experiences of new community gardeners and their self-report on the impact of gardening on wellbeing, engagement, and educational outcomes.

The research aims were addressed through three key research questions:

What is the impact of participation in the Community Greening program on **intrapersonal** outcomes?

What is the impact of participation in the Community Greening program on **interpersonal** outcomes?

What are **participants' perspectives** of participation in the Community Greening program?

The project aims are also informed by the *Measuring Social Housing Outcomes* report (FACS NSW, 2016a) and the *Future Directions for Social Housing in NSW* (FACS NSW, 2016b). Links to strategic priorities relate primarily to 'A better experience in social housing'. Specifically, the findings from this research will inform factors related to creating *suitable, safe, and quality housing*.

This is the first time such data on RBG&DT's Community Greening program has been collected in this way, and has the potential to

advance our understanding about the impact of community gardening and inform future directions for the program.

The outcomes of this research have the capacity to help build social capital and resilient communities by gaining an understanding of the impact of RBG&DT's Community Greening program on enhancing the wellbeing of Australians, and particularly those living in lower socio-economic status (LSES) communities.

Related literature

4.1 An Overview: Potential Benefits of Community Gardening

Broadly, the health benefits derived from nature contact have gained prominence in recent years (Frumkin & et al., 2017). Interestingly, at a time of increasing disconnectedness from the natural world, the scientific rigour in this area has grown concomitantly. According to eminent Harvard biologist E. O. Wilson (1975, 1984, 2001) we are biologically drawn towards contact with nature. In other words, we are hard wired to have an affiliation with the natural world. Contemporary evidence-based literature can be found to validate the benefits of nature immersion and green exercise enriching wellbeing and health (Africa et al., 2014; Kingsley & Townsend, 2006). Widespread research has also identified strong causal links towards health promoting behaviours resulting from immersion in natural settings (Firth, Maye & Pearson, 2011; Lapina, 2017; Lanier, Schumacher, & Calvert, 2015; Teig et al., 2009; Wakefield, Yeudall, Taron, Reynolds & Skinner, 2007). The myriad of gains which have been acknowledged include: stress reduction, improved mood states, accelerated healing, attention restoration, development of perceptual and expressive skills, cognitive enhancement, productivity and heightening of imagination and creativity, to name just a few (Dannenberg, Frumkin, & Jackson, 2011; Gray & Birrell, 2014).

With specific regard to community gardening, research indicates there are both intrapersonal (individually or within) and interpersonal (for other or relational/social) benefits (Roe et al., 2017). Immersion within community gardens has been found to moderate both individual and societal stress levels within deprived urban environments (Ward Thompson, Aspinall, Roe, Robertson, & Miller, 2016).

“A community garden is an organised, grassroots initiative whereby a section of land is used to produce food or flowers or both in an urban environment for the personal use or collective benefit of its members”

(Glover, Shinen, & Parry, 2005, p. 79).

The following is an exploration of the related literature contained within five discrete attributes of community gardening:

1. Health and Wellbeing
2. Social Cohesion, Community Engagement and Social Capital
3. Intergenerational and Intercultural Interaction
4. Produce and Cost
5. Connection to Nature and Pro-Environmental Behaviours.

4.2 Health and Wellbeing

One of the key objectives of our study was to gather robust evidence of the self-reported benefits of new community gardeners with respect to their wellbeing, social engagement, and educational outcomes. Historically, the majority of research findings regarding the affordances of working with community gardens and plants have been anecdotal (Elings, 2006). More recently, evidence suggests participation in community gardening enhances health, wellbeing, social cohesion, community

engagement and education, particularly in low-income communities (Booth, Chapman, Ohmer & Wei, 2018; Bussell, Bliesner & Pezzoli, 2017; Carney et al., 2012; Cumbers, Shaw, Crossan, & McMaster, 2018; Hartwig & Mason, 2016; Ober Allen, Alaimo, Elam, & Perry, 2008; Teig et al., 2009).

There is extensive evidence-based research to suggest the shared value of community gardens to society. Urban agriculture assists health, wellbeing and healing (Bussell et al., 2017) whilst Okvat and Zautra (2011) reveal a direct causal relationship between community gardens and individual, community and environmental wellbeing. It appears that urban gardens are instrumental in bolstering the resiliency of individuals and communities, increasing individual empowerment, and lowering levels of stress (Booth et al., 2018, Carney et al., 2012). Indeed, Pitt (2014) found community gardens have much in common with other places deemed as therapeutic, particularly their capacity to offer physical and mental release from stress. In short, community gardens are both cathartic and liberating. In the same vein, Hale et al. (2011) assert:

“gardeners’ aesthetic experiences generate meaning that encourages further engagement with activities that may lead to positive health outcomes. Gardeners directly experience nearby nature by ‘getting their hands dirty’ and growing food. They enjoy the way vegetables taste and form emotional connections with the garden. The physical and social qualities of garden participation awaken the senses and stimulate a range of responses that influence interpersonal processes (learning, affirming, expressive experiences) and social relationships that are supportive of positive health-related behaviours and overall health” (p. 1853).

Other studies suggest community gardens were perceived by gardeners to provide numerous health benefits, including improved access to food, improved nutrition and improved mental health (Alaimo, Packnett, Miles, & Kruger 2008; Wakefield et al., 2007). Additionally, there appears to be a high value placed upon pride and self-esteem in community garden participants producing and cooking their own produce and sharing their produce with others (Martin et al., 2017).

Hartwig and Mason (2016) noted refugees identified community gardens as a healing space for their depression or anxiety. Furthermore, hospital staff interviewed during a study by Milliron et al. (2017) endorsed the use of community gardens to augment patient treatment. Given such evidence, it appears that

the place-based social practices amassed within community gardens are a formidable force for encouraging health promotion (Teig et al., 2009).

4.3 Social Cohesion, Community Engagement, and Social Capital

Community gardens provide a platform for a range of social processes such as forming community relationships, social connections, public engagement and community building (Lanier, Schumacher, & Calvert, 2015; Teig et al., 2009). The sites create a context where social capital is produced, accessed, and utilised by a network of community gardeners. As a natural corollary, establishing and maintaining neighbourhood norms and values is also developed in parallel to these gains (Alaimo, Reischl, & Allen, 2010; Glover, 2004). In-situ, the gardeners need to work cooperatively to share the space and other resources such as water and equipment. The ability to cooperate and share resources is benefited by the social connections and social capital they create during the gardening process (Alaimo et al., 2008).

Social capital is defined as:

“features of social organisations, such as networks, norms, and trust, that facilitate actions of cooperation for mutual benefit” (Putnam, 1995, p. 67).

Key elements of social capital that empower the individual are community, sense of place, social networks, trust, and reciprocal benefit. Collectively, these elements of social capital strongly influence an individual’s level of participation and engagement within their community (Kingsley & Townsend, 2006).

Central to the notion of social capital is the degree of interaction and trust a participant has for a fellow citizen, membership of strong social networks, powerful relationships and sharing common values (Firth et al., 2011). Results also show “community gardens help to build cohesion and vitality in a community, contributing to the generation of bonding, bridging and linking social capital” (Firth et al., 2011, p. 555).

Bonding social capital is defined as horizontal ties between individuals in similar socio-demographic and social groups, such as immediate family, close friends, or neighbours with strong social norms, mores, and trust. Bridging social capital is more outward looking and is used to describe increasingly distant vertical ties of similar people, such as loose friendships or colleagues that may not involve many shared norms but is associated with reciprocity and thin trust. Linking social capital refers to social connections between

unlike people in dissimilar situations. It refers to more formal relationships with people in power or authority, such as those in politically or financially influential positions (Claridge, 2013; Firth et al., 2011).

Jointly, these three types of social capital are important to a strong community and finding the right balance between them is critical, as is the number of people participating in a particular social network. Glover (2004) extends this notion to community gardens by arguing that these urban green spaces are both a source and consequence of social capital.

Saldivar-Tanaka and Krasny's (2004) study of Latino gardens in New York City, discovered that community gardens were sites of frequent socialising and community organising and that gardeners viewed their gardens "more as social and cultural gathering places than as agricultural production sites" (p. 407). Likewise, Glover and colleagues' work (Glover, 2004; Glover et al., 2005) with community gardeners in Missouri, defines community gardens as social contexts for the production and use of social capital and for accessing resources such as ideas, water, labour, and tools. Community gardens are:

"A spatially based nexus of social and health empowerment in all communities. Socially, they are hubs for community building and connection" (Bussell et al., 2017, p. 145).

Urban gardens have likewise been proposed by Lapina (2017) as particularly promising for cultivating community cohesion, participation, and citizenship. In a 2009 study of individual, social and community benefits of community gardening, respondents indicated involvement in a community gardening program contributed to an overall revitalisation of beliefs and behaviour regarding their sense of community (Ohmer, Meadowcroft, Freed, & Lewis, 2009). Hale et al. (2011) propose that it is these crucial social qualities of community garden participation that stimulate a range of responses that influence social relationships that are supportive of positive health-related behaviours.

Community gardens allow volunteers to work together for the health of the community, yet they incorporate so much more than just growing produce. Opportunities to learn from others, connect with team members, and to feel more involved in the neighbourhood are often witnessed. They also provide an outward and relational sense of belonging and a chance to positively give back to the community (Cumbers et al., 2018; Firth et al., 2011; Lanier et al., 2015; Milliron et al., 2017).

A community garden is a place that brings people together with a shared goal to participate in a joint activity; a meeting place for interaction and contribution towards the creation of community. Like-minded individuals meet on a level playing field, outside of their homes, to gather, network and identify with one another as members of their unique neighbourhood.

"Activities such as growing, cooking and eating of food are all sociable and allow people of all ages, ethnicities and socio-economic backgrounds to interact informally" (Firth et al., 2011, p. 565).

In contrast to many community gardens in the US, Canada, and UK where the focus is often on food and nutrition provision, in Prague the community is prioritised over food production. Different activities, events, and functions make the community gardens hearts of their communities and potential tools of further community involvement and social change (Spilková, 2017). Community gardens also have the potential to contribute in meaningful ways to community development, particularly in low-income neighbourhoods.

A recent study that included exploration of low-income communities found 39% of respondents were involved in community gardens to make new friends (Bussell et al., 2017). Firth et al. (2011) also reported perceived benefits of urban gardening to community volunteers and the general population included the creation of new friendships. These findings are consistent with other research that suggests benefits of community gardens include providing opportunities to establish and build community relationships. Unquestionably, community gardens impact participants' perceptions of social capital and can amplify community cohesion.

Kingsley and Townsend (2006) propose an increase in urbanisation has led to an associated decline in contact with nature, which in turn creates a sense of social isolation and loneliness. Declining social interaction caused by urbanisation promotes “individual strategies of survival over...intragroup and intergroup identity and cohesion” (p. 527). Firth et al. (2011) describe four ways community gardening can overcome this nature deficit by generating social capital:

1. Bringing people together with a common purpose to participate in a joint activity or venture.
2. Creating a meeting place for people of different neighbourhoods to interact and contribute to community creation.
3. Helping to build bridging social capital as people from different neighbourhoods are brought together around a common interest in nature, food and community.
4. Facilitating the creation of external links with institutions and authorities enabling resources to be accessed for the benefit of those directly involved with the community garden. (pp. 564-565)

4.4 Intergenerational and Intercultural Interaction

As growing, cooking and eating food are all social activities; they provide opportunities for people of all ages, backgrounds and ethnicities to work together in an informal and inclusive setting. Learning to engage with people outside one's own generation or culture may assist those within the group to become more accepting of others and encourage an outward focus (Firth et al., 2011). In this way, gardening can provide a way of enacting cultural and family heritage as well as a sense of belonging (Lapina, 2017).

Shinew, Glover, and Parry (2004) studied community gardens as potential sites for interracial interaction indicating that participants felt that community gardening brought together people of different races in an unbiased setting. Community gardens can be a sanctuary for immigrants, refugees and people of different cultures to assimilate and adjust to living in a new country whilst connecting with others, interacting socially, developing new friendships, and learning new skills (Hartwig & Mason, 2016; Okvat & Zautra, 2011).

Ober Allen et al. (2008) found that engaging youth with a constructive endeavour also had the dual benefit of bringing together neighbourhood residents of different generations and cultures who would previously have shared little in common or had no reason to interact. Youth involvement in community gardening further

highlighted the promotion of respect for elders and appropriate behaviour in a shared space.

4.5 Produce and Cost

“Emerging evidence shows the effectiveness of community gardens in increasing access to, and consumption of, fruits and vegetables” (Barnbridge et al., 2013, p. 1).

Having a communal place to grow produce has both an economic advantage but also facilitates daily access to fresh seasonal produce. As such, community gardens ensure availability, as well as increased dietary intake and affordability of fruit and vegetables in low-income communities (Alaimo et al., 2008; Bussell et al., 2017; Carney et al., 2012; Hartwig & Mason, 2016; Martin et al., 2017). In a research project utilising education techniques to support Hispanic families, Carney et al. (2012) revealed there were also economic benefits in relation to reducing food insecurity.

4.6 Connection to Nature and Pro-Environmental Behaviours

Evidence suggests that community gardeners believe gardening programs contribute to neighbourhood revitalisation with reports of feeling more environmental concern for their immediate surroundings (Milliron et al., 2017; Ohmer et al., 2009). Researchers also found the ability to produce pesticide-free vegetables an attractive and satisfying aspect of community gardening in terms of both personal health and environmental benefits (Carney et al., 2012). In a 2011 study, empirical evidence obtained by Okvat and Zautra (2011), indicated many community garden participants expressed increased positive beliefs and behaviour about conservation issues particularly in terms of tempering climate change, with urban gardens lending support by reducing atmospheric carbon and new greenhouse gas emissions, as well as playing a supporting role in altering urban lifestyles. The study lists specific environmental benefits of community gardening, such as reducing the carbon footprint created by transporting food from afar, increasing composting, and alleviating the energy demands of mass-produced food requiring packaging and refrigeration.

“By helping people reconnect to natural systems, community gardening might help expand awareness of environmental issues in general and encourage civic participation to take positive actions”

(Okvat & Zautra, 2011, p. 381).

Methodology

5.1 Research design

Mixed-method design: To address the stated research objectives, a mixed-method design (Creswell, 2018) was adopted which incorporated both the administration of a pre and post questionnaire to community garden participants, post focus group interviews with community garden participants, and open-ended questionnaires with staff working at the community sites. This twelve-month project provides rich and in-depth descriptions of individuals' participation in community gardening and its perceived impact over a period of six to seven months.

Participant questionnaires: Pre questionnaires were administered to participants of six new community gardens established between May to July 2017, followed by the administration of post questionnaires at these community gardens between six to seven months later. This design sought to identify changes in participants' perceived health and wellbeing, sense of community and participation over the time of their involvement with the new community gardens.

Focus group interviews: Post focus group interviews provided an understanding of participants' experiences that cannot be effectively captured through the questionnaires alone and determine what elements of the program are most valued by participants, and thus should continue to be implemented.

Staff questionnaires: Finally, staff working at the community garden sites were contacted by email with an open-ended questionnaire to ascertain their observations and perspectives on the impact of the gardens on community members and the community as a whole.

Steering committee: Importantly, the research was designed and implemented in collaboration with key stakeholders including representatives from the NSW Department of Family and Community Services and the RBG&DT. A Steering Committee was formed which included members from the research team, the NSW Department of Family and Community Services, the RBG&DT, and a community representative. The committee was consulted regularly throughout the research to provide advice and guidance concerning design, data collection, analysis, and dissemination to ensure that the research met the needs of the end users of the research and thus was able to impact their future work.

5.2 Participants

5.2.1 Pre and post questionnaire

A total of 55 participants across six sites completed the pre-test questionnaire. Of these, 30 participants across five sites also completed the post-test questionnaire. Data was cleaned to identify missing data and response sets (as recommended by International Wellbeing Group, 2013 – authors of the Personal Wellbeing Index) which reduced the sample for analysis to 23 participants across five of the six sites.

Of the 23 participants, 14 were female and nine were male, with an average age of 59 years (ranging from 29 to 83 years). Fifteen participants (53%) were born in Australia while the remaining participants were born in Fiji, Iran, Poland, New

Zealand, Philippines, Chile, Afghanistan, and Mauritius. Five people (22%) reported English was not their first language and one participant identified as an Aboriginal and/or Torres Strait Islander. The educational qualifications of participants included University degree (n=4), TAFE (n=8), high school (n=4) while six people reported holding none of these qualifications.

Prior to coming to the community garden, 27% of participants reported they had never gardened, 18% rarely – once a month, 37% often – once a week, 18% a lot – every day. At the post test, participants reported their frequency of attendance at the community garden as Rarely (9%), sometimes – once a month (26%), regularly – once a week (26%), often – 2-3 times a week (17%) and a lot – almost every day (22%).

5.2.2 Focus groups

A total of 42 participants across all six sites participated in focus group interviews. Of these, 30 also completed the pre and post questionnaire. The remaining 12 focus group participants became involved with the community garden after construction of the garden beds. Out of the total, there were 26 females and 16 males who participated in the focus groups.

Site	Number of focus group participants	Number also completed pre and post test	Female	Male
1	13	6	13	0
2	6	6	3	3
3	9	8	5	4
4	7	4	2	5
5	3	2	0	3
6	4	4	3	1
Total	42	30	26	16

Table 5.1. Overview of focus group interview participation

5.2.3 Staff questionnaires

A total of four staff members completed an open-ended questionnaire. All four staff members were female from four different sites. Job titles of the participating staff members included community development worker, manager, tenant participation officer, and tenancy officer.

5.3 Procedures and Measures

Approval to conduct the research was provided by the Western Sydney University Human Research Ethics Committee. All participants provided consent to contribute to the research.

Site selection was conducted in collaboration with the Community Greening Coordinator, to identify prospective new community garden locations for construction in 2017. Members of the research team attended an orientation day with potential participants to explain the purpose of the study and to obtain informed consent. Recruitment posters were also displayed at each site. The new community gardens were built in six different suburbs in the Greater Sydney region, which is a particularly culturally, linguistically, and socio-economically diverse area.

Table 5.2 includes the most recent Socio-Economic Indexes for Areas (SEIFA) information for each suburb, collected in 2016. SEIFA is used by the Australian Bureau of Statistics (ABS) to rank areas in Australia by relative socio-economic advantage and disadvantage (ABS, 2018). The four SEIFA indexes each capture a different concept of socio-economic advantage and disadvantage in terms of: (1) relative socio-economic disadvantage, such as many households with low income, or many individuals with no qualifications or in low skill occupations; (2) greater disadvantage and lack of advantage; (3) financial aspects of relative socio-economic advantage and disadvantage; (4) the educational and occupational level of communities. For the ABS, relative socio-economic advantage and disadvantage is broadly defined “...in terms of people’s access to material and social resources, and their ability to participate in society” (n.p.). After scoring each area, they are ordered from lowest to highest score. The areas in lowest 10% are given a decile number of one, up to the highest 10% of areas, which are given a decile of 10. Decile one is the most disadvantaged area relative to the other deciles. 5.3.1 Pre and post participant questionnaire

NSW Suburb	Index of relative socio-economic disadvantage ¹	Index of relative socio-economic advantage and disadvantage ²	Index of economic resources ³	Index of education and occupation ⁴
A	1	1	1	1
B	1	1	1	1
C	5	7	3	8
D	7	10	1	10
E	2	3	2	4
F	4	5	3	5

Table 5.2. SEIFA index information for participating sites

5.3.1 Pre and post participant questionnaire

The researchers constructed a pre and post questionnaire to address the research objectives. Both the pre and post questionnaire collected similar information in order to make comparisons between these two time points. Key data collected included participants' motivation to join and continue to attend the community garden; their activities such as participation in education, employment, social events; and health behaviours such as smoking, healthy eating and exercise. Moreover, both pre and post questionnaires included the following two measures:

The Sense of Community Index 2 (Chavis, Lee, & Acosta, 2008) is the most frequently used quantitative measure of sense of community, which casts sense of community as comprising four elements: membership, influence, meeting needs, and a shared emotional connection. Participants were asked to indicate how they feel about this community on a 4-point Likert scale.

The Personal Wellbeing Index (International Wellbeing Group, 2013) is an empirically validated scale that measures satisfaction across seven broad domains: How satisfied are you with: (1) your standard of living; (2) your health; (3) what you are achieving in life; (4) your personal relationships; (5) how safe you feel; (6) feeling part of your community; and (7) your future security. The index uses an 11-point (0 No

Satisfaction at All - 10 Completely Satisfied) end-defined response scale, which optimises participants' discriminative capacity and is simple to understand.

Questions unique to the pre questionnaire included key demographic information from participants. Questions unique to the post questionnaire included their opinions on the community gardens as well as their perception of the contribution of the community gardens to outcomes for themselves and their community. More specifically, they were asked to consider what skills they had acquired by attending the community garden and what they did with the produce. A selection of these items was identified from existing informal evaluation surveys generated by the Community Greening program.

The researchers visited the community garden locations on the two occasions (pre and post periods) and distributed hard copies of the questionnaires for participants to complete. Participants were asked to complete these questionnaires independently whilst the researchers were available to provide assistance if required. In some instances, questionnaires were completed with the assistance of language interpreters.

¹ <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2033.0.55.001-2016-Main%20Features-IRSD-19>

² <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2033.0.55.001-2016-Main%20Features-IRSAD-20>

³ <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2033.0.55.001-2016-Main%20Features-IER-21>

⁴ <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/2033.0.55.001-2016-Main%20Features-IEO-22>

5.3.2 Focus groups

Six to seven months post construction of the garden beds, focus groups were held with community garden participants at all six sites on the same date as the administration of the post questionnaire. The focus group interviews consisted of open-ended questions designed to elicit responses and discussion on the impact of the community gardens. They ranged in duration from 34 to 70 minutes, with an average length of 50 minutes. In some instances, the focus groups were completed with the assistance of language interpreters.

5.3.3 Staff questionnaires

Open-ended questionnaires were sent by email six months post construction of the garden beds. The questionnaire consisted of five questions related to background information and the motivation for the construction of the community garden, and 10 questions related to their observations and perceptions on the impact of the community garden.

5.4 Analysis

5.4.1 Pre and post questionnaire

Demographic data were analysed with descriptive statistics. Statistical analyses were performed using SPSS. To determine if there were differences on the Sense of Community Index following participation in the community garden, pre- and post-test scores were analysed with a paired sample t-test. Scores on the Personal Wellbeing Index violated the assumption of normality and therefore, differences between pre and post scores were tested using the non-parametric Wilcoxon signed-rank test.

5.4.2 Focus groups and staff questionnaires

Focus group and staff questionnaire transcripts were managed and analysed with the use of NVivo software. Guided by the constant comparative method (Glaser & Strauss, 1967, Strauss & Corbin, 1998) categories were developed based on similarities and differences of ideas within the data, which was used to identify common themes (Creswell, 2018). The rigour of data analysis process will be enhanced through the use of multiple coders and a focus on intercoder agreement.

What is the impact of participation in the Community Greening program on **intrapersonal** outcomes?

What is the impact of participation in the Community Greening program on **interpersonal** outcomes?

What are **participants'** perspectives of participation in the Community Greening program?

6.1 Impact on Health and Wellbeing

6.1.1 Self-reported health behaviours

In the pre and post questionnaire, participants were asked to indicate the frequency of specific health behaviours in the two weeks prior in order to gauge whether participants experienced improvements in positive health behaviours over this time (see Table 6.1). Responses suggest that changes were evident for some participants, with participants who initially never ate fruit and vegetables or cooked healthy food reporting that they did indeed demonstrate these positive health behaviours at the post test.

Smoking	Pre%	Post%	Exercise	Pre%	Post%
None	85	81	None	25	25
1-3 days	—	4.8	1-3 days	30	30
4-6 days	—	4.8	4-6 days	15	25
7-9 days	10	4.8	7-9 days	15	5
10-13 days	—	—	10-13 days	—	—
Everday	5	4.8	Everday	15	15

Eating fruit and vegetables	Pre%	Post%	Cooking healthy foods	Pre%	Post%
None	5.3	—	None	15	—
1-3 days	10.5	19.2	1-3 days	10	22.7
4-6 days	10.8	22.7	4-6 days	15	18.2
7-9 days	10.5	9.1	7-9 days	15	18.2
10-13 days	5.3	4.5	10-13 days	—	9.1
Everday	52.6	45.5	Everday	45	31.8

Table 6.1. Self-reported health behaviour at pre and post test

Focus group interviews:

Increased physical activity

In focus group interviews, participants commented on the benefits of increased physical activity through gardening. At each site, a core group of participants were actively involved in the planning and building stages of the garden beds. In the subsequent six months, participants shared that they were involved in a number of activities, including watering, planting, weeding, and general upkeep of the garden and grounds. A number of participants expressed appreciation for this form of physical activity, which they found to be enjoyable:

"You feel better. Your health is better because you're doing activity. You're planting your own. You know what's in there."

"Since we've been in this community garden, since we've been living here, we're more active than we were before, before we moved here."

"Gardening is exercise all together, and breathing in fresh air is also good, instead of sitting at home."

Appreciation for the outdoors

Participants also expressed an appreciation for being outdoors and having something specific to do each day. Having a daily activity to keep busy was viewed as beneficial. Some participants who were older adults and those experiencing mobility challenges discussed how gardening served as an extension to some of their mobility and falls prevention exercises.

Growing fresh vegetables

There was a sense of community pride in growing fresh vegetables. Many participants commented on the benefits and convenience of harvesting food, such as lettuce, herbs, tomatoes, and berries from the garden beds. While nutrition was not a significant topic that was discussed in the focus group interviews, it is important to note that some participants reported eating more vegetables or trying different types of vegetables. One participant also shared how the community garden improved her eating habits and initiated some positive changes in her life:

"For me, I suffer with a lot of health problems, and a lot of times I've been sitting at home, been depressed and not been happy about my illness and since I've become more involved with the garden, it helped me to not worry about my health so much like I used to and it actually improved my eating habit. I'm eating a lot more and a lot healthier. Before I didn't have much of an appetite, so that improved tremendously. Eating healthy food, fresh veggies all the time, so it has changed my life positively. I don't have time to feel sorry for myself anymore, which is good. So, it's been very positive for me."

6.1.2 Perceptions of personal wellbeing and mental health

The Personal Wellbeing Index (International Wellbeing Group, 2013) was found to have good reliability for the pre-test scores, producing a Cronbach's alpha of .892. At the pre test, the average scores of participants on all domains fell more than two standard deviations below the mean score for the Australian population, as reported by the International Wellbeing Group (2013).

Means and standard deviations at pre and post test are presented in Table 6.2. The Wilcoxon test was statistically significant ($Z = -1.95, p = .05$) for only one domain – satisfaction with health. This result indicates that participants reported being less satisfied with their health at post test compared to pre test. Although this may be concerning, a closer analysis reveals that the age of the participants may have an impact on the capacity of the community gardening to shift satisfaction with health. Eleven participants reported reduced satisfaction with health (Group 1), seven reported no change (Group 2), and five reported improved satisfaction with health (Group 3). The average age of Group 1 ($M = 64$ years) was higher than Group 2 ($M = 59$ years) and Group 3 ($M = 52$ years) suggesting that more data is required to determine if community gardening can shift satisfaction with health for younger participants.

	Pre M (SD)	Post M (SD)
Life in general	6.57 (3.15)	6.57 (2.76)
Standard of living	6.70 (2.72)	6.97 (3.05)
Health	6.04 (2.65)	5.43 (3.06)
Achieving in life	6.13 (2.95)	6.30 (3.02)
Personal relationships	7.04 (2.91)	6.69 (3.18)
Safety	6.57 (2.96)	7.26 (2.78)
Community	6.30 (2.75)	7.00 (2.54)
Security	6.00 (3.52)	6.47 (2.95)

Table 6.2. Mean and standard deviations for pre and post Personal Wellbeing Index scores

To further understand the perceived impact of the community garden on personal wellbeing, the researchers asked participants to consider how much changes in any satisfaction with aspects of their life could be attributed to attending the community gardens. Table 6.3. suggests that participants believed attending the community gardens made the greatest contribution to increasing their satisfaction with their community. The subsequent Table (Table 6.4) depicts the qualitative comments made about the nature of any changes.

How much has coming to the garden changed your satisfaction with:	M	SD
Community	6.05	3.06
Life in general	5.91	3.04
Standard of living	5.83	2.82
Achieving in life	5.61	2.95
Health	5.57	2.86
Personal relationships	5.50	3.17
Safety	5.30	3.30
Security	5.14	3.30

Table 6.3. Perceptions of the impact of community gardens upon personal wellbeing at post test. Note. Response options 0 (not at all) – 10 (in a very big way)

Question	Responses — Yes	Responses — No
Has coming to the community garden changed how satisfied you are with your life as a whole?	I am generally a solitary person, the community garden group has given me the courage to socialise and get more involved with community activities	The garden is okay but it is small
	It gets me out of house not thinking about health problems for couple hours and to socialise and to learn proper way	It doesn't change anything
	I already did a lot in garden but enjoy more people involved	I have always loved gardening
	The garden made me feel more satisfied with my life	
	It gives me a new hobby a positive outlook on life, new friends	
Has coming to the community garden changed how satisfied you are with your standard of living?	I garden a lot at home too, it keeps me very busy	The garden should be bigger
	It gets me out of house not thinking about health problems for couple hours and to socialise and to learn proper way	It doesn't change anything
	The garden made me feel more satisfied with my life	
	Fresh food without going to the supermarket	
	Enjoy going to the garden meetings	
Has coming to the community garden changed how satisfied you are with your health?	Visiting the garden makes me happy	Hasn't had much influence
	Love being here	Chronic on-going health problems
	The garden made me happy and I can get active in the garden	It doesn't affect my health
	I'm out of the house in the sun and exercising	
Has coming to the community garden changed how satisfied you are with what you are achieving in life?	Yes, I'm a lot more outgoing, I feel a lot stronger emotionally	Fine while here but not enough follow up at home
	I learnt how to not kill my plants	It doesn't affect it
	Love more vegetables	
	I can grow flowers and vegetables which makes me happy	
	I can grow some flowers and vegetables and this makes me happy	
	I'm just happy to have been given the chance to find a new interest	

Question	Responses — Yes	Responses — No
Has coming to the community garden changed how satisfied you are with your personal relationships?	I am a lot more patient with my 3 sons	More differences of opinion are showing up
	See friendly neighbours more	I don't have one
	Improved my personal relationships	
	That has not changed	
	Getting to know other people more in the community	
Has coming to the community garden changed how satisfied you are with how safe you feel?	I always feel safe	Don't have a connection
	More people watching	The building we live in has negative activities going on, of which is out of my control
	I can work with others which makes me feel safer	
	I can work with others and that makes me feel safe	
	Feel very safe	
Has coming to the community garden changed how satisfied you are with feeling part of your community?	I feel a part of my community and am a lot more involved	Don't always feel I fit in
	I feel I can make some contribution to my community	
	I feel I can contribute something to the community	
	I've meet and made new relationship with other tenants	
	Community feels good	
	Getting to be with other community people	
Has coming to the community garden changed how satisfied you are with your future security?	I have a lot more confidence getting involved within our community	Can't see the connection for me
	Does not affect security	The community garden does not affect my future security
	I think with the garden I can always do something so I feel secure	
	I believe the community will be bonding more with the members	
	Feel secured going into the community garden	
	Feel secure where I am living	

Table 6.4. Qualitative responses at post test regarding how coming to the gardens has changed participants' satisfaction with aspects of their life

Focus group interviews:

6.1.3 Participants' perceptions of satisfaction with aspects of their life

Calming and meditational

In the focus group interviews, participants described engagement with the community garden, whether actually gardening or spending time in the garden, as calming and meditational. The calming effect of the community garden was shared by a number of participants, as highlighted by these three statements:

"It's sort of a calming atmosphere. It's sort of a stress-free environment sort of thing. You know, it's like going for a stroll in the park or something like that."

"It's meditational. And the trees and plants and herbs don't swear at you."

"I noticed the change in me in how I handle difficult situations. I'm a lot calmer in the way of dealing with it and less stressful on me. So, yeah, I find I'm a lot calmer within myself now in dealing with difficult situations. It doesn't bother me as much as it used to, so that's a big change for me."

Reducing anxiety and stress

Participants across all sites expressed satisfaction with the presence of the new garden beds, and many referred to specific health benefits they experienced, such as reducing anxiety and stress, as evidenced in the following narratives from two participants:

"From the mental health point of view, the fact that you can switch off your negativity or whatever it is your problem, gives you what I call safe time. It stops the anger, it stops the anxiety, it stops the worry; you're just focusing on what you're doing. You sort of shut yourself off to concentrate on a positive and that's what it does for me. It brings a positive aspect to what could be a very spiralling downward trend."

"No depression; no anxiety disorder when I'm doing the gardening. It's just, you're in your own little zone. Especially when people are walking past and going 'It's looking good' that makes you feel like you've contributed, not only just to this block, but to the whole street."

Socialising and interaction

The garden was also described as a meeting place. The social relationships that were formed, not only elevated a sense of community, but also created stronger friendships. Participants often planned times to garden together, or would stop for conversations if they were passing by. Participants observed that the gardens facilitated socialising and interaction with one another. In one focus group, gardening was described as sharing culture and a common commitment, whereby relationships were formed by helping each other.

Focus group interviews:

Enjoyment and Achievement

A sense of enjoyment and achievement was also prevalent throughout the focus group interviews. When asked to describe the feelings elicited by the community garden participants shared that they felt relaxed, calm, proud, happy, satisfaction, and joy. The feelings of enjoyment were attributed to a number of factors, including the social interaction that resulted from gardening, as well as gardening itself and witnessing the growth of the plants. For example, one participant shared the feeling of joy that emerged as a result of hard work in the garden:

“Going outside gives me not only physical exercise, but it provides a certain amount of joy in that you’re seeing the benefit of your hard work coming through in healthy plants, whether it’s vegetables or a conifer, you’re seeing it grow and you’re seeing the benefit, and also the benefit of people’s perceptions have changed, especially neighbours.”

Similarly, participants expressed feelings of satisfaction from watching flowers bloom or produce, such as tomatoes grow over time. Some participants associated these feelings of satisfaction as a source of enjoyment and wellbeing, as evidenced by the following two statements:

“Whole idea is when you sort of grow something you take the pleasure of watching the plants grow. It’s not only the vegetables that you can grow. I grow also some flowers. So some flowers are flowering. You know, it gives you some pleasure.”

“My idea on gardening is if you wander around the suburb and you see a nicely maintained garden, you’re pretty confident that that family is on the ball, that they are working together very well. Because anyone that looks after a garden, maintains it, has to be well disposed. So that might be the outcome that we’re achieving here. We’re getting a greater level of wellbeing. That’s what I’ve noticed.”

Participants also recognised a connection between a sense of enjoyment and achievement. This included feelings of “happiness from being clear of mind by gardening” as shared by one participant, as well as feelings of accomplishment:

“I know how much fun I get out of it and it’s working well, but I enjoy seeing something, I’m achieving something, and I want others to see that if you put that little effort in you’ve got a plant and you can take home a tomato or you can take home a lettuce and enjoy it and eat it and have the fun from having it. It’s an enjoyment from inside.”



6.2 Impact on Participation and Skill Acquisition

6.2.1 Employment, education, and social participation

In the pre and post questionnaire, participants were asked to report the number of hours over the previous two weeks they had spent engaging in employment, education and social activities (see Table 6.5). The Wilcoxon test showed that there was no significant difference in the amount of employment, education, and social activities completed by participants from pre to post test. This outcome may not be malleable to significant change as 47% and 53% of participants, at pre and post testing respectively, reported that they have a condition that reduces their ability to work and some of the participants were retired and not looking for work or education opportunities.

	Pre M (SD)	Post M (SD)
Employment	2.74 (9.43)	3.38 (9.75)
Volunteering	2.30 (4.54)	4.09 (6.93)
Training	2.70 (5.90)	1.36 (2.65)
Social (playgroup and participating in another community)	.90 (2.49)	2.48 (7.04)

Table 6.5. Mean and standard deviations for pre- and post-employment, education, and social participation

Focus group interviews:

Motivation to learn

When asked about what they had learned as a result of the Community Greening program, many participants indicated that they had increased their knowledge and understanding of gardening. In all instances, participants had learned directly from the Community Greening staff, including attendance at on-going workshops. Many participants had also continued to learn from each other, or through their own independent study with books or online sources.

Learning to garden

Participants identified a number of topics of new knowledge they had gained from participation in the Community Greening program. This included the construction of garden beds, specific information about planting and caring for particular vegetables, natural methods for pest control, establishing composting and worm bins, as well as native flora and fauna. While discussing what he had learned as result of the program, one participant shared:

We've learnt about crop rotation, gardening methods and I think next year, especially during the spring and summer, we will probably be a bit more productive...

And the plants are needy, you know. So what the worms give me, they go back into the garden bed, which, therefore, improves the soil, and gives the plants nutrition. So these are the things I'm learning, composting, what I'm doing wrong, and how I can improve it."

The study included participants who were completely new to gardening, as well as those with varying levels of experience; however, all participants expressed appreciation for what they had learned through the process of the program. For example, the following participant also shared how she was transferring this new knowledge to her own home:

"It's just wonderful. I've been an amateur gardener, and even through to my grandmother...What I've learnt with Phil and the with the others here has just been so amazing, and I'm revitalising my own garden at home and getting to grow more things again, so it will be on-going and I'll just share it with my little grandchildren. They're getting to know about the garden as well. Sometimes I give them a pot with some little veggies or something I've grown."

As a result of the engagement with the community garden, some participants reflected upon their sense of connection with nature, and gained a deeper appreciation for the natural world and food sources. For example, Lisa stated:

"I think that with gardening it's a way to be in contact with the natural life. We realise how beautiful it is just planting flowers or lettuce or tomatoes or whatever. We realise how these plants grow and give us life, so we can get food."

6.2.2 What skills have changed since coming to the community gardens?

On the post questionnaire, participants were presented with a list of skills and asked to rate if their skills in this area had increased, decreased, or stayed the same since coming to the community gardens (see Table 6.6).

Skills	M	SD
Gardening	2.64	.58
Listening	2.64	.58
Teamwork	2.55	.58
Organisation	2.45	.67
Problem Solving	2.45	.60
Decision making	2.41	.67
Leadership	2.32	.65
Allocating people to tasks	2.23	.53
Conflict resolution	2.23	.53

Table 6.3. Perceptions of the impact of community gardens upon personal wellbeing at post test. Note. Response options 0 (not at all) – 10 (in a very big way)

Life skills

Focus group interviews:

Interconnected with participants' new knowledge about gardening, was an increase in gardening skills and other related life skills. For example, participants indicated that they shared with one another different ways of cooking vegetables; they gained knowledge and awareness about recycling in their community, and also learned ways to research on their own if they needed to learn more about gardening or planting a particular type of seed. In some instances, participants discussed learning from their mistakes and building on previous knowledge in order to plan for the next time.

For one participant, who experienced difficulties with social anxiety, the garden assisted in providing a 'neutral' topic for discussion and safe space for interacting with other community members. Throughout the focus group, this individual shared that in addition to gardening skills, community gardening facilitated the development of social interaction and communication skills as well:

"I thought the novelty would wear off very quickly actually and that is what surprised me, is that it kept going and going...So I was really impressed with that...And that's probably why more people are coming into it now because they see it wasn't just a flash in a pan... and that's the skill that you learn and that's the skill that you can use in other areas...that's the thing I've learnt is to choose the right subjects and the right times to talk to people who come down. You know, [we] are always down there, so people actually approach us... When people were asked "What did you learn most about being in a garden?" they sort of said 'Oh, well, growing food' but that wasn't as hard as we thought. It was actually working with other people and, you know, building relationships. It seems to be quite a trend there that it is those skills that you're picking up as much, if not more, than gardening.

What is the impact of participation in the Community Greening program on **intrapersonal** outcomes?

What is the impact of participation in the Community Greening program on **interpersonal** outcomes?

What are **participants' perspectives** of participation in the Community Greening program?

6.3 Sense of Community

The Sense of Community Index 2 (Chavis et al., 2008) was found to have good reliability with all Cronbach's alphas for subscales above .70. The paired sample t-Test showed that there was a statistically significant increase in the shared emotional connection score and total score with a .47 and 6.14 point increase, respectively (see Table 6.7). No other significant differences from pre to post test were found. Results indicate that over the period from pre to post test, participants reported a significantly increased sense of emotional connection with the community, which can be defined as "emotional support stemming from the struggles and successes of community living" (Chipuer, Pretty, & Chavis, 1999, p. 646).

Sense of community index domain	Mean	SD	t	df	Sig. 2 Tailed
Reinforcement of Needs	-.10	.48	-.99	20	.335
Membership	-.11	.66	-.78	20	.447
Influence	-.21	.52	-1.80	20	.086
Shared Emotional Connection	-.47	.73	-2.74	17	.014*
Total score	-6.14	7.61	-1.75	13	.010**

Table 6.7. Paired sample t-test of pre and post scores on Sense of Community Index

6.3.1 Social connection

Feelings of social connection and connection with others were often expressed in each of the focus group interviews. The connection with one another was demonstrated in different ways across the participating communities, including through helping each other with gardening tasks, and meeting new people and engaging in conversation. The garden was described as a space that “brings people together” or an area in the community with a “draw-in factor.” One participant stated, “I’d say if you came to the garden, there’s always someone there to meet when you get to the garden. Even if you go by yourself, there’s always someone else walking or walking nearby.” Additionally, the garden was viewed by one participant as *common ground* that could help to “break the ice” with other community members, even with small gestures, such as saying good morning or a salutation. This was viewed as an entry point to creating positive relationships.

Connection was perceived as valuable to community members, particularly in the garden sites where there were a high number of units in a small geographical space, yet low interaction amongst residents. In some communities, it was common for residents to “just stay inside their units.” As one participant stated:

“Without a garden, you know, it would be just taking out the bins and checking the letterbox. But this gives you a reason to get together and spend a little bit of quality time.”

Therefore, the increased engagement with one another was viewed as beneficial, as demonstrated in the following participant statements:

“Well, I know with me, I feel like I’m part of the community now, and I didn’t feel like I was a part of it until now.”

“This kind of event binds us together. I mean, we start talking, we’re starting to know each other, like Paul. I’ve been living there for about three years now. This the first time I saw Paul.”

“So, people slowly, slowly will start to exhibit what is called official social cohesion. I know it’s a buzz word, but it works.”

“I think this garden is big and beautiful, because everyone just works together and we can continue to grow this garden. And with this garden we live here in harmony and we cooperate with each other. I think it’s very good for our community.”

6.3.2 Inclusivity — intercultural and intergenerational engagement

All garden sites were located in suburbs with high levels of diversity. In particular, many of the community members came from culturally and linguistically diverse (CALD) backgrounds, and in some instances, also recently arrived in the country. Across some sites, the community garden was found to create a sense of place within and across cultural groups. For example, community members from similar cultural backgrounds gardened together, and in some instances shared garden beds, growing plants and vegetables unique to their own cuisine. This was viewed as beneficial, as a source of social support and place-making. However, the garden also facilitated intercultural interactions, and for relationships to be formed amongst community members from CALD backgrounds. One participant reflected upon the ‘beauty’ of diversity in the garden, as well as in communities:

“You know, every sunset is different and every human being is different. If you can see the beauty, I think it makes life a little bit better. So the garden brings people together because there is this magic of life that we don’t know, the magic of plants, we don’t know them at all. We use them, but there is magic. They grow, they live. You know, so I think there is magic.”

Several participants also commented on the act of sharing produce and ideas for different recipes. For example, Elaine shared:

“I got involved with the community garden through my daughter, Julie, and her daughter, Christine, who’s four years old. They began doing the garden, and little Christine has a great interest, so I got involved. I got to meet people from different cultural backgrounds, which has been great, and learning how to cook different food, and also watching the garden grow and feeling so proud of the garden, how they’re growing and being connected to it. It’s an amazing feeling. I’ve actually started doing my own garden bed at home, and I’m very proud of it, and I’m looking forward to having my own veggies and stuff like that. So, it’s been very positive for me.”

Elaine’s example demonstrates the potential for community gardens to enable intercultural and intergenerational engagement. Several participants discussed spending time in the garden with grandparents, parents, children, or grandchildren. In some instances, there were also gardeners in the family across generations, so the new garden beds provided a topic of discussion, as shared in the following quote:

“You know, my dad’s so proud that I’ve actually taken up gardening. You know, it’s something that he’s always been interested in...he’s seen me do what he used to do, so he’s actually quite pleased, and he’s given me chilli plants and thyme to put into the garden.”

Community members acknowledged the importance of the garden being for everyone and therefore, the sharing of produce was viewed positively. While language was viewed as a potential obstacle to relationship building, gardening was also considered an enabling factor, as ways were found to negotiate the language barrier. One participant stated, “People communicate non-verbally much more than they did before. A lot of people. Before it was difficult to form a cohesive group. The garden’s managed to begin to achieve that, and we can see a path forward.” Correspondingly, gardening has assisted community members with getting to know each other through learning each other’s names and interests, which was viewed as a valuable outcome:

“When you know someone by their first name and what’s interesting to them, that’s the basis for understanding each other better. And having people here together because we’ve got people gardening and other things, that’s already shown me what the gardening is doing. It’s bringing people together.”

6.3.3 Community pride

Upon returning to the communities to conduct the focus group interviews, it was evident to the research team that there was a growing sense of community pride stemming from the development of the gardens over the previous six months. There was an internal community appreciation for the garden’s aesthetic, as well as growth, which was exemplified in the following narrative from Tori:

“I admire it. I admire it and I like to see every day what’s grown, you know, what’s grown more and more. I admire it. I admire what my neighbour has planted here – it smells beautiful.

Sort of you get that sense that you’re part of building the beds and you know, the whole process. I admire it because it’s ours. It’s a creation, you know. It just needs a little bit more time.”

Community members also expressed a sense of achievement from external recognition and public perception. This varied based on each site, but was particularly salient for residents living in

affordable and social housing communities. For example, participants from one community felt that their landscaping and gardening efforts were helping to change stereotypes and prejudices that others might hold towards their community:

“The garden’s been a success, because we get people from outside the complex visiting just to look at it. That happens regularly. And the local coffee house supports us with free coffee grains. So, a number of elements are coming together that weren’t there before... It was not very attractive before, but there’s a lot more to do.

It’s just a positive thing...our whole basis of doing the front garden was to change people’s perception of what affordable and public housing’s all about.

It’s changed the stereotype...we’re not all junkies, we’re not all, you know, mad.

We’re a valuable part of the community and we are a positive part of the community.”

In many instances, participants invested their own funds into additional seeds, plants, tools, and other supplies to maintain or extend the garden. There was a strong sense of achievement in contributing towards the transformation of the community and to receive recognition from other strangers or members of the broader local area. The ability to contribute to the community was also raised as an important outcome and source of pride.

6.3.4 Safety and security

Participants from one community discussed changes in perceptions surrounding sense of safety and security. While this issue was not explicitly raised in the focus group interviews at other communities, it was a matter discussed during initial planning meetings with residents. In particular, there were concerns prior to the construction of the garden beds that they could be damaged; however, this did not occur at any of the participating sites. In the focus group interview, participants indicated that rather than being a space that was at risk of being vandalised, the community garden resulted in a sense of enhanced security, as there were more people outside and possibly gardening. Correspondingly, the presence of the garden itself was viewed as a possible deterrent for uninvited activity, as it indicated that the space was used on a regular basis, as shared during one interview:

“From a security point of view, there’s a lot more people out and, therefore, keeping an eye. As I said, after 7 o’clock there’s no-one back there, but during that time people know...it gives the perception that that space is used all the time. So, there’s less chance of undesirables going into that area, and surprisingly, we haven’t had any damage by tenants or undesirables coming in to destroy it, which actually surprised me. I was expecting the other way.

Before it was built, it was a wasteland of weeds that came and went, depending on the amount of rain that we got. It was under – it was never utilised. No-one went back there at all and now there’s a lot more people back there and I think as the garden grows, I think it will become a more pleasant place to be hanging out because at the moment no-one used to hang out there at all. So it makes a huge difference.”

6.3.5 Development and aspirational change

A common theme across all sites, which indicates a growing sense of community, was a vision for continued community development and aspirational change. In one regard, the construction of the garden beds served as an entry point to explore new ideas for community enhancement. For example, participants discussed an interest in planning their garden beds differently based upon what they had learned, planting fruit trees and native plants, and thinking about ways to attract more wildlife, such as birds.

There was a strong desire amongst participants to continue working together to improve their shared spaces, and more specifically, to increase the green space available to them. This was exemplified in the following comment on the benefit of the community garden:

“And they’re a benefit, and also because we’re living near the city, just bringing green into the area because, you know, we’ve all got terraces, small front yards, small backyard, and to be able to bring green into a quite urbanised area is important.”

Community Greening also plays an integral role in supporting residents’ visions for change and enhancement. There was a sense of commitment from some participants to indicate a longer-term dedication towards change. Participants in one focus group expressed the importance of achieving something together and having a sense of ownership of their new community garden:

“We want the neighbourhood to see what’s behind it because after all, it is community guided.”

“Well I’m a gardener forever, and I enjoy my gardening down in my unit, so therefore to have this garden here, it’s an extension of it and I enjoy what I can from seeing our achievements. So, I enjoy being here and seeing us achieving something that we can share together.

Over the course of this study, the on-going workshops, as well as engagement from Community Greening staff, helped to encourage and facilitate continual changes. Participants discussed the ways in which they were assisted to contact the local council or other funding bodies to seek resources and supplies for their community development.

What is the impact of participation in the Community Greening program on **intrapersonal** outcomes?

What is the impact of participation in the Community Greening program on **interpersonal** outcomes?

What are **participants' perspectives** of participation in the Community Greening program?

6.4.2 What is your motivation for participation?

In both the pre and post questionnaires, participants were asked to identify what motivates them to join and continue attending the community garden. Table 6.8 presents the strongest to weakest motivations identified by participants. Interestingly, at both times the top three motivators were (1) make a positive contribution, (2) eat more healthily, and (3) learn more about gardening.

Motivation to join at pre-test (highest to lowest)	Motivation to continue attending at post-test (highest to lowest)
Make positive contribution	Learn about gardening
Eat more healthily	Eat more healthily
Learn about gardening	Make positive contribution
Healthy and culturally appropriate food production	Socialise with others
Get active	Enjoyable hobby
Enjoyable hobby	Healthy and culturally appropriate food production
Socialise with others	Meet like-minded people
Meet like-minded people	Get active
Save money	Save money
Avoid supermarkets	Contribution to society
To grow native plants	To grow native plants
Mental health	Avoid supermarkets
Build skills	Build skills

Table 6.8. Motivation to join and attend the Community Garden

6.4.5 What do you do with the food you produce?

Use of food produced	%
I eat all the food I/we produce myself	57
I eat some and share some with other members of the garden, family and friends	57
I eat produce that is given to me by my fellow gardeners	38
I leave some plants to flower and seed for next year	38
I swap the food I/we grow for other produce	5
I don't use the food I/we grow	5
I sell the food I/we grow	0

Table 6.9. What do you do with the food you produce?

What needs to be improved about the garden?	%
Number of participants	Think they make more community in many and they teach people what community
The day it's held	It needs to be larger
Nothing	More edible/usable vegetables
I am not involved to make any comments	More involvement by other tenants
Make it bigger	Better organised
Even though Phil has told people how to cut the silver beet from outside not the middle people still cut from middle which makes the plant not grow so well after that	Getting lazy tenants who don't mind eating the food to get off their butts and do some work
Seat and table next to garden	There is zero group attendance. Only when organised by "X"
Bench and table near the garden outside	Organisation
To have some time to spend in the garden (e.g., schedule); some space in the garden	Would change nothing
More users	I hope someone can help us get more soil here
More learning from instructors	I hope someone can help us get more soil here

Table 6.10. What needs to be improved about the garden?

Focus group interviews:

What improvements are needed?

Overall, participants were pleased with the state and progress of the gardens six months after the construction of the garden beds. Across the focus group interviews, a number of common suggestions for improvement were discussed, such as:

1. Fostering increased engagement and involvement from other community members;
2. Clearer organisation and communication, which could include designating garden beds to particular individuals, and establishing routines or a roster for daily garden activities;
3. Creating a shared understanding for participation and guidelines for harvesting produce;
4. A 'swap club' if gardeners are growing different produce in their garden beds;
5. More garden beds depending on the level of interest and the number of units/houses in the community; and
6. Ensuring there are adequate funding and resources for the sustainability of the garden.

6.5 Staff Members' Perspectives

Staff members have varying levels of direct involvement with community members, particularly on a day-to-day basis. Therefore, it is important to note their responses are not based on on-going observations or daily engagement with the community garden. However, the staff

members who responded to the questionnaires oversee social housing estates / sites, and have a broad understanding of the challenges and needs within the community. These responses provide an additional perspective for understanding the potential impact of the community garden.

6.5.1 The motivation for the construction of the garden beds

Responses indicate a high level of interest from community members themselves for the construction of the garden beds and participation in the Community Greening program. Similarly, there was strong support from local staff members and organisations, as demonstrated in the following responses:

"It was initiated by community members. Over the last several years the [housing estate] experienced serious neglect due to the decline of public housing assets, lack of sufficient maintenance, etc."

The garden was decided on after running over a dozen half day workshops about growing fruit and vegetables in small areas as many of the social housing places in this area are units and flats. We had a lot of interest from the participants and had the space out the front, which is open and can be accessed... So both our organisation as well as local [residents] saw the need.

"This garden was initiated by 2 tenants in the block as part of the community gardens engagement initiative."

6.5.2 What are the reasons you have heard residents give for coming to the garden?

Residents reasons for coming to the garden	
Learning about new skills, feeling at peace and less stressed when they are there in the garden and taking advantage of eating freshly grown and picked produce.	Everybody who utilises the garden as well as local residents have all commented about how lovely the space is and how healthy the garden looks. The [gardeners and children] enjoy taking and eating the produce from the garden.
Enjoy the gardening.	Increased cooperation.
Create a harmonious community.	Build up the social cohesion.
Visible increase of social consciousness and social cohesion [in] Housing Estate community.	It helps to build up a community leadership within community.
Enjoyment, growing food they can eat and share.	The Gardeners like the community interaction and the tenants [are] attending every month session that has been provided.
To socialise and help each other look after the garden.	It helps to build up a genuine enthusiasm.

Table 6.11. What are the reasons you have heard residents give for coming to the garden?

6.5.3 How do you think the community garden impacts on the health and wellbeing of those who garden in this community/housing site?

Impact on health and wellbeing
Learning the organic way to grow plants.
Improve their physical and mental health.
It gives them a purpose to interact with other residents who they might have had any dealings that reside within that complex.
Improvement of mental health and confidence is a huge one. It has been noticeable from our point of view seeing how our clients mood and confidence has increased from participating and breaking that social isolation but they have also commented that they feel happier since taking part.
It was reported to me that one of the tenants who got involved in the garden in the initial stages suffers severe mental illness and usually socially isolates [themselves] for long periods. The residents that know [this individual] were surprised [they] got involved and reported that [they] really enjoyed [themselves].

Table 6.12. How do you think the community garden impacts on the health and wellbeing of those who garden in this community/housing site?

6.5.4 Has the Community Garden helped to build a stronger community? If so, in what ways?

Building a stronger community
Yes. Genuine enthusiasm, increased cooperation, visible increase of social consciousness and social cohesion in [this] Housing Estate community
We are in the early stages of the garden/nursery but I believe it started to strengthen the local community
One of the benefits I observed on the garden build day and since then is the strengthening of the relationship between [staff] and residents. It was a positive experience for the Housing Manager to attend the garden build day and pitch in alongside tenants. This has helped to build trust between the tenants and their housing manager.

Table 6.13. Has the Community Garden helped to build a stronger community? If so, in what ways?

6.5.5 What do you think would improve the community garden?

Ideas for improving the garden	
Keep improving gardeners' skill.	Keep communication with gardeners.
Support gardeners/tenants' initiatives.	The Garden is done in two stages and funding.
We need to establish a bigger volunteer base to really take over the 'ownership' of the space. I believe that will come with time.	More inclusion for other neighbours and residents. [One resident] has taken very clear ownership of the garden (which is keeping it going) however I believe this may be putting others off getting involved.

Table 6.14. What do you think would improve the community garden?

Discussion

7.1 Summary of Findings

The current findings are based on a mixed-method study comprising pre and post questionnaires with community garden participants, and post focus group and questionnaires with participants and staff, respectively. The findings provide important feedback for the strategic growth and sustainability of Community Greening, and contribute to this significant yet underexplored research area. It is recognised that while the mixed-methods deepen and strengthen the nature of the findings, the study was unable to utilise a control group which therefore reduces the ability to attribute reported changes from the pre- and post-test explicitly to the Community Greening program.

The quantitative data collected in the participant questionnaires at pre and post test indicate that no significant gains were made in relation to participants' self-reported employment, volunteering, training, social participation, and Personal Wellbeing Index. Positive gains were evident in participants' sense of community, especially the shared emotional connection, with 79% reporting that the community gardens had impacted their community. It appears that participants who were not eating any fruit and vegetables or cooking healthy food upon commencing at the community garden had indeed changed these behaviours at the post test. In sum, over the period of time from the pre to post test it appears that some improvements in sense of community and self-reported health behaviours for the most needy were apparent which is encouraging.

The qualitative data collected through the focus group interviews at each site indicate the broad impact of the community garden on participants' lives. It must be acknowledged that the study

included a diverse group of participants across six different sites. Each participant had a unique experience and individuals did not all report the same benefits. However, the purpose of the focus group interviews was to systematically collect the stories and narratives of the lived experience of engaging with the garden over the relatively short period of time to gain a deeper understanding of the potential impact of Community Greening in participants' daily lives.

The participants' responses reveal intrapersonal outcomes, such as increased physical activity, a greater appreciation for the outdoors, and the benefits associated with growing and eating fresh vegetables, including a sense of enjoyment and achievement. Participants described the gardening experience as calming and meditative. In certain instances, gardening was found to reduce anxiety and stress experienced by community members. Gardening also served as an opportunity to socialise and interact with neighbours. Participants shared a motivation to learn, to seek new knowledge about gardening, and the development of life skills associated with community gardening.

The interpersonal outcomes that were identified included social connection generated through engaging in shared activities, a sense of community pride, as well as ideas and motivation to continue to grow the garden and develop the community. Many of these outcomes were also observed by social housing staff members who completed the open-ended questionnaire. Overall, the qualitative data supports the finding that engagement with the community gardens resulted in a number of positive intra and interpersonal outcomes for a diverse group of participants. The gardens themselves were viewed as beneficial, but also served as a catalyst towards cultivating social capital and a stronger sense of community.

7.2 Alignment with Contemporary Priorities in Social Housing

The aims of this study were informed by the Community Greening program's evaluation priorities as determined in consultation with RBG&DT, as well as in consultation with Family and Community Services NSW Government (FACS NSW). With regard to the latter, the *Measuring Social Housing Outcomes report* (FACS NSW, 2016a) and the Future Directions for Social Housing in NSW (FACS NSW, 2016b) were identified as key documents for discussion.

7.2.1 Community Greening to support health and wellbeing

This study sought to increase understanding of participants' self-reports on the impact of gardening on health and wellbeing. In its 1948 Constitution, the World Health Organization (WHO) defines health as "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (WHO, 2018). Correspondingly, while research in wellbeing has been growing in recent decades, it remains a complex and multi-faceted construct that is difficult to define (Dodge, Daly, Huyton, & Sanders, 2012). Diener and Suh (1997) proposed, "Subjective wellbeing consists of three interrelated components: life satisfaction, pleasant affect, and unpleasant affect. Affect refers to pleasant and unpleasant moods and emotions, whereas life satisfaction refers to a cognitive sense of satisfaction with life" (p. 200). Furthermore, Diener, Lucas, Schimmack, and Helliwell (2009) stated that most frequently, definitions of wellbeing view it as an individual's global evaluation of their life across different aspects of that life. "Thus, well-being refers to being well in general rather than within any specific area of life" (p. 9).

Correspondingly, in establishing an outcomes framework for social housing, FACS NSW (2016a) identifies a range of wellbeing outcome domains and objectives for people living in NSW, including: health; social and community; empowerment; economic; safety; and education. The outcomes framework is designed to improve service effectiveness for people living in social housing in NSW, and in particular, to track their capability development and wellbeing.

The results from this study contribute to the growing body of scholarly literature supporting the benefits of participation in community gardening to health and wellbeing. The post questionnaire and focus group interviews revealed participants' self-reported impact on health and wellbeing was wide-ranging. While benefits varied within and across each community and are based on a small sample size, the findings suggest that community gardens contribute towards the provision of good quality housing and align with the growing body of evidence identified in the literature. Particular aspects of health and wellbeing that were reported by participants, included growing fresh vegetables, eating more fruit and vegetables, being active, and an appreciation of the outdoors. Themes represented in the focus group interviews suggest that participants found gardening to be calming and meditational, reduce anxiety and stress, encourage socialising and interaction, and give a sense of enjoyment and achievement. Attending or participating in community gardening was generally associated with positive feelings. Additionally, participants identified an array of educational outcomes, including learning about gardening, developing skills pertaining to gardening, and the acquisition of various life skills, such as listening, teamwork, and organisation.

7.2.2 Community Greening to support sense of community and social capital

FACS NSW's (2016b) vision for social housing over the next 10 years is underpinned by three strategic priorities, including (1) more social housing, (2) more opportunities, support, and incentives to avoid and/or leave social housing, and (3) a better social housing experience. The findings from this study indicate that the Community Greening program makes direct contributions towards the achievement of this vision, and in particular, to the third strategic priority area of creating a better social housing experience, and Action 3.2, Action 3.3, and Action 3.4.

3.2 Action 3.2 Better maintenance and community amenity

FACS NSW (2016b) identifies the need to work "...in partnership with all levels of government, not-for-profit housing providers, the private sector and social housing tenants to deliver more housing with better support services" (p. 4). Collaboration with the RBG's Community Greening program represents a strategic and cost-effective partnership to support a quality social housing experience for community members. Participants reported that the construction of the garden beds encouraged getting out of the house in the sun and exercising and contributed towards the overall landscape of the site. The commonly identified best features of the garden included the aesthetic appeal of the garden beds, the accessibility of working with a raised garden bed, and attracting wildlife. Furthermore, participants consistently reported on the benefits of learning from the Community Greening staff through on-going visits and workshops, as well as assistance with maintenance, including provision of supplies when available, and the upkeep of compost bins and worm farms. Lastly, community gardening was also viewed as an entry point into addressing other community development issues and connecting with stakeholders and service providers.

3.3 Action 3.3 Safe, stable communities

FACS NSW (2016b) recognises "the majority of social housing tenants are good neighbours and law-abiding people. However, there are a small number of tenants whose antisocial and illegal behaviour puts the safety of their neighbours at risk and this impacts the broader community" (p. 23). The findings from this study support the view that participation in community gardening promotes social cohesion and sense of community, resulting in the development of social capital. Participants with social anxiety and mental health concerns, reported positive outcomes, and in particular, with strengthening social interaction and sense of emotional connection. Lastly, some participants

also commented on feelings of improved security, as there were more people outside and possibly gardening. The presence of the garden itself was viewed as a possible deterrent for uninvited activity, as it indicated that the space was used on a regular basis. The garden was also seen by participants as contributing to improving public perceptions of social housing communities and tenants.

3.4 Action 3.4 A "place-making" approach to building communities

A significant finding from this study is that participation in the Community Greening program can support the development of social capital, defined as "features of social organisations, such as networks, norms, and trust, that facilitate actions of cooperation for mutual benefit" (Putnam, 1995, p. 67). Key elements of social capital that empower the individual are community, sense of place, social networks, trust, and reciprocal benefit. Collectively, these elements of social capital strongly influence an individual's level of participation and engagement within their community (Kingsley & Townsend, 2006). This finding highlights the ways in which the Community Greening program contributes towards a "place-making" approach to building communities.

It is noteworthy that participants' top ranked motivation for participating in the community garden at pre test, and third ranked at post test, was to make a positive contribution. This suggests that community gardening may have a role in encouraging individual agency to build a stronger community with a positive identity. Additional motivations identified, such as learning about gardening and socialising with others also support a "place-making" approach through building life skills and fostering community engagement.

Results indicated that over the period from pre to post test, participants reported a significantly increased sense of emotional connection with the community, which can be defined as "emotional support stemming from the struggles and successes of community living" (Chipuer et al., 1999, p. 646). Participants also shared that community gardening enhanced feelings of social connection, facilitated intercultural and intergenerational interaction, and produced feelings of achievement and pride. Participation in the construction of the garden beds, and the process of growing fresh produce, may contribute towards establishing or strengthening a sense of place attachment. Place attachment is defined as "...the cognitive-emotional bond to a meaningful setting" (Scannell & Gifford, 2017, p. 256). Research suggests that place attachment bonds are positively related with quality of life (Manzo & Perkins, 2006; Scannell & Gifford, 2017), and as such it is an important consideration for community participation and planning.

Recommendations

While the focus of this report is based on a small-scale study within the Australian context, the findings have relevance for the growing body of scholarly literature on the impact of community gardening, and in particular, for social housing communities.

Participants in this study reported that engagement with the Community Greening program has a positive impact on intra- and interpersonal outcomes. Participants' self-reports suggest that community gardening is associated with an elevated sense of community, in tandem with health, wellbeing, and participation in low-income communities.

Following are key recommendations that stem from this study:

1

Findings indicate that the Community Greening program is highly valued by the community participants. Participants report they have witnessed changes in their intra and interpersonal lives and attribute these changes to their involvement with the program. As such, it is recommended that the continuation and expansion of the program is supported.

2

The Community Greening program and staff were recognised by participants for providing valuable knowledge and resources to contribute to the construction and maintenance of the community garden. The community-centred approach was viewed by community members as effective for relationship building and community education. It is recommended that Community Greening continue to grow these strengths and pursue support, resources, and partnerships with key stakeholders to address community members' and social housing staff members' suggestions for improvements, including:

- a. Supporting the growth of the gardens and construction of additional garden beds to enable broader participation;
- b. Providing more educational workshops to support knowledge relating to gardening, as well as community leadership.

3

To bolster the program's expansion, sustainability, and impact it is recommended that a program logic be created in an effort to standardise and formalise the operations of the Community Greening program across sites. Documenting and disseminating a best-practice model across sites will address some of the improvements suggested by the participants, support upscaling, and also allow the program to undergo a more sophisticated efficacy evaluation.

4

The current goals of the Community Greening Program may benefit from differentiation based on the target participants. For example, if the participants are of retirement age then the goal of improving employability may not be appropriate. Although the program delivery should be more standardised where possible, stated goals of the program must be sensitive to the characteristics of the participants.

5

The findings from this study are encouraging; however, further research with a more rigorous design is needed in order to investigate if participation in community gardening results in shifts related to sense of community, health and wellbeing, skill acquisition, and social participation. Future research may involve an efficacy evaluation, which utilises a larger sample size, a control group, specific program goals tailored for specific participant groups, and measures of program fidelity.

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