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Research

The impact of community-based food access strategies in high-income countries: a systematic review of randomised controlled trials

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Key points

- The use of community-based food system strategies in high-income countries (HICs), and their impact on dietary behaviours and health outcomes, have been tested in seven randomised controlled trials
- Food pantries, mobile produce markets and community farm interventions improved fruit and vegetable (F&V) intake, particularly when used alongside educational and behaviour change strategies

Abstract

Objectives: Some geographic regions in high-income countries (HIC), including Australia, have poor healthy food access and a high burden of diet-related chronic disease. Scalable and sustainable strategies to strengthen community food systems have the potential to address these inequities. To inform future interventions in regions with poor healthy food access in Sydney, Australia, and beyond, we systematically reviewed randomised controlled trials of community-based food access interventions in HIC, to identify effects on dietary behaviours and health outcomes.

Methods: Four electronic databases were searched. Studies involving community-based healthy food access strategies (solely or combined with education/behaviour change) and measuring effects on dietary behaviours and/or health outcomes were identified. Data on dietary behaviours, health outcomes and intervention descriptions were extracted, and the risk of bias was assessed.

Results: Seven studies met inclusion criteria, with most conducted in the US (n = 6). Intervention strategies included food pantry-based interventions (n = 2), mobile produce markets (n = 2) and community farms (n = 3). Most interventions (n = 6, 85%) incorporated educational and/or behavioural change aspects. All studies measured fruit and vegetable (F&V) intake, with nearly all (n = 6, 85%) reporting significant beneficial effects.

Conclusion: Preliminary evidence in our synthesis demonstrates that multicomponent community-based food system interventions promise to improve F&V intake in regions of HICs. Recommendations for improving

Key points (continued)

- Future studies should include comprehensive measurement of health measures, in addition to other dietary behaviour indicators that are important for health economic analyses, to build evidence to support policies that strengthen community healthy food access

future evaluations are identified to build evidence for policymakers and urban planners to enact upstream and downstream strategies to strengthen community healthy food, particularly in geographic regions with the greatest health inequities.

Introduction

Poor diet quality remains a major public health concern globally, including in high-income countries (HICs). For example, insufficient consumption of fruit and vegetables (F&V) is a risk factor for obesity, type 2 diabetes mellitus, and cardiovascular diseases.[1] Global eating patterns show a shift in consumption of energy-dense and nutrient-poor (EDNP) content high in refined carbohydrates, added sugars, sodium, saturated fats, and ultra-processed foods.[2] This is further exacerbated in some geographic regions of HICs, including urban and rural areas of low socioeconomic status (SES), where the current, globalised food systems result in inequitable healthy food access.[3] Financial access to food is increasingly challenging in HICs like Australia, where the price of healthy foods and drinks has been shown to be increasing at almost double the rate of price increases of unhealthy items.[4] This means that healthy diets are now relatively less affordable than unhealthy diets, particularly for people with low incomes and those receiving government support payments. Physical access to food is also challenging, particularly in areas of lower SES where a greater density of EDNP food options tends to exist, and there is often limited access to fresh, affordable, healthy food.[5]

The availability and access to healthy food in community environments can influence health behaviours and chronic disease outcomes.[6] Healthy food access refers to sufficient resources to secure relevant nutritious foods[7], encompassing adequate transport, proximity and convenience of healthy food outlets, alongside affordability of healthy food. Greater Western Sydney (GWS) is an example of a low SES region in Australia with poor healthy food access, with approximately 28% of neighbourhoods having a 3:1 ratio of takeaway shops to greengrocers and supermarkets.[8] Inequity in access to healthy food translates into poorer health outcomes across GWS, with significantly higher rates of type 2 diabetes in low-income suburbs compared to other affluent suburbs in Sydney.[9]

When challenges with food access and supply occur in HICs like Australia, there is often a reliance on short-term and suboptimal food relief[10] rather than implementing more sustainable solutions that could improve local food environments and increase individual's access to and consumption of healthy foods.[11] This is due to fragmented governance and a lack of comprehensive policy coverage for supporting resilient, local food systems.[12] Further, nutrition and population health outcomes are currently not adequately integrated within policies that govern local food systems[12], which is particularly true within New South Wales (NSW) and at a national level in Australia.[13] In the state of Victoria, Australia, the health promotion agency VicHealth has historically been better funded to support food system transformation activities, including initiatives to improve community health by investing in setting up food hubs, providing funding, traineeships, and developing opportunities for communities to access locally produced healthy foods and celebrate diverse food cultures.[14]

Interventions to support healthy food access can include behaviour change interventions, which are an individual-level strategy (a downstream approach). These require individuals to have high levels of engagement with information on dietary choices to benefit. Upstream interventions that enhance the affordability, accessibility, acceptability, and/or availability of healthy foods or address other social determinants of health can also influence dietary behaviours. In Australia, like other HICs, there is a need to transition away from quick-fix "emergency food relief models" and relying on globalised food supply chains (which can lack resilience and result in inequitable food access[15]). Instead, a shift towards food social enterprises could have upstream social effects that influence the health of individuals downstream. It is argued that social enterprises that are run *by* communities *for* communities can enhance food access by responding to community needs[16] and providing dignified food security solutions. Other initiatives include food hubs and mobile produce markets that promote shortening and re-localisation of the food supply chain (where food is grown, packaged, and consumed within the same community). This is considered central to building resilience and sustained improvement in healthy food access.[17] Such community-based food strategies, when implemented alongside education and capacity-building strategies, potentially reduce chronic disease risk[18], but further research is required.

Previous systematic reviews examining healthy food access have been limited to examining one type of

community-based food access intervention at a time (e.g., food pantry interventions[19] or mobile produce markets[20]) and found improvements in consumption of F&V intake of between 0.4–1.5 servings/day. These reviews synthesised multiple study designs (including cross-sectional and pre-post studies), which are commonly used in nutrition research due to difficulties in conducting community-based randomised controlled trials (RCTs) around food access. However, causal attribution is inconclusive for non-RCT study designs, highlighting the need for a focused review. When considering the implementation of context-specific interventions, a systematic review of community-based RCTs can and should be considered alongside a range of other types of literature from various disciplines to guide policy and practice. To inform the body of future research and strategies to support healthy food access, we aimed to systematically review studies of community-based food strategies that aimed to improve healthy food access in HICs. Our review sought to answer the following research question:

"In adult populations aged 18 years and older in high-income countries, do community-based healthy food access strategies (e.g., food pantry, mobile produce markets) with or without an educational or behavioural change component, compared to another intervention or no intervention, lead to significant changes in dietary content, quality or behaviour outcomes (e.g., total dietary content, meat consumption) and/or health outcomes (e.g., weight, BMI) in randomised controlled trials?"

The review identified and described study characteristics, intervention design and effects on dietary behaviours and health outcomes to provide recommendations that inform future policy and practice in GWS and other low SES areas in HICs.

Methods

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed throughout this review.[21]

Search strategy

Searches were conducted in: Medline (EBSCOhost), Embase (OVID), CINAHL (EBSCOhost), Scopus and Cochrane Central Register of Controlled Trials (CENTRAL). The search strategy aligned with the PICOS ('Population', 'Intervention', 'Comparisons', 'Outcomes', 'Study designs') framework[22], without the inclusion of 'Population' or 'Comparison' terms, which would narrow the search due to the number of potential populations/comparisons (see Appendix 1 for complete example, available from doi.org/10.6084/m9.figshare.24274840). Keywords included:

- *Intervention*: food hub*, food pantr*, mobile produce market*, community farm
- *Outcomes*: fruit*, vegetable*, grains, protein, processed food*, diet* intake, obes*
- *Study designs*: intervention*, program*, RCT, randomi?ed controlled trial

Boolean operators 'or' and 'and' were used to join synonyms or clusters of keywords, respectively. Searches were conducted in October 2020 and rerun in July 2022 to identify new publications. Secondary searches of reference lists of included articles and relevant reviews were conducted.

Study eligibility

Eligibility criteria adhered to the PICOS framework.[22]

- *Population*: Studies were conducted in HICs. No restrictions were placed on demographic characteristics, other than participants were ≥ 18 years.
- *Intervention*: Interventions described as community-based healthy food access strategies (e.g., food pantries, mobile produce markets, community gardens or farms) with/without an educational or behavioural change component to improve any area of dietary behaviour and/or any health outcome measured pre- and post-intervention. Emergency food relief models were excluded. Food pantry interventions were included if incorporating food provisioning strategies above and beyond standard food pantries (e.g., strategies to increase food literacy or offering agency through food choice). Food hubs were included if they were in a community location, such as a community centre providing support other than just food (as opposed to a charity).
- *Comparisons*: Changes in outcomes over time in another intervention group (no restrictions on the comparison intervention) or control group (no intervention).
- *Outcomes*: Change in any dietary content, quality or behaviour outcome (e.g., total dietary content, meat consumption, readiness to change an area of diet) and/or health outcome (e.g. weight, body mass index, quality of life).
- *Study design*: RCT.

Peer-reviewed articles written in English, with no limitation on the year of publication, were included. Two researchers (SM, FM) independently screened titles and abstracts of identified articles. Discrepancies were discussed until a consensus was reached.

Exclusions

Studies were excluded if they: i) were conducted in low- or middle-income countries; ii) were not interventional studies with data collected to measure effects in a sample pre- and post-intervention (e.g., repeated general population surveys); iii) were voucher/incentive/subsidy or supermarket-based interventions (see background for rationale); iv) were organisational settings-based interventions (e.g., targeted to healthcare, workplace, churches, childcare, schools, universities); v) included behaviour change, social marketing, web-based or

telephone interventions, or health campaigns only – they needed also to include a local community-based food access component; and vi) targeted sub-populations or patient groups (e.g. pregnant women, patients with a specific condition such as cancer, diabetes, maternal and child nutrition programs) or children and adolescents rather than adults (< 18 years).

Data extraction

Data were extracted (see Appendix 2, available from: doi.org/10.6084/m9.figshare.24274840) from included papers by one researcher (SM) and checked by another (FM, KM). Outcome data was considered for meta-analysis, but was impossible for any outcome due to heterogeneity in outcome measures. A narrative summary considering study quality based on risk of bias was used instead.

Assessing bias

Risk of bias of studies was assessed using the Cochrane risk-of-bias tool for randomised trials (RoB 2).[23] Studies were rated in five domains as either 'low risk', 'some concerns', or 'high risk. Studies scored overall 'low risk' if they scored 'low risk' in all domains and 'high risk' if they scored 'high risk' in at least one domain. Two researchers (SM, SH) independently rated the risk of bias items. Discrepancies were discussed, and consensus was met (inter-rater agreement was 95%). Studies were not excluded on the outcomes of the risk of bias assessment.

Results

Appendix 2 (available from: doi.org/10.6084/m9.figshare.24274840) includes a flow diagram of study selection. Seven papers[24-30] were eligible for inclusion in this review and are referred to below.

Study characteristics

Six studies were conducted in the US[24-29] and one in the Netherlands.[30] Two studies were conducted in urban or metropolitan areas[24,26], one was conducted in urban and regional areas[30], and four studies did not provide such location details.[25,27-29] Intervention duration ranged from 7 weeks[28] to 2 years.[29]

Food access intervention design

Study interventions were food bank or pantry[27,30], and mobile produce[25,26] or community farm[24,28,29] interventions (See Appendix 3 for detailed descriptions, available from: doi.org/10.6084/m9.figshare.24274840). Of the seven studies, five had additional educational components (e.g., information provision approach)[24-26,28,29], and one had a behaviour change component (e.g., use of techniques, including goal-setting and social support, for moving knowledge into action).[27] All six educational and behaviour change interventions included practical cooking classes/demonstrations.[24-29]

Outcome measures

Three of the seven studies used interviewer-administered surveys for dietary intake[24,25,30], two used self-report surveys[28,29], and two did not specify[26,27] (see Appendix 3 for data collection tools used; available from: doi.org/10.6084/m9.figshare.24274840). Survey questions were related to dietary intake in the past 24 hours[29,30], week[24,29], and month.[25-27] One study objectively measured F&V intake through skin carotenoids.[29] Two studies measured self-efficacy towards purchasing, preparing and eating F&V[25] and towards cooking and meal preparation.[29] One study assessed knowledge, attitude, beliefs, and the ability to select, store and prepare community farm produce.[29]

Study quality

Appendix 4 details study quality ratings (available from: doi.org/10.6084/m9.figshare.24274840). Two of the seven studies reported details on random sequence generation.[26,27] At least one previously validated outcome measure was used in all studies. One study provided reported detailed power calculations used to estimate sample size.[30] Outcomes were reported fully for all studies. Four of the seven studies reported differences in participant characteristics and used confounder-adjusted analyses.[24-26,29] Six of the seven papers reported the number of participants with outcome data pre-and post-intervention.[24-29] Intention-to-treat analysis was included in three studies.[25,29,30]

Findings from studies

Food bank and food pantry

Of the two studies testing food-pantry interventions, both found improvements in at least one outcome: F&V(n = 2)[27,30], fibre(n = 1)[30], and vitamin C (n= 1)[30] intake. One of these studies (which had a low risk of bias rating), included participants choosing fresh food boxes plus monthly motivational meetings. It also had a project manager to track personal goals and identify strategies to overcome barriers plus community services resulted in participants increasing F&V intake by one serving/day compared to traditional food pantry recipients at 12 months.[27]

Mobile produce market, community farm

The two studies evaluating mobile produce market interventions[25,26] reported improved F&V intake, of which one had overall some risk of bias.[25] The 'Veggie Van' intervention found a significant increase (0.95 cups/d ± 0.3) after 6 months follow-up, but results were not significant after extreme values were removed.[28] One of the two community-supported farm interventions found an increase in F&V intake with/without juice (+ 1.10 cup/1.01 cup) after one growing season but no effect after 1 year and no effects on consumption of sweets, salty snacks, or sugar-sweetened beverages.[29]

The other intervention offering assorted F&V from a local farm found a larger increase in F&V consumption compared to the control; however, it had an overall high study risk of bias score.[28]

Discussion

This systematic review synthesised all available RCT evidence on dietary behaviours and health outcomes impacted by community-based food access interventions in HICs. Our review identifies that most community-based food access interventions tested in RCTs included education and/or behaviour change strategies, and most reported at least some beneficial effect on F&V intake over 7 weeks to 1 year.[25-30] While effects on F&V intake within studies were generally small (e.g.,~0.5–1 cup/day[25-27]), the relevance of these changes might be substantial in certain community groups, where even small increases in F&V consumption could provide a meaningful outcome in populations unable to meet dietary recommendations due to poor healthy food access. Interestingly, the studies included in our review were all conducted in the North American context. This review was unable to identify a greater effect of the identified intervention types (food pantry, mobile produce markets or community farm) in part because there were few studies overall, large heterogeneity in measurement units and confidence in some studies' findings was compromised by lower study quality.

This begs the question: should we wait for more RCT evidence, specifically within the Australian context, before changing policy and practice in Sydney? We suggest not. While some differences exist between food systems and governance structures across HICs, the strategies within this review involving food pantries, mobile produce markets, and community farms should achieve comparable results in countries like Australia, where interventions are urgently needed. In a time of crisis, when the effects of climate change, the ongoing coronavirus disease 2019 (COVID-19) pandemic and rapid inflation together are impacting Australia's food supply system resilience[31] and sustainability, alongside ever-widening inequities in health, healthy food access action is necessary now. A growing body of observational literature supports the us of food hubs that predominantly support local food producers and low-income consumers.[32] In addition to the health benefits identified in our review, food hubs support a range of beneficial economic, social, and environmental impacts within communities[33] that are important for the sustainability of healthy food access. Similarly, mobile produce markets[34] have been championed as a model to increase the availability, accessibility, and consumption of healthy foods by explicitly travelling to known food deserts. However, their smaller scale of operation, financial viability and long-term sustainability have been questioned.[35] While they can overcome geographical boundaries to restrict food access, they cannot address other social and cultural factors inhibiting food access in vulnerable communities[36] without subsidy. Interventions to support local farmers, especially through farm-to-retail venues,have been shown to be important for rebuilding local and regional food systems. An important determinant of their success is community readiness and support for local food, as demonstrated in some regions of Australia.[37] In low SES communities, economic incentives have been shown to increase purchasing of locally-grown foods, resulting in increased vegetable intake among low-income adults, highlighting the importance of overcoming economic barriers to healthy food access.[38] While not reported by studies in our review, ultimately, community engagement and co-design are crucial for tailoring such interventions to local contexts, ensuring that food system activities are prioritised based on their suitability for each specific community.[39]

Food system transformation in Australia and other HICs requires a range of upstream and downstream actions to facilitate a shift towards improving healthy food access. Combining bottom-up and top-down approaches in health promotion programs is beneficial in chronic disease prevention[40] and shows promise for dietary behaviour change in this study. Within the upstream context, local, state and federal governments have important roles in responding to food system challenges, such as through the development of legislation, policies and effective interventions in the food supply system.[41] Upstream interventions include addressing social disparities in access to healthy food through addressing root causes of socioeconomic and health inequities (e.g., poverty, employment, and education). Local governments are also well-positioned to change local community food environments positively.[42] However, state-wide policies are needed to ensure consistency across local councils. Such policies should relate to supporting the growing, retail sale and transport of locally produced foods so that community-embedded models are initiated and sustained. Other top-down, nudge approaches to creating healthy eating environments could include changes in the built environment to support positive behaviour changes.[43] For example, when designing new suburbs, including built environment features that support the growing and sharing of local food (e.g., community gardens) should be a priority. Through policy, food outlets should also be encouraged to support the ability of populations at risk of poor food access to purchase nutritious foods.[44]

Alongside policy approaches, downstream action can build on the strengths of community assets so community members are knowledgeable and feel supported to change their behaviour once healthy food is accessible. Education alone is often not sufficient for behaviour change. Behaviour change support and physical, structural strategies to address social determinants (e.g. sustained and systematic policy change) should also focus on food access and/or addressing underlying

determinants. This might involve building capacity within existing community groups/organisations and establishing new social networks so that community members have the knowledge, skills and social support to support them in using healthy food access models and making healthy dietary choices.[28]

Strong, cross-sectoral collaborations, including involvement of public health and built environment professionals working with communities, are needed to support healthy food access within a sustainable food supply.[45] Upstream planners, financers, developers, and managers of urban environments can introduce policies that facilitate the implementation of community-based healthy food access strategies to accelerate potential downstream health outcome benefits within communities. Diverse, place-based stakeholders from within communities should be involved in developing and implementing place-based activities tailored to the food access challenges for that specific community. Establishing food policy groups or coalitions comprising these stakeholders has facilitated effective advocacy for impactful community initiatives[32], including in the Australian context.[46] After a Parliamentary Inquiry in 2022, the NSW Committee on Environment and Planning published comprehensive recommendations on supporting food production and supply in NSW. The report includes 36 recommendations that underscore the importance of addressing food security and equitable access to food in NSW through a multifaceted approach that involves sustainable agricultural practices, waste reduction, community engagement, and collaborative governance.[47] In particular, our review findings support the role of local governments in addressing food system issues, including the report recommendations related to increasing healthy food access by supporting local agriculture projects and community gardens.[47]

Our review highlights the need to assess outcome measures other than just F&V intake to capture the full extent of food access strategies on health and lifestyles. Further evaluations of interventions that collect data on both short- and longer-term indicators spanning objective health measures and using validated tools to collect knowledge and behaviour change data are needed. Additionally, health economic analysis measures (e.g., quality-of-life) are essential to support building models into ongoing practice and/or policy. While our review focused on health and lifestyles, measuring environmental and social outcomes will also be useful in making the case for model sustainability.

Strengths and limitations

A strength of this review is its inclusion of only RCTs to provide rigour. However, it does not report on additional intervention strategies (e.g., community gardens) that are potentially effective but have not been tested in RCTs. Only studies published in English were included. Thus, relevant research reported in different languages may have been missed.

Conclusion

This study systematically reviewed evidence of community-based food access strategies on dietary behaviour and health outcomes. All but one study reported some beneficial effects on F&V intake. However, the effects were small, highlighting the need for such downstream strategies to be complemented by upstream changes to food environments. Further research is necessary to determine the most beneficial healthy food access interventions. All but one study included educational and/or behaviour change strategies alongside food access interventions, highlighting that this combination may be particularly beneficial for behaviour change and health improvement and should be explored further. Our review also emphasised the need for more consistency around how outcomes are measured in subsequent studies. Future research should also consider strategies implemented in HICs outside the US, as findings from these settings may not be translatable to all HICs.

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Peer review and provenance

Externally peer reviewed, invited.

Competing interests

None declared.

Author contributions

SM led the first drafting of the manuscript, and KK and FM led the drafting of subsequent iterations. All authors were involved in the conception and design of the review and reviewed and edited drafts of the manuscript. SM, KM and FM screened articles. SM extracted data from the included articles.

References

1. Aune D, Giovannucci E, Boffetta P, Fadnes LT, Keum NN, Norat T, et al. Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality – a systematic review and dose-response meta-analysis of prospective studies. Int J Epidemiol. 2017;46(3):1029–56.
2. GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2019;393(10184):1958–72.
3. Trapp GSA, Hooper P, Thornton L, Kennington K, Sartori A, Billingham W, Bivoltsis A. Does fast-food outlet density differ by area-level disadvantage in metropolitan Perth, Western Australia? Health Promot J Austr. 2022; 33(S1): 262–5.
4. Lewis M, Herron L-M, Chatfield MD, Tan RC, Dale A, Nash S, Lee AJ. Healthy food prices increased more than the prices of unhealthy options during the COVID-19 pandemic and concurrent challenges to the food system. Int J Environ Res Public Health. 2023; 20(4):3146.
5. Vilar-Compte M, Burrola-Méndez S, Lozano-Marrufo A. Ferré-Eguiluz I, Flores D, Gaitán-Rossi P, Terue G, Pérez-Escamilla R. Urban poverty and nutrition challenges associated with accessibility to a healthy diet: a global systematic literature review. Int J Equity Health. 2021; 20(1):40.
6. Timba R, Morrison N, & Paine G. A rapid-mapping methodology for local food environments, and associated health actions: the case of Penrith, Australia, Journal of Urbanism: International Research on Placemaking and Urban Sustainability 2022.
7. Food and Agriculture Organization of the United Nations. Food Security. Policy Brief: 2: Italy: FAO; 2006 [cited 2023 Jun 20]. Available from: http://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf
8. Astell-Burt T, Feng X. Geographic inequity in healthy food environment and type 2 diabetes: can we please turn off the tap? MJA 2005; 203(6):246–8.
9. Astell-Burt T, Feng X, Kolt GS, McLean M, Maberly G. Understanding geographical inequities in diabetes: multilevel evidence from 114,755 adults in Sydney, Australia. Diabetes Res Clin Pract 2014;106(3):68.
10. Oldroyd L, Eskandari F, Pratt C, Lake AA. The nutritional quality of food parcels provided by food banks and the effectiveness of food banks at reducing food insecurity in developed countries: a mixed-method systematic review. J Hum Nutr Diet. 2022;35(6):1202–29.
11. Lo J, Delwiche A. The good food purchasing policy: a tool to intertwine worker justice with a sustainable food system. Journal of Agriculture, Food Systems and Community Development. 2016;6(2):185–94.
12. Cordell D, Nelson J, Atherton A, Gadhoke P. Who is responsible for ensuring food security in NSW? A brief review of risks, opportunities, and policies for creating resilient food systems and healthy communities in Greater Sydney. Sydney: Institute for Sustainable Futures, UTS Sydney; 2022 [cited 2023 Jun 20] Available from: www.uts.edu.au/sites/default/files/2022-04/FINAL_NSW%20Food%20Security%20Report%5B95%5D.pdf
13. Australian Government. National Food Plan: Our Food Future. Canberra: Department of Agriculture, Fisheries and Forestry; 2013 [cited 2023 Jun 20]. Available from: www.ftaaus.com.au/wp-content/uploads/2013/06/JUNE-national-food-plan-white-paper1.pdf
14. VicHealth Say hello to our 7 future healthy food hubs partners! Victoria: VicHealth; 2023 [cited 2023 Jun 20]. Available from: www.vichealth.vic.gov.au/programs-projects/say-hello-our-7-future-healthy-food-hubs-partners
15. Food and Agriculture Organization of the United Nations. The future of food and agriculture: trends and challenges. Rome, Italy: FAO; 2017 [cited 2023 Jun 20]. Available from: www.fao.org/3/i6583e/i6583e.pdf
16. Lindberg R, McCartan J, Stone A, Gale A, Mika A, Nguyen M, Kleve S. The impact of social enterprise on food insecurity – an Australian case study. Health Soc Care Community. 2019;27(4):e355–66.
17. United Nations Industrial Development Organization. Short food supply chains for promoting local food on local markets. Vienna, Austria: United Nations Industrial Development Organization, Vienna International Centre; 2020 [cited 2023 Jun 20]. Available from: www.suster.org/wp-content/uploads/2020/06/SHORT-FOOD-SUPPLY-CHAINS.pdf
18. Food and Agriculture Organization of the United Nations. Sustainable food systems – Concept and framework. Rome, Italy: FAO; 2018 [cited 2023 Jun 20]. Available from: www.fao.org/3/ca2079en/CA2079EN.pdf
19. An R, Wang J, Liu J, Shen J, Loehmer E, McCaffrey J. A systematic review of food pantry-based interventions in the USA. Public Health Nutr. 2019;22(9):1704–16.
20. Hsiao B-s, Sibeko L, Troy LM. A systematic review of mobile produce markets: facilitators and barriers to use, and associations with reported fruit and vegetable intake. Journal of the Acad Nutr Diet. 2019;119(1):76–97.

21. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffman TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71.

22. Higgins JP, Thomas J, Chandler J, Cumpston M, Li T, Pag MJ, Welch VA (editors). Cochrane handbook for systematic reviews of interventions: 2nd Edition. Chichester (UK): John Wiley & Son, 2019.

23. Sterne JA, Savovic J, Page MJ, Elbers RB, Blencowe NS, Boutron I, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. BMJ. 2019;366:l4898.

24. Quandt SA, Dupuis J, Fish C, D'Agostino Jr RB. Feasibility of using a community-supported agriculture program to improve fruit and vegetable inventories and consumption in an underresourced urban community. Prev Chronic Dis. 2013;10:E136.

25. Leone LA, Tripicchio GL, Haynes-Maslow L, McGuirt J, Grady Smith JS, Armstrong-Brown J, et al. Cluster randomized controlled trial of a mobile market intervention to increase fruit and vegetable intake among adults in lower-income communities in North Carolina. Int J Behav Nutr Phys Act. 2018;15(1):2.

26. Gans KM, Risica PM, Keita AD, Dionne L, Mello J, Cooksey Stowers K, et al. Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial. Int J Behav Nutr Phys Act. 2018;15(1):80.

27. Martin KS, Wu R, Wolff M, Colantonio AG, Grady J. A novel food pantry program: food security, self-sufficiency, and diet-quality outcomes. Am J Prev Med. 2013;45(5):569–75.

28. Metcalfe JJ, Prescott MP, Schumacher M, Kownacki C, McCaffrey J. Community-based culinary and nutrition education intervention promotes fruit and vegetable consumption. Public Health Nutr. 2021;25(2):437–49.

29. Seguin-Fowler RA, Hanson KL, Jilcott Pitts SB, Kolodinksy J, Sitaker M, Ammerman AA, et al. Community supported agriculture plus nutrition education improves skills, self-efficacy, and eating behaviors among low-income caregivers but not their children: a randomized controlled trial. Int J Behav Nutr Phys Act. 2021;18(1):112.

30. Neter JE, Dijkstra SC, Twisk JWR, Visser M, Brouwer IA. Improving the dietary quality of food parcels leads to improved dietary intake in Dutch food bank recipient – effects of a randomized controlled trial. Eur J Nutr. 2020;29(8):3491–501.

31. Kent K, Gale F, Penrose B, Auckland S, Lester E, Murray S. Consumer-driven strategies towards a resilient and sustainable food system following the COVID-19 pandemic in Australia. BMC Public Health. 2022; 22(1):1539.

32. Rose, N. Community food hubs: an economic and social justice model for regional Australia?, Rural Society. 2017;26(3):225–37.

33. Nelson E, Landman K. Evaluating food hubs: reporting on a participatory action project. Journal of Agriculture, Food Systems and Community Development. 2020;10(1):63–81.

34. Weissman E, Robinson J, Cecio W. The promise and pitfalls of mobile markets: an exploratory survey of mobile food retailers in the United States and Canada. Agriculture and Human Values. 2020;37:895–906.

35. Mari, E. Healthy food on wheels: An exploration of mobile produce markets through a food justice lens. In Food justice in US and global contexts. Editors: Werkheiser and Z. Piso, P 141–157. New York: Springer; 2017.

36. Evans A, Banks K, Jennings R, Nehme E, Nemec C, Sharma S, et al. Increasing access to healthful foods: a qualitative study with residents of low-income communities. Int J Behav Nutr Phys. 2015;12(S1):S5.

37. Godrich S, Kent K, Murray S, Auckland S, Lo J, Blekkenhorst L, et al. Australian consumer perceptions of regionally grown fruits and vegetables: importance, enablers, and barriers. Int J Environ Res Pub Health. 2020;17:63.

38. McCormack LA, Laska MN, Larson NI, Story M. Review of the nutritional implications of farmers' markets and community gardens: a call for evaluation and research efforts. J Am Diet Assoc. 2010; 110(3): 399–408.

39. Meloncelli N, Young A, Christoffersen A, Rushton A, Zhelnov P, Wilkinson SA, et al. Co-designing nutrition interventions with consumers: a scoping review. JHND. 2022;36(3):1045–67.

40. Laverack G. Parallel-tracking bottom-up approaches within chronic disease prevention programmes. Int J Public Health. 2012;57:41–4.

41. High Level Panel of Experts. Food security and nutrition: building a global narrative towards 2030. Rome, Italy: HLPE on Food Security and Nutrition of the Committee on World Food Security;2020 [cited 2023 Jun 20]. Available from: www.fao.org/3/ca9731en/ca9731en.pdf

42. Institute of Medicine (US) and National Research Council (US) Committee on Childhood Obesity Prevention Actions for Local Governments; Parker L, Burns AC, Sanchez E, editors. Local government actions to prevent childhood obesity. Washington (DC): National Academies Press (US); 2009 [cited 2023 Sep 25]. Available from: nap.nationalacademies.org/catalog/12674/local-government-actions-to-prevent-childhood-obesity

43. Laverack G, Labonte R. A planning framework for community empowerment goals within health promotion. Health policy and planning. 2000;15(3):255–62.

44. Hawkes, C. Dietary implications of supermarket development: a global perspective. Development Policy Review. 2008;26:657–92.

45. Ruben R, Cavatassi R, Lipper L, Smaling E, Winters P. Towards food systems transformation—five paradigm shifts for healthy, inclusive and sustainable food systems. Food Sec. 2021;13:1423–30.

46. Sustain the Australian Food Network. Think. Do. Network.: 2021 Annual Report. Melbourne: Sustain; 2021 [cited 2023 Jun 20]. Available from: sustain.org.au/media/documents/SUSTAIN-21-22-_Annual_report-Final-website-version.pdf

47. Committee on Environment and Planning. Food production and supply in NSW. Sydney: Parliament NSW Legislative Assembly; 2022 [cited 2023 Jun 20]. Available from: www.parliament.nsw.gov.au/ladocs/inquiries/2841/Report%20-%20food%20production%20and%20supply%20in%20NSW.pdf