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Evidence Assessment Library
Community Gardens

Summary: There is **sufficient evidence** that community gardens can improve functional outcomes and targeted health-related behaviors, increase vegetable consumption, and reduce food insecurity.

Age Group:	Adults; Older Adults	**Payer Type:**	Medicaid; Medicare
Conditions:	Diabetes	**Level of Prevention:**	Primary; Secondary; Tertiary
Need:	Food Insecurity	**Level of Intervention:**	Programs & Care: Community & Home
Geography:	Urban; Rural	**Sufficient or Strong Outcomes:**	Sufficient

Impact Assessment

The United States Department of Agriculture (USDA) defines community gardens as areas of land that are cultivated by a group of people, either individually or collectively. Community gardens are typically found in both urban and rural communities and utilized by communities of color.

This assessment synthesizes the results of studies on community gardens domestically and internationally across three domains of measurement:

- **Health**: There is **sufficient** evidence to suggest that community gardens can be used to improve functional outcomes and targeted health-related behaviors. Measures showing the effect of the intervention with respect to **health-related behaviors**, such as **perception of nutritious foods**, **diet,** and **exercise**, as well as **body mass index (BMI) reductions,** were identified. There is **a need for more evidence** to suggest community gardens can improve clinical outcomes. While studies indicated depression and social isolation were affected, the sample sizes and methods of measures require further exploration.
- **Social:** There is mixed evidence around community acceptance of the intervention. While some communities viewed community gardens as a way to improve food security by supplementing their monthly income, other studies found that participants viewed community gardens as an insufficient solution to larger systemic societal problems of poverty, inequity, and other related social injustices. There is **sufficient evidence** that community gardens increase vegetable consumption and reduce food insecurity.
- **Healthcare Cost, Utilization & Value:** No studies identified hard cost savings, reductions in utilization-related costs, or changes in healthcare utilization such as emergency room visits or hospital admissions, mostly because those measures were not included in the studies. There is **a need for more evidence** to suggest that community gardens can affect cost and utilization outcomes.

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Background of the Need / Need Impact on Health

Food-related needs fall into three interrelated categories: Food insecurity, nutrition insecurity, and dietary quality.

Food Insecurity

Food insecurity is defined as not having access to enough food. In 2021, 10.2% (13.5 million) of United States (U.S.) households reported being food insecure over the last year. Of families experiencing food insecurity, 6.4% (8.4 million) were identified as having low food security and 3.8% (5.1 million) were identified as having very low food security[1]. Food insecurity varies by race, ethnicity, household makeup, and income. Rates of food insecurity are higher than the national average (10.2%) for families that identify as Black (19.8%) and Hispanic/Latino (16.2%), for households with children (12.5%), and for households with income below 185% of the poverty line (26.5%)[2]. The majority of Medicaid enrollees fall in this low-income bracket. Additionally, food insecurity may be more common for those whose employment status, neighborhood of residence, and access to transportation further impact their food access[3,4,5].

Nutrition Insecurity

Nutrition security is the "consistent and equitable access to healthy, safe, affordable foods essential to optimal health and wellbeing[6]." While most food-insecure households also experience nutrition insecurity, food-secure households can also experience nutrition insecurity. Because most screenings focus on food security rather than nutrition security, national data on the prevalence of nutrition insecurity is not yet available. The concept of nutrition insecurity has been adopted by the United States Department of Agriculture (USDA) and the Centers for Disease Control and Prevention (CDC) as a core goal for their food-related initiatives. Nutrition security, beyond just food insecurity, is necessary in order to reduce the chronic illnesses caused as a result of poor nutrition[7].

Dietary Quality

While food and nutrition insecurity is a primary driver of poor diet, other factors such as food availability (food deserts), personal preference, nutrition knowledge, and other psychosocial factors may contribute to dietary options and choices[8]. One analysis found that 45% of U.S. adults have a poor diet[9]. According to an analysis of a representative sample of U.S. high school students, only "8.5% of high school students nationwide met [USDA] fruit recommendations and 2.1% met vegetable recommendations[10]." Research on adult dietary consumption has shown that income is a predictor for inadequate vegetable consumption (only 7% of adults below or close to the poverty level consume adequate vegetables), but even high-income groups had inadequate vegetable consumption (only 11.4% of adults in the highest income categories consume adequate vegetables)[11], Healthy People 2030 includes a number of specific nutrition objectives, including increasing calcium, potassium, fruit, and vegetable (including dark green, red, and orange, beans, and peas) consumption in people over age two[12,13,14,15,16,17,18].

Health Impacts of Food and Nutrition Insecurity and Poor Diet

Having an unhealthy diet and poor nutrition is associated with a range of physical and behavioral health conditions that are disproportionately experienced by people of color. Poor diet is associated with both obesity and Type 2 diabetes, as well as other chronic health conditions such as cardiovascular disease and cancer[19,20]. Individuals experiencing food and nutrition insecurity are uniquely at risk and have a much higher risk of long-term chronic health conditions, including obesity, diabetes, and hypertension[21,22,23,24,25]. Consuming unhealthy food and beverages, such as sugar-sweetened beverages and highly processed foods, puts people at higher risk of at least 13 types of cancer, including endometrial (uterine) cancer, breast cancer in postmenopausal women, and colorectal cancer.

The length of time a person experiences food insecurity influences the severity of the health impacts. A study examining food insecurity over four years of age in children found that children who experienced food insecurity for longer periods of time had worse health outcomes[26].

According to the CDC, among those ages two to 19, the prevalence of obesity was 19.7% and affected about 14.7 million. Childhood obesity is also more prevalent among certain racial and ethnic groups (26.2% among Hispanic/Latino children and 24.8% among non-Hispanic Black children). Obesity-related conditions include high blood pressure, high cholesterol, Type 2 diabetes, breathing problems such as asthma and sleep apnea, and joint problems[27].

The rate of cardiovascular disease in the Black population is disproportionately high and is a primary cause of differences in life expectancy between Black and White individuals[28]. Black Americans are disproportionately affected by colorectal cancer, with Black people being 20% more likely to develop colorectal cancer and 40% more likely to die from it than White people[29].

The impacts of food insecurity extend beyond diet-related diseases. Children who experience food insecurity have been shown to have a higher risk of iron deficiency anemia, lower non-cognitive performance, asthma, depression, suicide ideation, and tooth decay[30]. Food insecurity has been shown to be a major stressor in early childhood with implications for cognitive, language, motor, and socio-emotional skills[31]. Individuals experiencing food insecurity are more likely to go to the ER, less likely to have a usual source of care, and have higher healthcare costs[32,33,34,35].

Background on the Intervention

Community garden interventions are framed as a means for community development efforts and to promote food security. Community garden programs provide information, skill-building, space, and tools for participants to engage in gardening activities. Additionally, some programs link participants to other food security interventions. As the programs have grown in use, research on community gardens to improve food security has shown varied results in both quantitative and qualitative studies.

Quantitative studies have found mixed results. A 2009 study[36] found participation rates were so low in a community garden study they could not complete the analysis, concluding the program reaches a small proportion of those in need and is unable to compensate for low household

incomes. A 2013 follow-up study[37] with the same population had results that indicated equally low participation. Two themes for not participating included it was 'not accessible' and a 'lack of program fit' as it was not reflective of participants' cultural backgrounds and life experiences. However, in contrast, a 2012 study[38] identified increased community cohesion, physical activity, and diet outcomes as potential benefits. Overall, while community gardens may influence some outcomes, it appears implementation and community-specific acceptance greatly influence participation levels and outcome effects.

Qualitative reviews have found consistent themes. In 2022, qualitative interviews[39] found themes showing food insecurity due to systemic racism, food affordability, and distance to food as major barriers to food security. Meanwhile, alternative food networks, such as farmer markets and community gardens, empowered communities. In 2023, interviews on community garden use were conducted[40], with themes being they were high in design and cleanliness but low in accessibility in terms of reflecting participants' backgrounds and information availability. These qualitative studies' themes suggest community gardens must balance not only community gardening, but also be reflective of participants' cultural context while simultaneously connecting participants to additional interventions to support them, as gardens alone are not sufficient.

Additional Research and Tools

University of California community garden start-up guide.

Evidence Review

Note: The vocabulary used in the table is the same terminology used in the study in order to preserve the integrity of the summary.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
Alaimo et al. (2008)	Adults in Flint, Michigan.	Fruit and vegetable intake was measured using questionnaire items from the Behavioral Risk Factor Surveillance System. Household participation in a community garden was assessed by asking the respondents if they, or any member of the household, had participated in a community	Cross-sectional random phone survey among 766 adults.	**Social:** Results found that adults with a household member who participated in a community garden consumed fruits and vegetables 1.4 times more per day than those who did not participate, and they were 3.5 times more likely to consume fruits and vegetables at least five times daily.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
		garden project in the last year. Generalized linear models and logistic regression models assessed the association between household participation in a community garden and fruit and vegetable intake—controlling for demographic, neighborhood participation, and health variables.		
Algert et al. (2016)	Home gardeners enrolled in a program that explicitly focused on low-income (Supplemental Nutrition Assistance Program (SNAP) eligible) households and community gardeners in San Jose, California.	The study compared home gardeners enrolled in a program that explicitly identified low-income households with community gardeners to examine whether these two groups increased their vegetable intake while gardening. It also assessed how gardening impacted other elements of food access, such as cost savings, culturally acceptable foods, and informal distribution networks. While the community gardeners in the study were generally more affluent than home gardeners, both groups were ethnically diverse and widely dispersed in neighborhoods throughout the city of San Jose with various levels of food access.	Observation study with a comparison group of 50 gardeners.	**Social:** Both participant groups reported doubling their vegetable intake to a level that met the number of daily servings recommended by U.S. Dietary Guidelines. The average cost savings reported by both groups was similar at $92 per month for home gardeners and $84 per month for community gardeners. One home gardener reported that without the savings and direct access to healthy produce generated from eating homegrown vegetables, the previous year would have been a significant struggle. Her garden significantly supplemented her diet, providing food to which she would otherwise have had very limited access. The

Study	Population	Intervention Summary	Type of Study Design	Outcomes
				study concluded that growing food in community and home gardens can contribute to food security by helping provide access to fresh vegetables and increasing consumption of vegetables by gardeners and their families.
Baker et al. (2013)	Garden workers and community garden users in Missouri. The poverty rate for this region of Missouri is 20.4%, nearly double the state rate of 11.8%; additionally, the chronic disease burden of this region is much higher than the rest of the state. Results from the study found that survey respondents identified predominantly as female (74%) and 45 years or older (74%). The majority of respondents	Creation of a rural community garden in southeastern Missouri.	Mixed methods study with 50 participants, including face-to-face surveys and focus group interviews.	**Social:** Survey respondents indicated that because of their engagement in community garden activities they ate more vegetables and fruit (89%), ate less fast food (74%), spent less money on food (80%), and were better able to provide food for themselves and their families (86%) as well as donate food to others (81%). Almost 50% of those who self-identified as experiencing food insecurity indicated that they were better able to provide food for themselves and their families as a result of taking part in the garden. Focus group data revealed that participants enjoyed learning about gardening as well as the process of gardening. The participants also benefited by having access to fresh produce, eating healthier, and saving money.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
	identified themselves as Black/African American (86%). 62% of respondents indicated that they experienced some level of food insecurity.			Participants also noted the benefits of spending time outside and increasing physical activity. Another key theme that emerged was the challenges in creating and maintaining the community gardens; participants identified organizing the garden, lack of time, and difficulty in getting equipment and people to prepare, plant, and maintain the garden as major challenges. From this, the study concluded that community gardens may be a viable way to increase access to and consumption of vegetables and fruit within rural African American communities.
Barnidge et al. (2013)	Community garden participants in rural communities in Missouri.	Analysis of **two** complementary studies that explored the association of community garden participation and fruit and vegetable consumption: **1)** 12 community gardens. As part of the intervention, communities received funding for garden equipment, technical assistance, and access to a regional community garden resource	1) Pre-post analysis with a convenience sample of 141 participants in a rural setting who completed self-administered surveys. 2) Descriptive survey study with a random sample of 1,000 residents in the catchment area.	**Social: 1)** Results found that individuals who worked in a community garden at least once a week were more likely to report eating fruits and vegetables because of their community garden work. **2)** 42% of the participants reported growing fruits and vegetables at home while 5% reported participation in a community garden

Study	Population	Intervention Summary	Type of Study Design	Outcomes
		network. The placement of intervention gardens depended on the interest and commitment of each community. Five of the 12 gardens were newly developed for this intervention period. Seven gardens existed prior to the intervention and expanded during the intervention. **2)** Residents in towns that have a community garden within a five-mile radius.		(grew fruits and vegetables in a community garden or obtained fruits and vegetables from a community garden in the past six months).
Barnidge et al. (2015)	Black residents in rural Missouri.	Provide nutrition education and access to fruits and vegetables through community gardens to change dietary behaviors. Baseline data was collected during Fall 2008 and mid-intervention data was collected during Fall 2010.	Observational study with comparison group using a cross-sectional survey of 395 participants.	**Health:** Mid-intervention results found that hypertension (61% vs 45%) and BMI for overweight and obesity were lower in the intervention county (69.8% vs 60.9%). **Social:** Participation in nutrition education and access to fruits and vegetables from a community garden were independently associated with perceived fruit and vegetable consumption. The strongest effect on perceived fruit and vegetable consumption occurred with high participation in

Study	Population	Intervention Summary	Type of Study Design	Outcomes
				nutrition education and access to community gardens. Those with access but without education had a reduced likelihood of consuming the recommended servings of fruits and vegetables. From this, the study concluded that education plus access interventions may be best at increasing consumption of fruits and vegetables in a rural Black population.
Carney et al. (2012)	Migrant seasonal farmworker families in a rural Oregon community, enrolled in the 2009 gardening season. The mean age of participants was 44 years (range 21 to 78 years). The median number of occupants in a household was four (range two to eight), and the average number of children was 2.3 (range one to four children).	Studied the impact of a community gardening program on vegetable intake, food security, and family relationships for migrant seasonal farmworker families in a rural Oregon community. The project supported local families who wanted to grow a home garden by providing resources, materials, volunteer support, and a social network that included meetings, an end-of-growing-season fiesta, and ongoing contact with health promoters (community health workers).	Community-based participatory research approach with pre-post survey analysis and interviews with 42 families and 163 participants.	**Social:** Results from the study found that the frequency of adult vegetable intake of “several times a day” increased from 18.2% to 84.8%, and the frequency of children’s vegetable intake of “several times a day” increased from 24% to 64%. Before the gardening season, the sum of the frequencies of “sometimes” and “frequently” worrying in the past month that food would run out before money was available to buy more was 31.2%; the sum of these frequencies dropped significantly to 3.1% during the post-garden period. The frequency of skipping meals due to lack of money was not

Study	Population	Intervention Summary	Type of Study Design	Outcomes
				statistically significantly different before and after the gardening season for either adults or children. Analysis of text responses and key informant interviews revealed that physical and mental health benefits as well as economic and family health benefits were reported from the gardening study, primarily because the families often worked in their gardens together. From this, the study concluded that a community gardening program can reduce food insecurity, improve dietary intake, and strengthen family relationships.
Corrigan (2011)	Gardeners from the Duncan Street Miracle Garden (DSMG) in East Baltimore, Maryland. The DSMG is in a primarily African American (98%) neighborhood with nearly 42% of residents living below poverty level and	Conducted interviews and made field observations from food stores and community gardens from June to August 2009 to study the extent to which community gardens contribute to food security.	Qualitative study with interviews with five of the 17 DSMG gardeners.	**Social:** The study found that the community garden contributed to individual, household, and community food security. However, additional community help is needed in the form of education, policy, and funding to increase food security and further promote healthy lifestyles in the community.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
	almost 50% of residents relying on public transportation.			
Hartwig et al. (2016)	Gardeners and volunteers with the refugee gardening project hosted by area churches serving primarily Karen and Bhutanese populations in Minneapolis-St. Paul, Minnesota.	Refugee gardening project.	Mixed methods study with participants completing survey pre-post analysis with a sample of 214 and 94 pre and 97 post responses. Individual and focus group interviews were also conducted.	**Social:** Results found that of the 97 post-season survey respondents, 65% were women, and the average age was 39 (range 16-80). Although few gardeners (4%) identified food insecurity as a problem, 86% indicated that they received some food subsidy, and 78% reported an increase in vegetable intake between pre-season and post-season surveys. **Health:** 12% of gardeners indicated possible depression using the PHQ-2 scale during the pre- and post survey; in focus groups, numerous respondents identified the gardens as a healing space for their depression or anxiety. Refugee gardeners expressed receiving physical and emotional benefits from gardening, including a sense of reflection and healing.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
Huisken et al. (2017)	Canadian adults that responded to the 2012/2013 Canadian Community Health Survey.	Analyzed data from the survey to determine how Canadian adults' food preparation, cooking skills, and use of home or community gardens related to their household food insecurity status, as well as to compare the food shopping and cooking behaviors of adults in food-secure and food-insecure households.	Descriptive study with data analysis of 16,496 adult respondents of the survey. Multivariable logistic regression analyses were also performed.	**Social:** Results found that adults in food-insecure households did not differ significantly from others with respect to their food preparation skills or cooking ability, and neither variable predicted the odds of household food insecurity when socio-demographic characteristics were considered. Adults in food-insecure households were less likely to use a garden for food, but gardening was unrelated to the odds of food insecurity. Shopping with a budget was more common among adults in food-insecure households, but no other differences in food shopping behaviors were observed after adjustment for socio-demographic characteristics.
Kirpatrick et al. (2009)	Low Income families in Toronto. 168 (35%) were categorized as "food secure" with a mean household income of $24,506; 182 (37%) were "moderately	Conducted qualitative interviews to examine food security, participation in community food programs, and strategies employed by families in response to food shortages among a sample of low-income families in high-poverty neighborhoods. Household food security was	Mixed methods study that includes a descriptive study using the Household Food Security Severity Module and geocoding distance to food programs, and interviews with participants. Of the 501 families enrolled, 484 responded to the survey.	**Social:** The study found that rates of program participation were surprisingly low (< 1/3 of the sample) and that their use of food banks or children's food programs had no bearing on household food security status. The patterns of food bank use among the study sample suggest that it is a strategy of

Study	Population	Intervention Summary	Type of Study Design	Outcomes
	food insecure" with a mean household income of $23,639; and 134 (28%) were "severely food insecure" with a mean household income of $20,362. Only one in five families used food banks in the past 12 months and the odds of use were higher among food-insecure families. One-third of families participated in children's food programs but participation was not associated with household food security. One in 20 families used a community kitchen, and only 10 of 484 families participated in community gardens (food secure n=1; moderately food insecure n=5;	assessed using the Household Food Security Severity Module. Data on the location of community food programs were obtained from program providers and mapped using geographic information systems software.		desperation, not a means of routine food acquisition**. Participation rates for the relationship between community garden or kitchen participation and household food insecurity were so low that the study could not complete an analysis.** The authors concluded that community-based programs reach only a small proportion of those in need and are unable to compensate for the inadequacy of their household incomes.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
	severely food insecure n=4). Additionally, food-insecure families commonly employed tactics to free up money for food.			
Litt et al. (2023)	Individuals who were on Denver Urban Garden waiting lists for community gardens in Denver and Aurora (CO, USA), aged 18 years or older, and had not gardened in the past two years.	Participants were randomly assigned (1:1) independently within each community garden waiting list to either the community gardening group (intervention group) or to stay on the waiting list with no gardening (control group). Participants assigned to the intervention gardening group were provided a standard community garden plot, seeds and seedlings, and an introductory gardening course. Plot fees were covered by the trial. Health surveys, including perceived measures of stress and anxiety, accelerometry, and dietary interviews, were administered to all participants at baseline before the gardening season and before random	Randomized controlled trial (RCT) with a total sample size of 291, with 195 in the intervention and 196 in the control groups.	**Health:** Difference score models showed greater reductions between T1 and T2 in perceived stress and anxiety among participants in the intervention group than among those in the control group. From this, the study concluded that community gardening can provide a nature-based solution, accessible to a diverse population including new gardeners, to improve wellbeing and important behavioral risk factors for non-communicable and chronic diseases. Significant time-by-intervention effects were observed for fiber intake, with a mean between-group difference (intervention minus control) at T2 of 1.41g per day, and for moderate-to-vigorous physical

Study	Population	Intervention Summary	Type of Study Design	Outcomes
		allocation; timepoint 1 (T1) during autumn harvest, timepoint 2 (T2) during the winter, and timepoint 3 (T3) after the intervention.		activity, with a mean between-group difference of 5.8 min per day. There were no significant time-by-intervention interactions for combined fruit and vegetable intake, Healthy Eating Index, sedentary time, BMI, and waist circumference.
Palar et al. (2019)	Low-income participants in an urban home gardening program. Participants were primarily female.	Community-based program offering supported urban home gardening together with nutrition education in Santa Clara County, CA. Supported home-based urban gardening is another model that can complement community garden approaches, where the garden is grown at the site of the household, but supported by education, gardening expertise, and/or gardening resources of a community organization. This study was a collaboration between researchers at the University of California San Francisco and Valley Verde, a local community-based urban garden organization.	Qualitative study with in-depth interviews of 32 participants.	**Health:** The interviews found that participants discussed a wide range of perceived health benefits of the gardening program. Major themes included perceptions of improved diet and nutrition, improved physical activity, and stress reduction. **Social:** Almost all participants indicated that they ate more vegetables and fruits due to program participation. Participants gave a range of reasons for these changes, including increased affordability, accessibility, freshness, flavor, and convenience of the garden produce, as well as self-efficacy for improving their health through eating garden produce. Changes in diet were

Study	Population	Intervention Summary	Type of Study Design	Outcomes
		Participant households received all necessary supplies to start and maintain a household garden based in their homes: Valley Verde staff provided 10 monthly workshops focused on nutritional education and organic gardening skills-building. Additionally, the study included individualized monthly garden mentoring and home visits by Valley Verde staff to provide an opportunity for personalized gardening support.		most pronounced among participants who described marked experiences of food insecurity, such as regularly running out of food at the end of the month; participants described how the garden helped during times of the month when money ran low. Participants reported that the greater quality and convenience of the homegrown produce increased consumption and reduced affordability as a barrier. One participant specifically described previously receiving food from a local food pantry during times when money was tight prior to the garden; however, after the garden, she no longer had to rely on the food pantry. The study concluded that education-enhanced urban home gardening may facilitate multidimensional nutrition and health improvements in marginalized populations at high cardiometabolic risk.

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Systematic Reviews

Note: The vocabulary used in the table is the same terminology used in the study in order to preserve the integrity of the summary.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
Garcia et al. (2017)	Participants in urban gardens.	Participation in urban gardens and its impact on healthy food practices, healthy food access, and healthy food beliefs, knowledge, and attitudes.	Systematic Review. Of these interventions, three had pre- and post-interventions without a control group, and one was a cross-sectional qualitative study. The eight studies on existing gardens were observational, comprising seven cross-sectional (three quantitative and four qualitative) studies and one cohort study. The sample size of the studies varied considerably, ranging from 12 to 855 participants. The review included studies from 2005 to 2015 that were published in English, Portuguese, or Spanish. Of the initial 660 articles that were identified, 12 met inclusion criteria and were included in the review. The majority of the included studies involved existing gardens while only four studies assessed interventions (new gardens).	**Social:** The following outcomes were reported: greater fruit and vegetable consumption, better access to healthy foods, greater valuing of cooking, harvest sharing with family and friends, enhanced importance of organic production, and valuing of adequate and healthy foods. The study found thematic patterns connecting adequate and healthy foods to participation in urban gardens. Assessment of quality and bias risk of the studies revealed the need for greater methodological rigor.
Gregis et al. (2021)	Studies from the U.S. constituted 50% of the studies followed	A systematic review to investigate the impact community gardens have on health and wellbeing, the	Eligible studies were published in English from 2010 to 2020. A total of 7226 articles were identified, of	**Health:** Almost 25% of the studies reported on “general health” as the main outcome when investigating

Study	Population	Intervention Summary	Type of Study Design	Outcomes
	by the U.K. at 13%. The remaining studies crossed the globe.	magnitude of the phenomenon, the geographical distribution, and the main characteristics in terms of health outcomes and target populations.	which 84 were included in the review (50%).	the benefits of community gardens. Around 10% reported benefits both in terms of mental health and physical activity. A marginal amount of the studies evaluated the impacts in terms of BMI (3.6%) and general wellbeing (4.8%).
Hume et al. (2022)	People participating in community garden programs in the U.S. and internationally.	This systematic review primarily focused on the effects of community gardens on physical and psychosocial health, health behaviors, and community outcomes.	A systematic review of the initial 7355 studies that were identified; 53 were included for review. Studies examining associations between community gardens and nutrition or food security were most frequently reported (n=23). Other factors examined for associations with community gardens were health (n=16), psychosocial (n=16) and community outcomes (n=7).	**Health:** Effects appeared positive for fruit and vegetable intake and but mixed for physical health outcomes. **Social:** Some psychosocial and community outcomes showed positive effect. Overall, evidence quality was low. The review concluded that community gardening was associated with higher fruit and vegetable intake and positive psychosocial and community outcomes, but poor evidence quality suggests the effects of community gardening may be overestimated.
Kunpeuk et al. (2020)	Adults participating in community gardening programs internationally.	Systematic review and meta-analysis focused on investigating the association between community gardening	Of the identified 995 articles, 19 were included for analysis; included studies were conducted in the U.S. (n=12), United Kingdom (U.K.) (n=2),	**Health:** Due to diversity in the measurement units, only BMI data could be pooled to perform meta-analysis. The results suggest

Study	Population	Intervention Summary	Type of Study Design	Outcomes
		and nutrition and physical health among adults.	Netherlands (n=1), France (n=1), Japan (n=1), and Korea (n=2). The sample size varied from 23 to 12,737 participants. Fifteen of the studies were observational and 14 of these were cross-sectional in design. The remaining four studies were experimental: one used a post-test-only design with controls, two used pre- and post-test with controls, and one used pre- and post-test quasi-experiment without controls. Results found that although the majority of included studies appeared to have moderate quality, there existed weaknesses in the methods used, including low response rates and lack of confounder controls.	that gardening had a significantly positive effect on BMI reduction. Subgroup analysis showed that quasi-experimental and case-control studies produced greater pooled effect size than those of cross-sectional design. The study concluded that because robust evidence for the effect of community gardening on BMI reduction was found, this intervention should be adopted as part of health promoting policies to improve population health.
Malberg-Dyg et al. (2020)	Groups that have been historically marginalized and/or made vulnerable.	Community garden participation.	Thematic review to document the effects of community garden participation. Of the initial 1066 articles identified, 51 met inclusion criteria (21 used quantitative methods, 16 were case studies, 13 were interventional, and 22 were cross-sectional).	**Health:** The review found that generally, community garden participation may have a positive impact on physical health, such as reducing body weight and hypertension and increasing physical activity and food knowledge.

Study	Population	Intervention Summary	Type of Study Design	Outcomes
				Social: Findings relating to community gardens and their potential to enhance food security were inconsistent. There were discrepancies in findings relating to community gardens' ability to enhance food security amongst low-income or food insecure households. It seems that community gardens have the potential to increase food security, or at least access to and availability of fresh fruits and vegetables (FVs). Smaller community garden interventions seem to reduce household food expenses, enable families to better provide for themselves, and increase access to fresh FVs. However, the number of households that take advantage of alternative food programs, including community gardens, seemed somewhat low, calling into question whether community gardens reach those in need.
Tharrey et al. (2021)	Participants in community gardens	Urban collective garden participation was the primary intervention in which the	Systematic review. The review included studies published from January 2000 to August 2020. Of	Analysis found that a wide range of health indicators were effected in the study. Collective gardening

Study	Population	Intervention Summary	Type of Study Design	Outcomes
	in the U.S. and internationally	systematic review focused. Urban collective gardening is a type of community garden approach.	the 1261 studies identified, 15 were included in the review (n=8 in the U.S., n=2 in the Netherlands, n=1 each in the U.K., France, Portugal, Switzerland, and Japan). Thirteen of the studies were cross-sectional, one was post-test only, and one was an RCT.	(defined as “cultivated spaces managed collectively by groups of gardeners and located at a distance from their homes”). **Health:** Mixed results were found for physical activity and physiological health with activity increasing. A positive association was found in most studies with mental health. **Social:** The intervention was associated with higher fruit and vegetable consumption than non-gardening. Studies also showed that social health improved. However, the vast majority of included studies were cross-sectional and subject to selection bias (n=13 of 15), and very few used objective measurement methods (n= 3 of 15). From this, it was concluded that longitudinal studies allowing the exploration of causal relationships are needed before the health benefits of collective garden participation suggested by existing studies can be confirmed.

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Assessment Synthesis Criteria

Strong Evidence	Sufficient Evidence	More Evidence Needed or Mixed Evidence
There is strong evidence that the intervention will produce the intended outcomes.	There is sufficient evidence that the intervention will produce the intended outcomes.	There is insufficient evidence that the intervention will produce the intended outcomes, however the results directionally indicate potential impact.
• At least one well-conducted systematic review or meta-analysis (including two or more large, randomized trials) showing a significant and clinically meaningful health effect; and • Consistent findings of health effects from other studies (cohort, case-control, and other designs).	• At least one well-conducted systematic review or meta-analysis (including two or more large, randomized trials) showing a significant and clinically meaningful health effect, but inconsistent findings in other studies; or • Consistent findings from at least three non-randomized control trial studies (cohorts, practical trials, analysis of secondary data); or • A single, sufficiently large well-conducted randomized controlled trial demonstrating a clinically meaningful health effect and consistent evidence from other studies; or • Multiple expert opinions/government agencies supporting the intervention.	• Lack of demonstration of improved health outcomes based on any of the following: (a) a systematic review or meta-analysis; (b) a large randomized controlled trial; (c) consistent positive results from multiple studies in high-quality journals; or (d) multiple expert opinions or government agencies supporting the intervention. • An insufficient evidence rating does not mean there is no evidence, or that the intervention is unsafe or ineffective. • In many cases, there is a need for more research or longer-term follow-up.

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Endnotes

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