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Interventions designed to promote the consumption of locally produced foods: a scoping review

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Introduction: Food system transformation is required for planetary health. Localizing food systems and applying agroecological principles to food production and supply have been suggested to support a resilient and sustainable food system. This scoping review aimed to map the implementation of interventions designed to promote the consumption of locally produced food, their application of agroecological principles and the outcomes evaluated, across Global North and Global South countries.

Methods: Searches were conducted systematically in 15 databases. Screening was conducted against criteria to identify eligible studies and data extracted in REDCap and EPPI Reviewer. Data were narratively synthesized, and results displayed as tables, figures and an interactive evidence gap map.

Results: We found 147 eligible studies describing interventions to promote the consumption of locally produced food. Only two studies reported the impact of intervention on local versus non-local food procurement and we identified a lack of a standard framework for assessing the impact of changing food source practice. Most studies reported dietary outcomes, mainly fruit and vegetable intake, and less used metrics for dietary diversity, particularly in the Global North. A small proportion (5%) reported ecosystem related outcomes. All home growing interventions were conducted in the Global South and most school-based growing interventions were conducted in the Global North. Agroecological principles were applied to Global North and Global South interventions, but a greater proportion of the Global South studies applied agroecological practices (GS 30%; GN 4%).

Discussion: This map of experimental research on local food interventions identifies key differences in intervention types and agroecological principles and practices applied in Global South and Global North countries, potential learnings between settings, and gaps in the evidence. We call for greater coherence in the development, evaluation and reporting of local food interventions to enable

synthesis on their effectiveness and to strengthen evidence on local food approaches aiming to improve human nutrition and planetary health.

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KEYWORDS

local food systems, Global North, Global South, scoping review, evidence gap map, food source

Introduction

Food system transformation is required for planetary health, encompassing human health and the health of the earth systems on which is depends. The current system, which relies largely on globalized corporate food value chains, is a major contributor to non-communicable disease and premature mortality in countries across the world. At the same time, it is highly vulnerable to shocks and imposes a large environmental burden as the leading cause of biodiversity loss and a major driver of environmental degradation, greenhouse gas emissions and social inequity (IPES-FOOD, 2023; EAT-Lancet commission, 2019; HLPE, 2017; Food and Agriculture Organization, 2020; Global Panel on Agriculture and Food Systems for Nutrition, 2020). The global food system's negative impact on human health has been attributed to inadequate access to, and availability of, nutrient dense, unprocessed or minimally processed foods, the increasing prevalence of ultra-processed food even in some of the world's most rural and least developed areas, and large-scale, intensive farming practices reliant on chemical inputs that have degraded soil structure and biota and diminished soil fertility (Willett et al., 2019; Ambikapathi et al., 2022; Loboguerrero et al., 2019; Lane et al., 2024). Calls have been made to prioritize sustainability across this complex system in order to meet the United Nations (UN) Sustainable Development Goals and climate mitigation targets, such as the Paris Agreement, to protect people and planet (United Nations, 2015).

Localizing food production and procurement is identified as a key strategy toward a more sustainable food system to protect humans and environmental health (Hickey and Unwin, 2020; Food and Agriculture Organization, 2021). Local food refers to food procured via shorter supply chains that reduce physical distances and intermediary stages between producers and consumers while fostering closer cultural and social connections (Food and Agriculture Organization, 2018; United Nations, 2020). There is debate over whether dichotomising local versus global approaches is helpful in the context of promoting resilience (Wood et al., 2023), and it is emphasized that local food approaches must support broader strategies such as increasing fresh, minimally processed food consumption, shifting toward plant-based diets and addressing food waste, to not exceed planetary boundaries (Enthoven and Van Den Broeck, 2021; Willett et al., 2019). Local food has an important role to play in promoting these shifts in dietary practices, can support tradition and culture, small-scale production and low-level processing, and resilience, providing multiple pathways for promoting diet-related health and food security (Food and Agriculture Organization, 2014; Stephens et al., 2020; Klapp et al., 2025). Indeed, local food practices based around traditional and cultural foods can promote healthy dietary behaviors (Deaconu et al., 2021), and recognizing the role of indigenous peoples' food system knowledge is crucial, as many local food systems are deeply intertwined with cultural practices and ecological wisdom that contribute to the resilience and sustainability of agroecological systems (Marrero and Mattei, 2022). The increased frequency and severity of climate-related hazards and their impact on food supply chains and prices has created an even greater impetus to produce food that is required to meet healthy diet targets, in ways that are resilient to, and help to mitigate, climate change and ecosystem damage (Rulli et al., 2024; Guell et al., 2024; FAO, 2021).

Local food systems have been positively associated with environmentally-friendly production practices (Enthoven and Van Den Broeck, 2021). Adopting ecologically regenerative agricultural practices has been proposed to reduce food system vulnerability and the negative impacts on people and the planet. Agroecology is a regenerative approach to agricultural production that is increasingly supported by institutions globally to improve food system sustainability and promote environmental health (IPES Food, 2016; Agroecology Coalition, 2024). Considered a science, a practice and social movement, agroecology encompasses a transdisciplinary approach that applies ecological principles to food production, such as connectivity, recycling, social values and biodiversity and is operationalized through elements of resource efficiency, resilience and social equity (Wezel et al., 2020; Gliessman, 2014). The benefits of an agroecological approach to food security and nutrition are widely reported (Bezner Kerr et al., 2021) and it is increasingly advocated as a pathway for driving food system transformation (van Zutphen et al., 2022).

Local place-based food systems already exist worldwide, many of which inherently follow agroecological principles and are supported as resilient value chains, which promote social equity, and environmental and human health (IPES-Food, 2024). However, the lack of a universal definition of 'local food' approaches complicates efforts to synthesize primary research evidence on the effectiveness of local food interventions (Enthoven and Van Den Broeck, 2021; Haynes et al., 2022) and, to our knowledge, no attempts have been made to classify local food interventions by their application of agroecological principles and practices in syntheses of their effectiveness. Given the potential scope of local food and agroecological approaches in addressing planetary health, there is a need to identify and synthesize available published evidence to inform further practice, policy and research.

We previously conducted a review of dietary interventions in small island developing states (SIDS) and classified studies by their local or non-local food approach (Haynes et al., 2022). A narrative review of the small pool of studies ($n = 9$) that explicitly promoted local food highlighted that local food approaches may promote effectiveness through mechanisms of cultural and contextual relevance. Building on this work, the current scoping review seeks to map a broader range of global studies that are designed to promote the consumption of locally produced food. This review categorizes interventions, reports outcomes, study settings (Global North versus

Global South) and the integration of agroecological principles, to identify evidence gaps relevant to informing further research, policy and practice. This work was conducted as part of the NIHR Global Health Research Group on Community Food for Human Nutrition and Planetary Health in Small Islands (Global CFaH), which examines the potential and impact of promoting community-based, agroecological food production to solve diet-related health issues in small island countries.

Methods

This scoping review was conducted systematically following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR) (Tricco et al., 2018) as the precursor to a systematic review on the effectiveness of local food interventions that reported dietary outcomes. The protocol for this overarching review was registered with the International Prospective Register of Systematic Reviews (PROSPERO registration number: CRD42023428104).

Eligibility criteria

Eligibility criteria guided the development of the search strategy. The full criteria are available in Supplementary material 1.

We included any before-after study design (randomized or non-randomized, with or without control or comparison group) that assessed the impact of any intervention designed to promote the consumption of locally produced foods, and measured change in any outcome defined under the following domains:

1. Diet or nutrition: Including but not limited to, measures of food or nutrient intake (e.g., dietary diversity, frequency of consumption, nutrient intake, dietary patterns), nutritional status, nutrition or food system knowledge, attitudes, skills or dietary behavior.
2. Food procurement: Any outcome relating to source or obtaining the food, including but not limited to, where or how food items are sourced, contribution of local food or food imports to food supply, frequency of purchase, own production for consumption, choice at point of procurement.
3. Economic: Including but not limited to, food security/insecurity, yield (as proxy for livelihood), household income or expenditure, price, revenue.
4. Ecosystem: Including but not limited to, biodiversity, air or water pollution, greenhouse gas emissions, changes in practices that would be classed as agroecological.

In line with scoping review methodological guidelines, eligibility criteria on outcome were broad to facilitate the identification of gaps in evidence (Tricco et al., 2018). Studies were excluded if they were not published in English or published prior to January 2000.

Search strategy

Searches were conducted in February 2023 in relevant databases intended to cover the major sources for health, social and agricultural sciences, listed below. We also conducted forward and backward citation searching of included papers.

- Health related databases: MEDLINE, Global Health (via Ovid); CINAHL Ultimate (via EBSCOhost); Global Health (via Ovid); Cochrane Library.
- Social science related databases: Web of Science: Conference Proceedings Citation Index, Science Citation Index Expanded, and Social Science Citation Index; Scopus.
- Agricultural science related databases: AGRICOLA (US National Agriculture Library); AGRIS (hosted by FAO).
- Regional databases: LILACS; Afrolib.
- Google Scholar via Publish or Perish.

An example search strategy is detailed in Supplementary material 2.

Study selection

Records were managed in the web-based screening tool, Rayyan (Ouzzani et al., 2016). Study selection was conducted in two stages of screening against the eligibility criteria. Two independent reviewers screened titles and abstracts to identify potentially eligible studies, which then underwent full text screening to determine whether eligibility criteria were met or not. Disagreement or uncertainty between reviewers was resolved by discussion or, if necessary, by a third reviewer.

Defining 'local' food

We considered 'local' food to be food procured via shorter supply chains that reduce physical distances and intermediary stages between producers and consumers while fostering closer cultural and social connections (Food and Agriculture Organization, 2018; United Nations, 2020). To identify whether a study was about 'local' food, and informed by existing reviews that apply and reflect on the application of this concept (Enthoven and Van Den Broeck, 2021; Haynes et al., 2022), the following keywords were searched for in title, abstract or keyword/topics: local, traditional, cultural, indigenous, community (production), household or home (production), home garden, home grown, homestead, backyard, school garden, urban garden, farmers market, local market, domestic market, community market, farm-to-school, farm-to-fork or domestic. We acknowledge that given the broad description of 'local' food two reviewers may not always agree on whether a study should be included. We aimed for consistency in identifying studies about 'local' food through the training of reviewers, duplicate screening of studies, and discussion over disagreements between reviewers.

Data extraction

Study data were extracted in the data management application REDCap (Harris et al., 2009) using a predefined framework that is available in Supplementary material 3. This included study location [using the UN regional groupings (United Nations, 2024)], study design, intervention type, setting and populations examined, outcomes measured, the stage of the food system in which the

intervention was based (from production to waste disposal), as well as the extent to which principles and practices of agroecology were applied as part of the intervention. Ninety-eight of the 147 (65%) records were extracted in duplicate by two independent reviewers, with any disagreement or uncertainty resolved by a third reviewer. The remainder were single extracted.

To classify studies by their application of agroecology, the 13 Principles of Agroecology as defined by Wezel et al. (2020), were used as a coding framework. We also identified and coded the application of agroecological farming practices where these were specifically applied and reported by the study authors. The framework for practices was informed by an existing framework for classifying agroecological practices (Wezel et al., 2014) expanded with examples of their application (Cole et al., 2022). The coding framework was populated with practical examples to guide objective data extraction and is available in Supplementary material 4. Codes were attributed to the study if one or more data extractors had coded for the principle or practice.

In keeping with scoping review methodological guidelines, the quality of included studies was not assessed (Tricco et al., 2018).

Data synthesis

References for all eligible studies were transferred into EPPI Reviewer (Thomas, 2023) and intervention, outcome and location data were transferred from REDCap to code each study and generate an evidence gap map (EGM) in EPPI Mapper (EPPI Centre and Digital Solution Foundry, 2023).

We narratively report the findings as a descriptive summary and disaggregate by the Global South and Global North for descriptions of interventions and outcomes measured. Our definition of Global South is the membership of the G77, which now comprises 134 countries, covering 80% of the world's population (G77, 2024). The G77 covers the majority of so called developing countries, from those in Latin America and the Caribbean to Africa and the Asia-Pacific, including least developed countries and small island developing states (World Economic Forum, 2023). Although formed over 60 years ago, the G77 is seen by its members as having continued relevance in affirming "…the right to development and the right to live free of hunger, and poverty, as a priority for developing countries" (Rodriguez Parrilla, 2023). The G77 includes some countries classified as high income by the World Bank (World Bank, 2024), but which nonetheless face severe development challenges, including several Small Island Developing States. For this reason, we have chosen to use Global South versus Global North rather than grouping our findings by World Bank income level.

In contrast to the Global South, the Global North does not refer to an organization with specific membership, but rather to so called developed countries, including, for example, those in North America (excluding Mexico), in Europe, Japan, South Korea, Australia and New Zealand.

We acknowledge that the categories of 'Global South' and 'Global North' are highly heterogenous, particularly the former. On average countries in the 'Global South' are economically less developed, have a lower human development index, have younger populations, and are more vulnerable to climate change than those of the 'Global North', and for these reasons it is a useful high level classification. However, we recognize its limitations and aim to interpret our findings accordingly, particularly with a view to informing the settings within which Global CFaH is working.

Results

Description of included studies

Figure 1 illustrates 147 studies eligible for inclusion. A list of included studies is available in Supplementary material 5. Characteristics of eligible studies are presented in Figures 2, 3, which illustrate the distribution of studies by location (Figure 2), food system stage and agroecological principles applied (Figure 3) where the width of each segment indicates the proportion of total studies. Details of main study characteristics are available in Supplementary File 1 (Supplementary material).

Figure 4 illustrates the evidence gap map, and the interactive version of the map can be accessed in Supplementary File 2 (Supplementary material). It presents the distribution of studies across intervention and outcome type, highlighting gaps and clusters of evidence; the bubbles indicate where evidence exists, and the different colors represent location (the green indicates Global South and the orange indicates Global North based studies). The map is interactive and further details and links to the studies under each category can be viewed by clicking on the bubbles (Supplementary File 2).

Study location and design

Figures 2A,B illustrate that a large proportion of studies were conducted in Northern America ($n = 68$; 46%) followed by Sub-Saharan Africa ($n = 24$; 16%), Southern Asia ($n = 21$; 14%) and South-Eastern Asia ($n = 14$; 10%). A smaller proportion of studies were conducted in Latin America and the Caribbean ($n = 11$; 7%) including South America ($n = 7$; 5%), Central America ($n = 3$; <1%) and the Caribbean ($n = 1$; <1%). Fewer studies were conducted in Oceania ($n = 6$; 4%) or Europe ($n = 4$; 3%). No studies were conducted in Eastern, Central or Western Asia or Northern Africa.

Just under half of all studies were conducted in Global South (GS) countries ($n = 71$), across 32 countries (see Figures 2A,B). This included four countries in Southern Asia ($n = 21$ studies), five countries in South-Eastern Asia ($n = 14$ studies), 13 countries in Sub-Saharan Africa ($n = 24$ studies), nine countries in Latin America ($n = 10$ studies), one in the Caribbean ($n = 1$ study) and one in Oceania ($n = 1$ study). The majority (97%) of those conducted in the Global South were in low- or middle-income countries (as defined by World Bank, 2024), with two in high income countries [Chile (Vinueza et al., 2016) and Uruguay (Roscioli et al., 2021)]. Of those conducted in the Global North (GN) ($n = 76$; 53%), the majority were in Northern America in the USA ($n = 64$) (84% of GN studies; 44% of all studies) and Canada ($n = 4$), followed by Australia ($n = 5$), United Kingdom ($n = 3$) and Ireland ($n = 1$). All of these studies were conducted in high-income countries.

More than half of the studies were quantitative non-randomized study designs ($n = 77$; 52%) (GN $n = 45$; GS $n = 33$), and 37 of these included a control or comparison group. Thirty-five studies were quantitative randomized trials (GS $n = 21$; GN $n = 14$) and of these 23 were cluster-randomized and 11 individually randomized parallel group trials. Thirty-four were mixed methods studies reporting

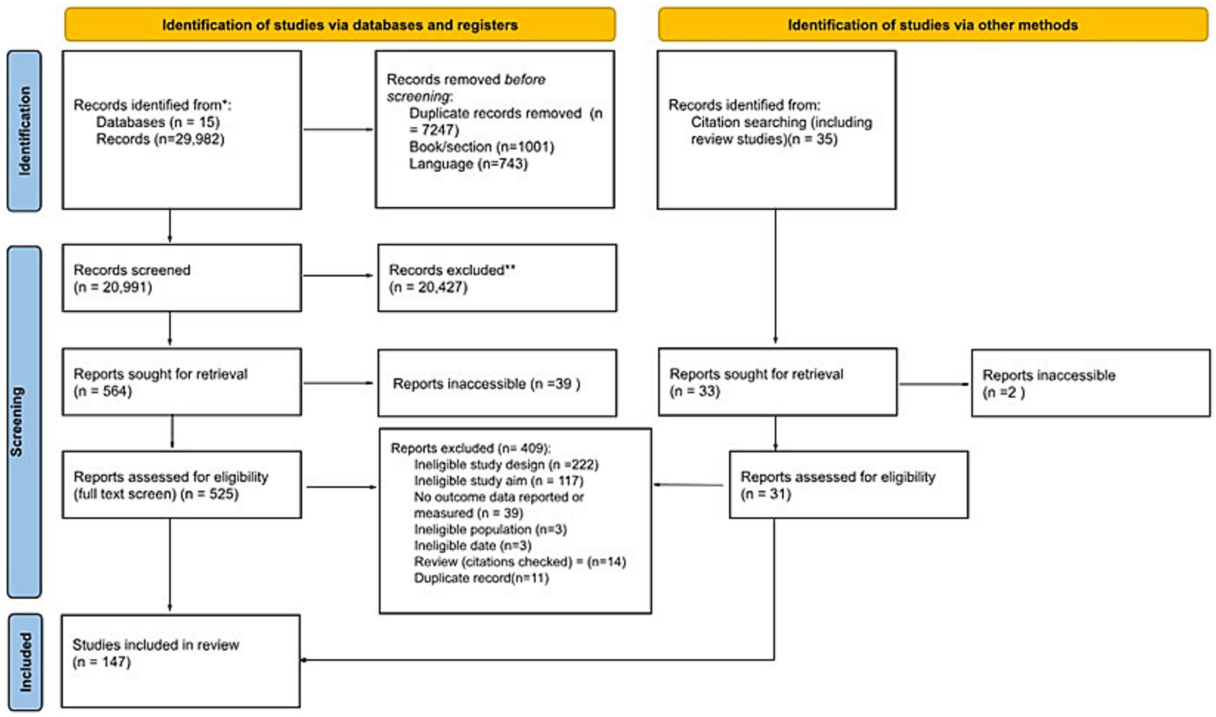

FIGURE 1
PRISMA flowchart.

quantitative and qualitative data across one or more publications (GN $n = 18$, GS $n = 16$).

Food system stage

Figure 3 illustrates that a large proportion of the studies implemented interventions in the consumption ($n = 115$; 78%) or production ($n = 94$; 64%) stages of the food system. These included, for example, interventions that aimed to encourage healthy dietary behaviors and local food consumption by providing information and changing food preferences (Gilliland et al., 2015) or interventions that aimed to increase the local food production by facilitating home gardens (Blakstad et al., 2021). Across all studies, there were fewer interventions based on the distribution ($n = 15$; 10%), processing and storage ($n = 7$; <1%) or disposal and waste management of food ($n = 2$; <1%).

Type of intervention

A large proportion of interventions were school-based ($n = 42$; 29%) and 74% of these were conducted in the Global North ($n = 31$) primarily the US ($n = 23$), with fewer school-based interventions conducted in the Global South ($n = 11$). The majority were school garden interventions ($n = 38$) largely involving education on food and nutrition and skills in growing and cooking the produce. Nine were farm-to-school interventions focusing on procurement for school meals (Evans A. et al., 2012; Colasanti et al., 2012; Jones et al., 2012, 2015; Soares et al., 2017; Chiero et al., 2018; Borelli, 2021; Gelli, 2021; Taniguchi et al., 2022) and three of these were multi-component, combining farm-to-school with school garden components (Evans A. et al., 2012; Jones et al., 2012; Taniguchi et al., 2022).

Targeted education interventions were identified outside of the school-setting. Four studies, conducted in the US, implemented education interventions for young people in summer camps (Meehan et al., 2008; Heim et al., 2011), or university (Lanou et al., 2021) and one took a family-focused approach to teach families about local produce and cooking skills in community centers in Illinois (Metcalfe et al., 2022). We identified five education interventions targeting women, pregnant women or mothers in Global South countries which largely focused on enhancing dietary quality through education on nutrition, traditional and locally available foods, recipes and cooking skills (Roche et al., 2017; Roche et al., 2017; Boedecker et al., 2019; Ziyenda Katenga-Kaunda et al., 2020; Ramaswamy et al., 2022). For example, one of these studies conducted in Ecuador implemented a mothers' education intervention within homes that aimed to increase traditional, indigenous, local food in their children's diets (Roche et al., 2017).

All home garden interventions were conducted in Global South countries ($n = 33$; 22% of all included studies) and contributed to almost half of all interventions implemented in the Global South (46%). Given the large proportion of these interventions in the Global South, the details of these studies are highlighted in Box 1. Two of these were multi-component interventions; one conducted in Thailand which also included a school garden component (Sirisai, 2013) and another conducted in Nepal which included a supplementary food component (Osei et al., 2015). Fourteen interventions focused on developing nutritional supplements using locally available ingredients, either to treat acute malnutrition or promote food security (for example, post-disaster). They promoted local food ingredients over imported (often ultra-processed) equivalents, and all were conducted in the Global South, across South-Eastern Asia (Purwestri et al., 2012; Nga et al., 2013; Scherbaum et al., 2015; Hall et al., 2017; Sigh et al.,

2018; Borg et al., 2020; Fatmah et al., 2021; Setyopranoto et al., 2021; Rocha et al., 2022), Southern Asia (Christian et al., 2015; Osei et al., 2015; Azimi et al., 2020) and Sub-Saharan Africa (Abizari et al., 2012; Schmied, 2017).

Eighteen studies were set in the wider community (e.g., were not school or home-based). These included community garden interventions in the Global North ($n = 5$) and Global South ($n = 1$) (Carney et al., 2012; Grier et al., 2015; Spees et al., 2016; Besterman-Dahan et al., 2021; Sileshi et al., 2022; Litt et al., 2023), community-supported agriculture schemes in the Global North ($n = 4$) (Cohen et al., 2012; Curtis et al., 2013; Quandt et al., 2013; Seguin-Fowler et al., 2021), and other community-level interventions implemented in the Global South that improved capacity for food production by providing resources as well as education and training ($n = 3$) (Alaofè et al., 2016; Jodlowski et al., 2016; Borgerson et al., 2021). For example, one study implementing the Heifer International Program in Zambia provided households with livestock to explore the impact on household food security, income and consumption (Jodlowski et al., 2016) and another in Benin provided villages with solar-powered drip irrigation systems to assist with community food production for household food security (Alaofè et al., 2016). Several studies included a component of community growing as part of a community-wide, multifaceted intervention ($n = 5$), mostly conducted across multiple settings and providing education and resources such as seeds and livestock (Cyzman et al., 2009; Kaufer et al., 2010; Chaifetz et al., 2015; Darrouzet-Nardi et al., 2016; George et al., 2016). One US-based study evaluated the implementation of a community food hub that aimed to increase access to local healthy food as well as healthy food distribution, education and consumption (Freedman et al., 2021). Another challenged participants to consume a diet grown or processed

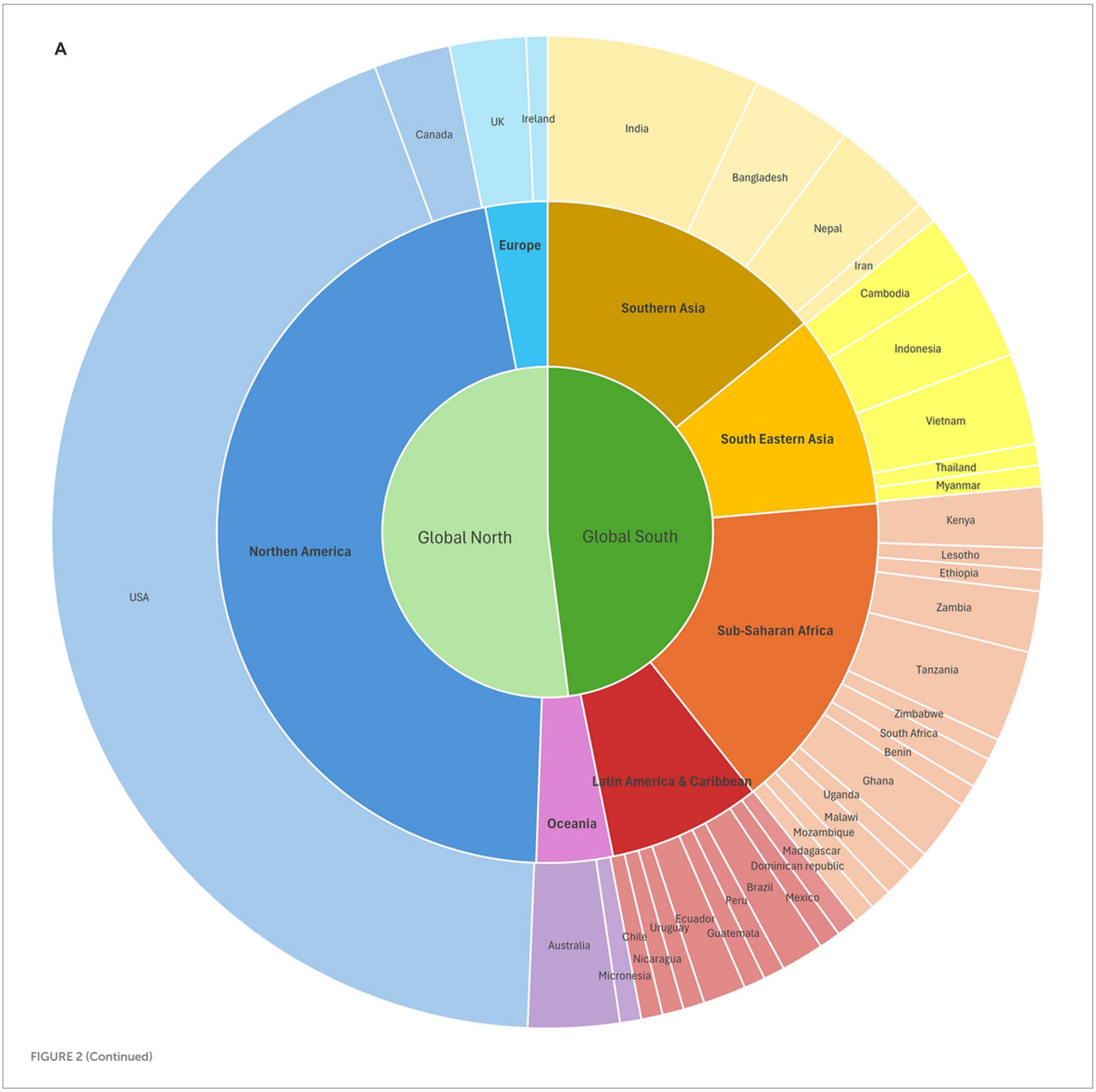

FIGURE 2 (Continued)

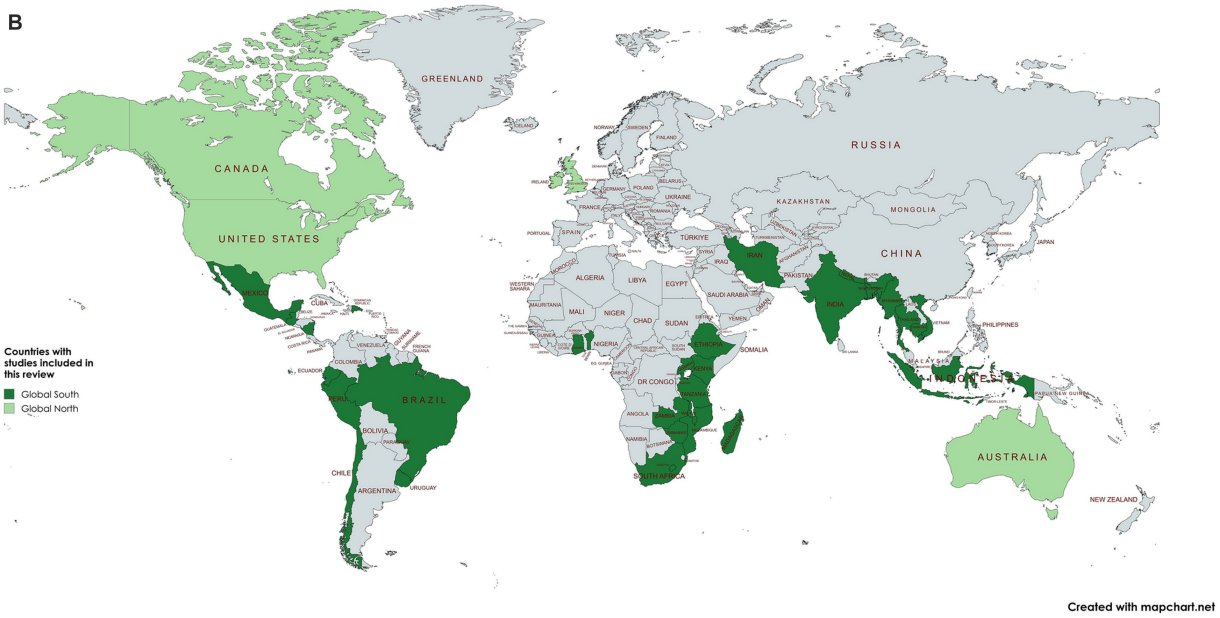

FIGURE 2
(A) Countries and regions chart. **(B)** Map of countries where studies were implemented.

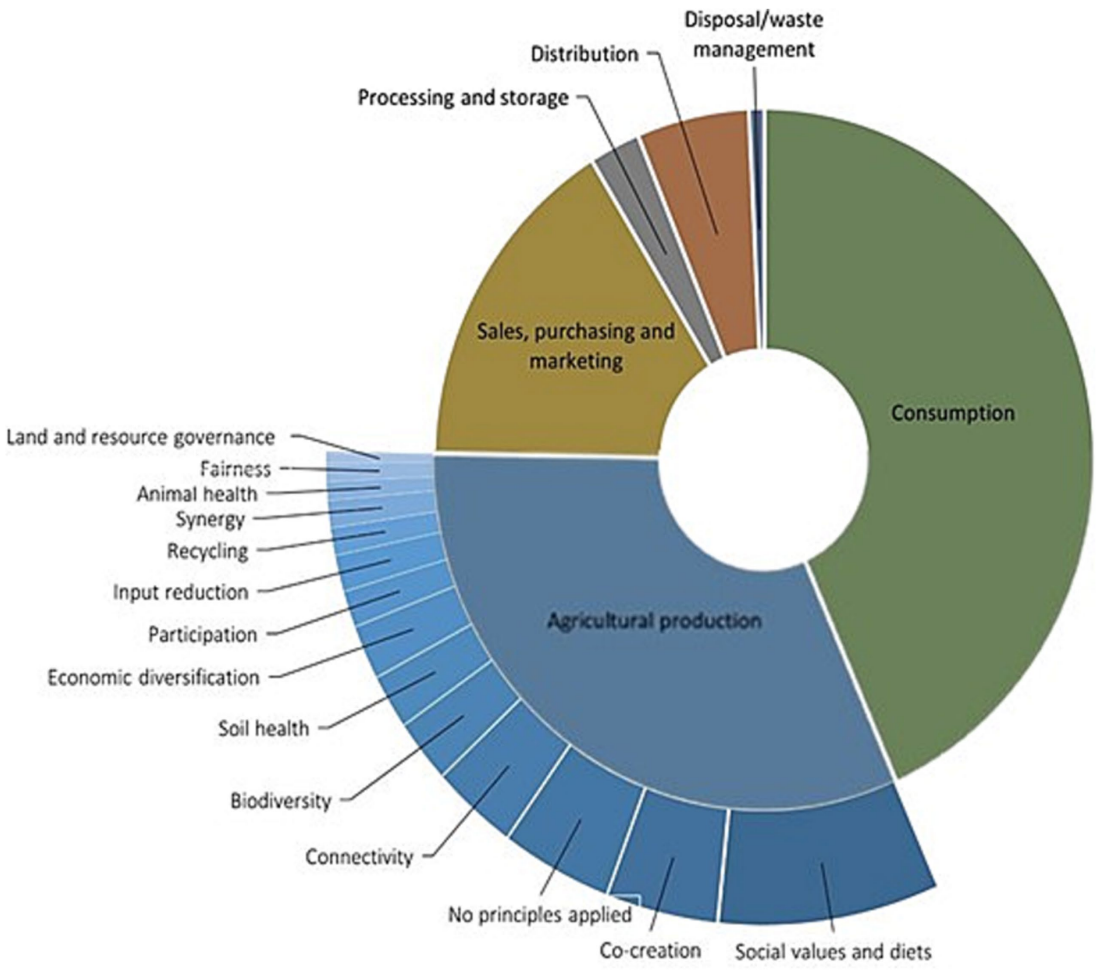

FIGURE 3
Food system stage and agroecological principles applied.

FIGURE 4
Evidence gap map to illustrate the type of interventions implemented to promote the consumption of locally produced foods and outcomes reported. Studies are segregated by location, Global South (green) and Global North (orange) as defined by G77 membership [link to interactive map].

BOX 1 Home garden interventions in the Global South

- All home garden interventions included in this review ($n = 33$) were conducted in the Global South. They were largely conducted in Southern Asia ($n = 14$), Sub-Saharan Africa ($n = 9$), followed by South-Eastern Asia ($n = 5$), Latin America and the Caribbean ($n = 5$).
- *Sampling*: Studies were mainly sampled at household level ($n = 27$) and ranged from 5 to 504 households receiving intervention. The largest of which was a cluster-randomized controlled trial amongst Tanzanian women in 504 intervention and 502 control households; the study reported a positive impact of home gardening on dietary diversity (Blakstad et al., 2021).
- Studies generally targeted households in rural communities at risk of food insecurity or malnutrition.
- Seventeen of the 33 studies specifically targeted women and/or children or households with children.
- *Interventions and outcomes*: Interventions largely focused on growing vegetables and/or fruit, but other items included livestock and eggs. For example, one study targeting mothers in selected communities in Ghana aimed to improve children's dietary diversity by increasing home production of nutrient-rich foods including the provision of poultry for eggs, and planting materials for sweet potato and dark green leafy vegetables (Marquis et al., 2018).
- Nine of the studies measured food procurement outcomes, mainly fruit or vegetables produced and proportion of household consumption from their own yield. Ten of the studies measured dietary diversity and six measured food security. Twenty studies measured dietary intake and ten of those included a specific measure of change in fruit and or vegetable consumption.
- *Food System:* As well as agricultural production, home garden interventions were classified under other stages of the food system; these were consumption ($n = 23$), sales purchasing and marketing ($n = 5$), distribution ($n = 2$), processing and storage ($n = 1$) and waste/disposal ($n = 1$). One study implemented interventions across four stages of the food system and developed a home garden model for year-round food production to improve food security and consumption amongst resource-poor households in Bangladesh (Ferdous et al., 2016).
- *Principles and practices of agroecology*: All 13 principles were applied across the subset of studies, the most common being 'Social values and diets' ($n = 17$), 'Co-creation and sharing of knowledge' ($n = 10$) and 'Soil health' ($n = 10$).

Nineteen (58%) of the home garden interventions did not report any evidence of agroecological practice. Of those that did, the practice of crop diversification ($n = 7$) and the use of organic animal manure to enhance soil fertility and replace inorganic fertilizers ($n = 6$) were most commonly applied.

within 100 miles from their home and provided education, resources and boxes of locally produced foods (Rose et al., 2008).

Sixteen studies provided fiscal incentives for food choice. All of these were conducted in Global North, 15 of which were conducted in the USA and one in Canada. They included fresh food vouchers for redemption at farmers markets ($n = 7$) (Bertmann et al., 2012; Dailey et al., 2015; Di Noia et al., 2017; Ferdinand et al., 2017; Durward et al., 2019; Atoloye et al., 2021; Heasley et al., 2021) or fresh produce on prescription (e.g., fruit or vegetables) ($n = 9$) (George et al., 2016; Bryce et al., 2017, 2021; Aiyer et al., 2019; Jones et al., 2020; Orsega-Smith et al., 2020; Lyonnais et al., 2022; Slagel et al., 2022; Joseph and Seguin, 2023), the majority of which could be redeemed at farmers markets.

Seven other studies, in the USA, held interventions in farmers markets and included, for example, education, taste testing and cooking demonstrations (Johnson et al., 2003; Cyzman et al., 2009; Evans A. E. et al., 2012; Cuy Castellanos et al., 2014; Ellsworth et al., 2015; Sadler, 2016; Saxe-Custack et al., 2021). Two of these also involved a school-based component, such as a mobile extension of the farmers market which visited schools to educate students on local, fresh produce, agriculture and sustainable farming (Cyzman et al., 2009; Ellsworth et al., 2015). One other study, based in the UK and Canada, used farmers markets to recruit participants to an app-based intervention, where participants received daily messages about healthy eating, recipes and information about local food vendors (Gilliland et al., 2015).

Three studies, conducted in the Global North, involved stores encouraging local healthy food purchases (Gittelsohn et al., 2010; Kolahdooz et al., 2014; Gudzune et al., 2015). One of these linked

local urban farms to neighborhood stores to increase access to fresh produce in low-income communities (Gudzune et al., 2015). One study implemented tax legislation in the Navajo Nation (USA), including a 2% tax on unhealthy food and 5% subsidy on healthy items; there was a specific focus on promoting locally grown, healthy, traditional and organic foods (George et al., 2016). One study involved a farm-to-workplace intervention, which encouraged employees to order local produce for consumption at work (Ross et al., 2000).

Outcomes measured

Various outcomes were measured by the studies, across the review's four domains: dietary [n = 129 (GN n = 66; GS n = 63)], food procurement [n = 36 (GN n = 21; GS n = 15)], economic [n = 39 (GN n = 16; GS n = 23)] and ecosystem [n = 7 (GN n = 2; GS n = 5)]. No study measured outcomes across all four domains, but some measured outcomes from a combination of three domains such as, diet, food procurement and economic outcomes (n = 9) (Low et al., 2007; Cuy Castellanos et al., 2014; Alaofè et al., 2016; George et al., 2016; Singh et al., 2016; Aiyer et al., 2019; Depenbusch et al., 2022; Metcalfe et al., 2022; Slagel et al., 2022) or diet, economic and ecosystem outcomes (n = 2) (Carney et al., 2012; Borgerson et al., 2021). The most common combination of any two outcome domains were dietary and economic (GS n = 16; GN n = 13) or dietary and food procurement (GS n = 12; GN n = 12). A mixed method community garden study in the USA, which promoted vegetable growing and applied various agroecological principles and practices, was one example of a study that measured impact on diet, economic and ecosystem outcomes, including vegetable intake (for children and adults) and knowledge of their nutritional benefits, food security and money saved, and knowledge of soil health (Carney et al., 2012).

The most measured dietary outcome was dietary intake (n = 99). Most studies focused on consumption of specific foods or food groups and 82% of those that measured dietary intake, measured the intake of fruit and/or vegetables (n = 80). Five studies reported on sugar-sweetened beverage intake (Kaufer et al., 2010; Kolahdooz et al., 2014; Spees et al., 2016; Davis et al., 2021; Seguin-Fowler et al., 2021) with a study conducted in Micronesia also reporting on change in local versus imported sweetened beverages including soft drinks (Kaufer et al., 2010). Fewer studies measured dietary intake at nutrient level (n = 20) (e.g., the intake of specific nutrients such as fiber or vitamin A). Thirty-one studies measured dietary diversity and the majority of these were conducted in the Global South (GS n = 28, 90%; GN n = 3, 10%).

There were only two studies that directly investigated the consumption of local versus non-local items (Rose et al., 2008; Kaufer et al., 2010). One multicomponent, community intervention, conducted in Pohnpei in Micronesia, applied a participatory, inter-agency approach to grow food locally, educate the community in food knowledge and skills through workshops and mass media and specifically measured the change in consumption of local versus imported food, assessing the contribution of local and imported foods to individuals' nutrient intake via two non-consecutive 24-h dietary recalls and a food frequency questionnaire. They also measured outcomes relating to the diversity of foods they produced (species diversity score) and consumed (Kaufer et al., 2010). The second study was conducted in Virginia, US, and challenged participants to consume a diet of only local foods (within 100-miles of their home); the study directly measured change in intake of local versus non-local food and included a distinction between locally grown or reared and locally processed foods via 7-day food records (Rose et al., 2008).

Diet-related knowledge, attitudes or skills were also measured (n = 43 studies; GN n = 29; GS n = 14) and these outcomes were largely focused on fruit and/or vegetables. Studies that measured knowledge-related outcomes (n = 38) included knowledge of where food items are produced (locally or imported) or when they are in season locally (Brennan et al., 2021), the ability to identify certain fruits or vegetables, as well knowledge about the food chain or food security (Murty et al., 2016), the nutritional composition of foods and awareness of local farmers markets or traditional foods (Sirisai, 2013). Studies that measured indicators of attitudes or food preference (n = 16) included willingness to try, likelihood of eating market produce or buying fresh produce from the market, attitudes toward buying local food and various likes and dislikes (Jaenke et al., 2012; Meinen et al., 2012; Grier et al., 2015; Greer et al., 2018; Taniguchi et al., 2022) and two studies measured cooking skills (n = 2) (Brennan et al., 2021; Saxe-Custack et al., 2021).

Markers of nutritional status were also measured (n = 37), including BMI or BMI Z-score (n = 19) other anthropometric measures such as waist circumference or percentage body fat (n = 5) or indicators of nutritional status in children such weight-for-height or length, height-for-age or weight-for-age z scores (n = 16; all of these were in Global South studies). Few studies reported biochemical measures such as HbA1c, lipid or glucose profiles, skin carotenoids, serum retinol or iron [n = 17 (GS n = 12; GN n = 5)].

Studies that measured food procurement (n = 35) used various indicators. In the Global South countries, the most commonly used indicator was home vegetable or fruit production/yield and the proportion of that own produce that is consumed, sold or distributed elsewhere (n = 10) (Low et al., 2007; Chayal et al., 2013; Sirisai, 2013; Ferdous et al., 2016; Singh et al., 2016; Soares et al., 2017; Ha et al., 2019; Ranawat, 2020; Baliki et al., 2022; Depenbusch et al., 2022). In the Global North, a large proportion measured the use or purchase frequency of locally produced foods (n = 9) (Ross et al., 2000; Evans A. E. et al., 2012; Chaifetz et al., 2015; George et al., 2016; Sadler, 2016; Di Noia et al., 2017; Freedman et al., 2021; Lanou et al., 2021; Slagel et al., 2022). Other indicators included household food sources (n = 1) (Bamji and Murthy, 2006), food procurement habits (n = 2) (Alaofè et al., 2016; Ferguson et al., 2019), the availability of local food at source (n = 4) (Cuy Castellanos et al., 2014; Gudzune et al., 2015; George et al., 2016; Gibson et al., 2022), as well as the contribution of locally produced food to local food supply (n = 1) (Chaifetz et al., 2015) or individual diet (n = 1) (Rose et al., 2008). The majority of food procurement outcomes were measured using quantitative surveys that were developed for the study (n = 20), or in-depth qualitative interviews (n = 6). Some of the Global North studies used sales data or receipts (n = 5) (Bertmann et al., 2012; Curtis et al., 2013; Di Noia et al., 2017; Ferdinand et al., 2017; Aiyer et al., 2019) or food records to calculate % kcal intake from locally produced food (n = 1) (Rose et al., 2008).

Food security was considered an economic outcome and was measured in 22 studies (n = 10, GS; n = 12, GN). These studies applied various tools to measure food security; the Household Food Insecurity Access Scale (n = 3) (Hanley et al., 2021; Madsen et al., 2021; Santoso et al., 2021), the Food Insecurity Experience Scale (n = 3) (Marquis

TABLE 1 Number of studies applying each principle of agroecology (see Supplementary material 4 for definitions).

Principle	Total studies (n;(%))	Global South (n;(%))	Global North (n;(%))
Recycling	9 (6)	8 (5)	1 (<1)
Input reduction	11 (7)	10 (7)	1 (<1)
Soil health	17 (12)	14 (10)	3 (2)
Animal health	5 (3)	4 (3)	1 (<1)
Biodiversity	20 (14)	13 (9)	7 (5)
Synergy	11 (7)	9 (8)	2 (1)
Economic diversification	20 (14)	12 (9)	8 (5)
Co-creation and sharing of knowledge	41 (28)	24 (16)	17 (11.5)
Social values and diets	82 (56)	38 (26)	44 (30)
Fairness	5 (3)	0	5 (3)
Connectivity	44 (30)	9 (8)	35 (24)
Land and natural resource governance	4 (3)	4 (3)	0
Participation	14 (10)	7 (5)	7 (5)

et al., 2018; Guzmán-Abril et al., 2022) including one example of a local adaptation (Derose et al., 2023), Food Consumption Score ($n = 1$) (Sileshi et al., 2022), USDA Food Security survey module ($n = 4$) (Durward et al., 2019; Jones et al., 2020; Slagel et al., 2022; Tumwebaze et al., 2023), Canadian Community Health Survey Food Security module ($n = 1$) (Heasley et al., 2021), qualitative interviews ($n = 2$) (Madsen et al., 2021; Zivkovic et al., 2022), focus groups ($n = 1$) (Dailey et al., 2015), and non-standard questionnaires developed for the study ($n = 6$). Other economic outcomes were income from food produced ($n = 12$) or quantity of yield sold ($n = 3$) (Low et al., 2007; Gelli, 2021; Depenbusch et al., 2022), use of income generated from produce sales ($n = 2$) (Ianotti et al., 2009; Alaofè et al., 2016), food expenditure ($n = 7$) (Carney et al., 2012; George et al., 2016; Jodlowski et al., 2016; Aiyer et al., 2019; Blakstad et al., 2021; Depenbusch et al., 2022; Zivkovic et al., 2022), food resource management ($n = 3$) (Orsega-Smith et al., 2020; Metcalfe et al., 2022; Slagel et al., 2022), and food pricing or affordability ($n = 2$) (Cuy Castellanos et al., 2014; George et al., 2016).

Seven studies measured outcomes that were considered 'ecosystem-related' (GS $n = 5$; GN $n = 2$). These were largely biodiversity-related outcomes in the Global South studies, for example, farm diversity in India ($n = 1$) (Pradhan et al., 2021), crop diversity or species count in Guatemala, South Africa, and Malawi ($n = 3$) (Madsen et al., 2021; Guzmán-Abril et al., 2022; Mkhize et al., 2022), and the production of host plants for nutrient-rich insects in Madagascar ($n = 1$) (Borgerson et al., 2021), but also included assessment of soil fertility ($n = 1$) (Mkhize et al., 2022), the use of fertilizer and the extent of application of agroecological practices ($n = 1$) (Madsen et al., 2021). Three studies that were conducted in the USA measured agricultural knowledge which was considered an ecosystem-related impact ($n = 2$) (Carney et al., 2012; Ellsworth et al., 2015; Grier et al., 2015).

Principles and practices of agroecology

There were 109 studies (74%) that applied one or more principles of agroecology to their intervention (GS $n = 51$; 74% of all GS studies; GN $n = 58$; 75% of all GN studies). As illustrated in Table 1, the most commonly applied principles were 'Social values and diets' ($n = 82$; 56% of all studies), 'Connectivity' ($n = 44$; 30%) and 'Co-creation and sharing of knowledge' ($n = 41$; 28%).

The studies that applied the 'Connectivity' principle showed a distinction in location; with nine of these conducted in the Global South (21%) and 35 in Global North (79%). These largely aimed to connect local farmers or producers with consumers to promote local food consumption. Connections were made through community schemes such as community supported agriculture ($n = 4$) (Cohen et al., 2012; Curtis et al., 2013; Quandt et al., 2013; Seguin-Fowler et al., 2021), farm-to-school ($n = 11$) (Cyzman et al., 2009; Evans A. et al., 2012; Jones et al., 2012, 2015; Ellsworth et al., 2015; Scherr et al., 2017; Soares et al., 2017; Chiero et al., 2018; Borelli, 2021; Gelli, 2021; Taniguchi et al., 2022), farm-to-store ($n = 2$) (Gudzune et al., 2015; Gibson et al., 2022) or farm-to-workplace interventions ($n = 1$) (Ross et al., 2000) or by providing resources to help consumers locate locally produced food ($n = 2$) (Rose et al., 2008; Gilliland et al., 2015). Seven 'connectivity' studies involved voucher schemes that linked consumers with local farmers markets through financial incentives to shop there; all of these were conducted in the US (Bertmann et al., 2012; Dailey et al., 2015; Bryce et al., 2017; Di Noia et al., 2017; Ferdinand et al., 2017; Durward et al., 2019; Atoloye et al., 2021; Heasley et al., 2021). One study in rural Zambia, connected the community by establishing a locally owned and managed egg production strategy to promote sustainable production and community-wide distribution (Dumas et al., 2018). None of these 'connectivity' studies measured ecosystem-related outcomes; $n = 36$ measured dietary outcomes, $n = 16$ measured food procurement outcomes (e.g., attitudes to local food or availability at source), and $n = 11$ measured economic outcomes (e.g., food security or sales).

Those that applied 'Input reduction' ($n = 11$) and 'Soil health' ($n = 17$) were mainly in Global South countries (91 and 82% respectively). Two studies applied seven principles of agroecology; the highest number applied to any of the included studies. One of these linked farms and growers to food pantries in Illinois (USA), applying principles of biodiversity, synergy, economic diversification, fairness, connectivity, social values and diets, and co-creation and sharing of knowledge (Gibson et al., 2022). The second implemented climate-smart agricultural interventions to improve food security and dietary

diversity in Myanmar, applying principles of recycling, input reduction, soil health, biodiversity, synergy, economic diversification and social values and diets (Hanley et al., 2021).

Agroecological practices were applied in 26 studies (18%; GS $n = 21$; GN $n = 5$) and related mainly to the practical application of principles of biodiversity, soil health and input reduction (Table 2 and Supplementary material 4). Of the studies that applied the 'biodiversity' principle, the most commonly applied practice was crop diversification ($n = 8$). For studies that applied the principle of 'soil health', the most commonly applied practices were measures to improve soil organic matter and water holding capacity, e.g., green cover, cover crops ($n = 6$), or specifically the use of organic animal manure to enhance soil fertility ($n = 8$). For those that applied 'input reduction' the most common practices were also the use of organic animal manure to replace inorganic fertilizers ($n = 7$) and the reduction or elimination of inorganic fertilizers ($n = 3$) or synthetic pesticides ($n = 2$).

Discussion

The aim of this review was to map existing studies that examine interventions to promote the consumption of locally produced food. We aimed to report the location and type of interventions implemented, the application of agroecological principles and practices to interventions and the outcomes reported across four domains of diet, food procurement, economic and ecosystem. We disaggregated the results by location to increase the context-relevance of the findings. This classification highlighted interesting differences in the type of interventions implemented and the outcomes measured across countries in the Global North and Global South.

A key overall finding was that, despite all included interventions aiming to promote the consumption of locally produced food, only two studies directly investigated the consumption of local versus non-local foods using outcome measures that allowed intake of each to be disaggregated (Rose et al., 2008; Kaufer et al., 2010). One study assessed the contribution of local and imported foods to individuals' nutrient intake via 24-h dietary recalls and a food frequency questionnaire (Kaufer et al., 2010), and the other measured change in intake of local (within 100 miles of home) versus non-local food via 7-day food records (Rose et al., 2008). Only one study measured household food source (Bamji and Murthy, 2006), which could be considered an indicator of consumption of foods produced locally. This finding indicates that despite an increasing policy focus on the production and consumption of local food for both planetary and human health, there is limited experimental research assessing the shift and impact of greater consumption of locally produced foods to overall dietary patterns. At the same time, there is currently no universal indicator to standardize the collection of food source data. Such data and frameworks to classify food sources have been applied in cross-sectional study designs to explore the association between food source and dietary outcomes and suggest an association between some practices, such as exchanging, borrowing or bartering food and higher dietary diversity (Haynes et al., 2022). Given the increasing policy focus on the production and consumption of local food, the application of such a framework to standardize food source data, globally, could strengthen experimental research that aims to investigate the impact of changing food source practice on diet and health, and provide essential evidence given the controversy around whether localizing the food system is the best transformative approach for planetary health (Wood et al., 2023).

The most reported type of outcomes measured were dietary outcomes, and similar to other reviews that focus on local food systems (Enthoven and Van Den Broeck, 2021), most studies focused on the production and/or consumption of fruit and vegetables over any other food group. Our findings align with previous research that demonstrates considerable breadth in dietary outcomes used to evaluate the interventions, including, for example, variability in indicators of fruit and vegetable consumption and tools and scales used to assess dietary diversity, which would make it difficult to pool the findings from these studies to assess effectiveness of the interventions (Verger et al., 2019). Examining the distribution of studies across countries in the Global South and Global North, a key finding was the difference in outcomes applied between the two regions. There was a much greater use of dietary diversity metrics in the Global South (27 studies) than Global North studies (2 studies). At household level, dietary diversity is used as a proxy for household access to food, a pillar of food security, and the greater focus on improving food security in the Global South studies might account for its wider application. However, the measure can also be used as an indicator of dietary quality and micronutrient adequacy of the diet for some population subgroups (FAO, 2021), and indicates consumption across food groups rather than fruit and vegetables only, which was a common focus of the Global North evaluations. Where the priority of diversifying production of nutrient-rich foods is represented across global nutrition initiatives and food-based dietary guidelines (Reyes et al., 2021), this indicator is particularly useful. Yet this review highlights an important gap in using dietary diversity to evaluate local food interventions in the Global North and indicates potential for future use, as seen in the Global South studies, given the important role that crop diversification can play in promoting food security, societal wellbeing, biodiversity, agricultural productivity and resilience (Bravo-Peña and Yoder, 2024; Zuza et al., 2024).

The EGM clearly indicates a gap in the application of ecosystem related outcomes to evaluations of local food interventions. One mechanism through which local food interventions can contribute to healthier diets is through the application of smaller-scale production that may be beneficial to human health over large scale, intensive methods which use chemical inputs and reduce the nutrient density of soils and produce (Hickey and Unwin, 2020). It is widely recognized that these agroecological approaches have a positive impact on ecosystem related outcomes, such as biodiversity, soil health and water quality (Bezner Kerr et al., 2023). However, in this review, we found very few local food intervention studies that included measures of ecosystem impacts in their evaluations, even amongst those that report the application of agroecological farming practices. A large proportion of the studies applied agroecological principles to their intervention, and therefore there is opportunity to better assess the potentially positive impact that these types of interventions, such as community garden and school growing initiatives, have on ecosystems, even at small scale. This broad scoping review indicates that there is scope to conduct a targeted systematic review of specific intervention type, such as community growing interventions, on specific ecosystem related outcomes, such as biodiversity to contribute to the evidence around the important role that small scale, agroecological approaches might

play in food system transformation (IPES-Food, 2024; HLPE, 2017; IPES Food, 2016).

A further important finding was that all home growing interventions included in this review were conducted in the Global South, largely in Southern Asia (India and Bangladesh), and Africa (Tanzania, Uganda). There are various social, economic and cultural differences between the Global South and Global North that may contribute to this finding, including that most Global South countries are low- and middle-income countries and addressing access to food through home growing may be more feasible than addressing income to purchase a healthy diet. The focus of research on home growing in the Global South may be driven by recognition of the disproportionate impact of the globalized food system and climate change on Global South populations, and the priority, therefore, of identifying protective approaches that promote resilience (HLPE, 2017; Ickowitz et al., 2019). Further, the lack of home growing studies in the Global North, may also be attributed to the history of food procurement by Global North countries such as the UK, which historically decommissioned the horticultural sector and prioritized the import of food grown elsewhere, largely in Global South British colonies, over own production (Lang, 2021). We found that a large proportion (64%) of these home growing studies applied agroecological practices in their intervention and generally, agroecological practices were applied in more Global South studies ($n = 21$) than in Global North studies ($n = 5$). This may reflect the cultural heritage, continuing knowledge and use of traditional, indigenous farming methods and techniques in the Global South compared to the Global North (Marrero and Mattei, 2022) or a necessity to restore soil health for food production in depleted areas and suggests (at least in the studies included in this review), relatively advanced agroecological food production in the Global South compared to the Global North. Various cross-sector policies, including those specific to Small Island Developing States, emphasize the importance of shortening food value chains, promoting traditional foods and cultural heritage, and producing food in ways that are resilient to climate-related natural disasters, which can be addressed through household food production, particularly agroecological approaches (IPES Food, 2016; FAO, 2017).

As countries in the Global North increasingly face the impact of climate change and globalization, inflation and increasing cost of food, and with lessons from the COVID19 pandemic which emphasized the fragility of the global food supply, the learnings from home growing interventions in the Global South may become more relevant to Global North-based research around preparedness and food security for future crises (Lal, 2020; Furceri et al., 2016). Evidence from cross sectional research in the UK indicates that households that grow their own food have higher consumption of fruit and vegetables and less food waste (Gulyas and Edmondson, 2024), and the benefits of urban agriculture on food security have been indicated globally (Mead et al., 2024). However, the evidence gaps identified by this review support gaps identified by other studies (Mead et al., 2024) and call for experimental designs that employ standardized and validated tools in their evaluations of home growing interventions, to strengthen the evidence base, particularly in the regions in the Global North, such Europe, which were underrepresented in the findings of this review.

One principle of agroecology that appeared more commonly in interventions in the Global North, compared to the Global South, was connectivity, where a higher proportion of studies evaluated the impact of connecting producers and consumers. These studies largely connected consumers with farmers by providing vouchers to incentivize the use of farmers markets; in most cases with the aim of improving access to fresh fruit and vegetables to promote dietary quality and food security in low-income, food insecure households. One type of 'connectivity' intervention, which applied a holistic agroecological approach, was Community Supported Agriculture (CSA) and all examples of CSA interventions that were included in this review were implemented in Global North countries. They demonstrate how CSA can contribute, not only to strengthening producer-consumer relationships and the distribution of locally produced food, but to various principles of agroecology across its core domains of resource efficacy, resilience and social equity (Wezel et al., 2020); the latter promoting food well-being across all levels of income and including those that are commonly financially excluded (Verfuerth et al., 2023). Such approaches may promote environmental sustainability as well as healthier diets (Mills et al., 2021) and thus these types of interventions that promote connections, shorten food value chains and encourage resilient close-to-home 'territorial' markets are increasingly promoted as one approach to reducing the environmental impact of the food system and the vulnerability of the system to shocks (IPES-Food, 2024). There is an emergence of initiatives and organizations working to promote direct connections between producers and consumers, including efforts to improve the efficiency of distributing food produced locally for the benefit of the producer and consumer (IPES-FOOD, 2023; IPES-Food, 2024). These initiatives include community owned and managed farms [such as Herenboeren (2023) in Europe], local food hubs, food cooperatives and local channels to transport and distribute food between producer and consumer, as well as efforts to connect growers with public sector services such as schools. In our review, the studies that implemented these types of interventions did not measure their impact on the ecosystem, such as emissions or carbon footprint, biodiversity or soil health, and there is scope for these studies to consider impacts on food waste, given its relevance to ecosystem health, but also dietary and economic outcomes. This highlights an important gap in evidence which could strengthen support and funding for these local food interventions.

The findings indicate that there is the potential for comprehensive evaluations of these local food interventions in order to provide evidence across multiple domains, including dietary, economic and ecosystem outcomes, and that are assessed with standard, validated tools. This transdisciplinary approach would widen the scope and policy relevance of the evidence toward supporting efforts to meet a broad range of global targets, such as the UN SDGs 2 (Zero Hunger), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action) and SDG 15 (Life on Land) (United Nations, 2023). Funding these types of transdisciplinary evaluations is one way in which governments can support important collaboration between the fields of agricultural and health sciences and contribute to the development of standard tools for evaluation to provide robust evidence on their effectiveness (IPES-Food, 2024; IPES Food, 2016). These efforts have the potential to support the development of local food systems and the adoption of agroecological practices.

Finally, our review maps differences in the availability and type of evidence across countries and geographical regions, including the socio-political regions defined as Global North and Global South. In doing so, this review has highlighted that the distribution of these types of studies differs markedly by countries and regions, both in number and in the types of interventions assessed. We found no published studies from most countries in Europe, Asia, Africa and Oceania (Figure 2B). The reasons for this gap in published evidence requires further investigation. The finding may be attributable to inequity in research funding across regions (Rakotonarivo and Andriamihaja, 2023) to conduct and publish the types of evaluations that were eligible for this review, or aforementioned historical and colonial ties between countries and institutions relating to food supply and security. Further investigation into the types of research that have been conducted in these underrepresented regions, may help to identify barriers and levers for the promotion and evaluation of local food interventions.

Strengths and limitations

To our knowledge, this review is the most comprehensive review of its kind, focusing on the interventions tested to promote local food systems and encompassing a global perspective and broad range of interventions and outcomes to identify key gaps in evidence.

Similar to other research in this domain (Enthoven and Van Den Broeck, 2021), this review was based on concepts which could be interpreted differently between individuals. The lack of a universal definition of 'local' food may introduce variability in the primary researcher's definition of local food supply and the terms they use to report their research, as well as the reviewer's interpretation of the concept. The concept is not always explicitly outlined in study outputs and therefore complex eligibility criteria, including definitions of proxies for local food, were necessary to standardize screening between reviewers. Despite this effort, there may be inconsistency in the selection of interventions which could impact the generalisability of findings. Further, despite efforts to use comprehensive search strategies, it's possible that some relevant studies were missed due to variations in terminology or reporting practices and the language restriction. This limitation could affect the completeness of the evidence synthesis and potentially bias the conclusions drawn from the review.

We developed guidance for classifying the studies by their application of agroecological principles and practices. This included thorough descriptions and practical examples to support reviewers to make objective decisions. However, variability in the interpretation of these guidelines, attributed in part to varying knowledge and experience between reviewers in the subject of agroecology, and a lack of comprehensive reporting of their application in the study reports, particularly in studies that were not focused on agroecology, may lead to inconsistencies and impact the findings.

We chose a distinction in interventions from the Global South and Global North. This categorization can be problematic and despite a resurgence of this relatively long existing terminology, it has been critically discussed. With our own interest in SIDS, we found this distinction a helpful framework to allow for the inclusion of countries that are formally classified as high income to be part of a grouping of countries that is considered vulnerable to global dynamics. The standard classification of countries as least developed, low and middle income, used by the OECD to assess eligibility for development assistance (OECD, 2024), fails to adequately account for the development and climate challenges that SIDS face. We acknowledge the recent development of the Multidimensional Structural Vulnerability Index (MSVI), which aims to better capture these vulnerabilities, and when fully reviewed and approved by SIDS governments, may be a better way to group studies in future reviews (Massa et al., 2023).

Finally, we included only experimental or quasi-experimental study designs, which we considered the most appropriate to understand the type of intervention and outcomes implemented in this domain and to clearly highlight the research gaps. However, we acknowledge that these research gaps may not translate directly to gaps in existing practices or strategies that are being conducted outside of targeted interventions that are formally evaluated by research teams and may be equally important in promoting the consumption of locally produced food. We acknowledge the value of these existing practices, particularly those championing traditional and cultural foods and techniques, and the potential bias of this review's focus on those that have been evaluated with a minimum of baseline and follow up measures. With this limitation in mind, we emphasize the value of collaborative approaches that combine existing practices with the more rigorous approaches to evaluation, such as the approach taken by the NIHR Global CFaH Research Group, to ensure that the outcomes of these local strategies are included in evidence syntheses to support ongoing work. Governments can play a key role in supporting these types of collaborations, to develop local food systems and the adoption of agroecological practices, by investing in small-scale, local initiatives and research partnerships (IPES-Food, 2024).

Conclusion

Localizing food systems and applying agroecological principles is one suggested approach for a more resilient, sustainable system that promotes planetary health. This review maps the experimental research that is being conducted in this domain globally and identifies key differences in interventions applied in Global South and Global North countries, as well as gaps in the evidence.

The review highlights the absence of a standard definition of local food, and a framework for assessing the impact of changing food source practices. It highlights a paucity of local food interventions that assess impact on ecosystem-related outcomes. It highlights the possible advancement in application of agroecological principles and practices in Global South studies, compared to Global North and emphasizes the potential learnings between the two in terms of approaches and indicators for evaluating impact. This includes the potential for interventions that have a broader focus across food groups, above and beyond fruit and vegetables, and for applying tools to evaluate dietary diversity in the Global North, as seen in the Global South. Finally, we acknowledge the potential role of local strategies that are not a part of more rigorous evaluation research and were not reviewed here but may be important for effecting change on the ground. This emphasizes the importance of collaborative approaches that are able to both foreground local practices and apply, as far as possible, scientific rigor to their evaluation.

As a result of the review process, we call for greater coherence in the development, evaluation and reporting of local food interventions to enable syntheses on their effectiveness. Greater homogeneity in outcomes

measured across studies, including food source, diet, economic and ecosystem outcomes, might strengthen the evidence and increase support for interventions and policies that promote local food approaches for planetary health.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

EH: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing. CB: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. CHa: Visualization, Data curation, Writing – original draft, Writing – review & editing. LA: Data curation, Writing – original draft, Writing – review & editing. CC: Data curation, Writing – original draft, Writing – review & editing. LC: Data curation, Writing – original draft, Writing – review & editing. LG: Data curation, Writing – original draft, Writing – review & editing. AG: Data curation, Writing – original draft, Writing – review & editing. CG: Data curation, Writing – original draft, Writing – review & editing. CHo: Data curation, Writing – original draft, Writing – review & editing. VI: Writing – original draft, Writing – review & editing. AK: Data curation, Writing – original draft, Writing – review & editing. JM: Data curation, Writing – original draft, Writing – review & editing. KMa: Data curation, Writing – original draft, Writing – review & editing. KMo: Data curation, Writing – original draft, Writing – review & editing. MM: Writing – review & editing, Conceptualization, Data curation, Writing – original draft. KP: Data curation, Writing – original draft, Writing – review & editing. NS: Data curation, Writing – original draft, Writing – review & editing. FV: Data curation, Writing – original draft, Writing – review & editing. NU: Conceptualization, Data curation, Writing – original draft, Writing – review & editing.

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Conflict of interest

JG were employed by SuppCo. KB were employed by Everest Clinical Research.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

Correction note

This article has been corrected with minor changes. These changes do not impact the scientific content of the article.

Publisher's note

Author disclaimer

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fsufs.2025.1544092/full#supplementary-material

SUPPLEMENTARY FILE 1
Main study characteristics of included studies.

SUPPLEMENTARY FILE 2
Evidence gap map – interactive version.

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