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Long-Term Impacts of Home Gardening on Dietary Diversity and Household Food Security in Low-Income Countries: A Systematic Review

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Abstract

Background: Food security is a critical global issue, worsened by climate change, economic instability, and unequal resource distribution, particularly in low- and middle-income countries (LMICs). Dietary diversity is a key indicator of food security, directly affecting nutritional quality and health. Home gardening has been identified as a potential strategy to improve dietary diversity and food security by providing nutrient-rich foods and reducing reliance on external food sources. This systematic review aims to assess the long-term impacts of home gardening on dietary diversity and food security, particularly in LMICs.

Methodology: The review utilized a systematic search strategy across PubMed, Google Scholar, and Web of Science, using keywords related to home gardening, dietary diversity, and food security. Inclusion criteria focused on studies examining the long-term impacts of home gardening in LMICs, with outcomes measured over at least one year. Data extraction involved collecting details on study design, population characteristics, location, intervention specifics, and outcomes. The synthesis was conducted narratively, identifying patterns and trends, and included a critical appraisal of the evidence.

Discussion: The review found that home gardening significantly improves dietary diversity and food security in LMICs. Studies indicated that home gardening promotes the consumption of nutrient-rich foods, reduces dependency on fluctuating food markets, and enhances resilience to economic and environmental shocks. Key factors influencing the sustainability of these benefits include socioeconomic status, climate conditions, and education. However, the review also identified gaps in long-term research and methodological limitations, such as the lack of diverse study populations and consideration of external contextual factors.

Conclusion: Home gardening is a viable strategy for improving dietary diversity and food security in LMICs. However, the long-term sustainability of these benefits depends on supportive policies, education, and resources. Future research should address the identified methodological limitations to better estimate the long-term effects of home gardening.

Keywords: Home gardening; Dietary diversity; Food security; Low- and middle-income countries (LMICs); Long-term impacts.
Abbreviations: LMICs: Low- and Middle-Income Countries; HHFS: Household Food Security; FGD: Focus Group Discussion.

Introduction

Food security remains a global concern as the world population increases, and this makes it a crucial problem to be addressed. In 2020, about 690 million people experienced famine, and this issue has worsened due to several factors such as climate change, economic fluctuations, and unequal access to resources [1]. These factors disrupt the food systems that ultimately affects a person's access to healthy foods and therefore increases the chances of malnutrition especially in Low- and Middle-Income Countries (LMICs). Dietary diversity is one of the key measures that define the degree of food security since proper nutrition is needed to provide the body with the necessary vitamins and minerals [2]. The concept of dietary diversity refers to the range of foods that are taken and has a direct relation with nutritional quality and health status [3]. However, a significant portion of the world's population, especially those from LMICs, suffer from low dietary diversity due to the limited availability of a wide variety of foods. This is worsened by the consequences of socioeconomic factors as highlighted by [4]. Home gardening has been discussed as one of the possible intervention strategies for enhancing the production and consumption of healthy foods, especially in the context of restricted access to resources. Such decentralized farming techniques are small-scale and are often near homesteads; hence many households cultivate diverse crops including fruits, vegetables, and herbs [5]. The presence of a home garden as a source of food reduces the dependency on outside sources of food and enhances the nutrient density of the food items that are produced, which improves the dietary diversity and nutritional status of the people [6]. Furthermore, home gardening contributes to food security because it reduces susceptibility to threats like fluctuations in food prices, and disruptions in the food supply chain common in low-income settings [7]. This practice is more helpful in areas with restricted market access and where the production of various crops in home gardens can help directly in combating nutritional deficiencies [8].

To better evaluate the long-term feasibility of home gardening as a strategy for enhancing food security and dietary patterns, more consideration should be given to the tangible impacts of these developments. Though some of the home garden gains are quantitative and can be easily illustrated through higher portions of vegetables consumed, and immersed improvements in food security standards, it is crucial to determine the long-term viability of these benefits [9]. Long-term studies can fill the knowledge gap and can help to understand whether home gardening activities result in consistent changes in diet and food security or if these improvements are only temporary after the termination of the initiatives. As such, there is a need to identify and understand these dynamics in order to implement and apply interventions that are temporary and long-term oriented [7]. Despite the widely agreed-upon importance of home gardening, it is striking that a knowledge gap persists regarding the sustained effects of the practice. Most of the current literature has a rather narrow scope and conforms to methodologies that investigate short-term impacts, for example, on the intake of vegetables or the transient changes in food security. Yet, there is little research on whether these improvements are sustainable, and the extent to which they enhance the capacity of households to cope with food insecurity du [10]. Thus, a systematic review is needed to conduct a synthesis of existing knowledge, reveal voids, and deliver a detailed view of the long-term advantages and issues of home gardening [11]. It will be very useful for policymakers, practitioners, and researchers to understand the possibility of home gardening as a sustainable solution for food security and dietary diversity [5]. Specifically, the aim of this review is to gain insight on the impact, in terms of improved dietary diversity and household food security, of home gardening in the long-term and the key factors that define these impacts.

Methodology

Search Strategy

Table 1: Keywords.

Home gardening	Dietary diversity	Food security
home gardening	dietary diversity	food security
kitchen gardens	nutritional diversity	household food security
urban gardening	food variety	food access
subsistence farming	dietary patterns	food availability
backyard gardens	micronutrient intake	nutrition security

The electronic databases that were searched for this review include PubMed, Google Scholar, and Web of Science (WoS). These databases were searched for keywords relevant to the review topic. Table 1 provides the list of the keywords applied in the databases. The first approach involved synthesizing three sets of keywords to cover all the relevant aspects of the research topic. The first set of terms with reference to home gardening, include "home gardening", "kitchen gardens", "urban gardening", "subsistence farming", and "backyard gardens". These terms accurately depict different aspects of home gardening and its capacity in increasing the production of food at household levels. The second set consists of terms defining the theme of dietary diversity and they include "dietary diversity", "nutritional diversity", "food variety", "dietary patterns", "micronutrient intake". These search terms are paramount to searching for articles that consider the connection between home gardening and the variety of foods available to households. The third set consists of terms regarding food security are "food security", "household food security", "food access", "food availability" and "food stability". These keywords are crucial in searching for articles that highlight the effect of home gardening on the level of food security in the households and community.

The keywords, which were used to build up the search string, were connected with the help of Boolean operators (AND, OR) in order to create a complex search request used for database searching. Table 2 shows how the keywords were combined.

Table 2: Search string.

Combination of Keywords
("home gardening" OR "kitchen gardens" OR "urban gardening" OR "subsistence farming" OR "backyard gardens") AND ("dietary diversity" OR "nutritional diversity" OR "food variety" OR "dietary patterns" OR "micronutrient intake") AND ("food security" OR "household food security" OR "food access" OR "food availability" OR "nutrition security")

Selection criteria

Table 3 presents the eligibility criteria for documents included in this review according to the Population - Exposure - Outcome - Study Design (PEOS) framework. Articles were included that (i) focused on the long-term impacts of home gardening on dietary diversity and food security, particularly in low- and

middle-income countries, (ii) involved households or individuals engaged in home gardening with outcomes measured over at least one year, and (iii) covered aspects such as dietary diversity, nutritional status, and food security including availability, access, utilization, and stability. Studies focusing on commercial agriculture, non-participating populations, or research examining only short-term impacts, or where home gardening was a minor component of broader interventions, were excluded. Non-peer-reviewed articles, studies published in languages other than English, and research from high-income countries were also excluded.

Data extraction and synthesis

Data extraction involved systematically collecting information from each included study using a standardized form, capturing details such as study design, population characteristics, location, intervention specifics, and outcomes related to dietary diversity and food security. The synthesis was conducted using a narrative approach, summarizing findings across studies and grouping them based on similarities to identify patterns and trends. The synthesis also included a critical appraisal of the evidence, highlighting gaps and areas for future research.

Results

Documents included

Figure 1 presents the flowchart of the articles included. The preliminary search yielded 453 documents from literature databases. Following the removal of duplicates, the remaining 240 documents were subjected to title and abstract screening. Of these, 71 documents were assessed for eligibility, and 10 articles were obtained that optimally met the inclusion criteria. Documents were excluded on the following grounds: (1) a lack of focus on home gardening, (2) an absence of examination of long-term impacts, and (3) a failure to focus on low-income countries. No further documents were included based on the examination of the reference lists of the included documents. The majority of the documents included were published between 2016 and 2023. The majority of the included studies employed a cross-sectional survey design.

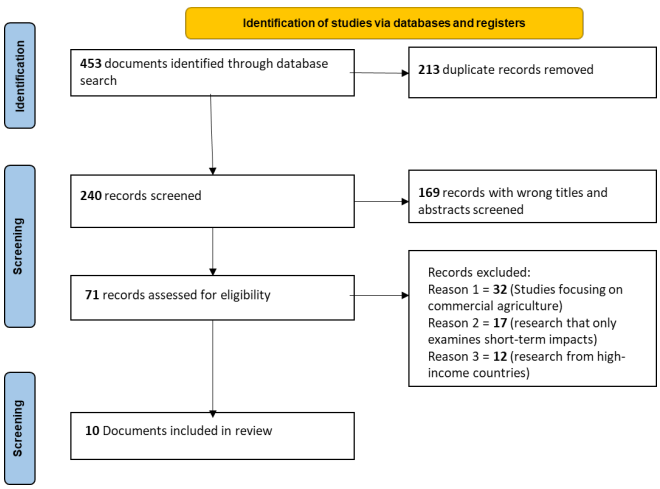

Figure 1: PRISMA Flow Diagram.

Impact on dietary diversity

Studies (Table 4) have indicated that home gardening enhances the changes in dietary diversity in the long run, especially in LMICs where the availability of diverse foods varies. Home gardening directly impacts dietary diversification since it enables households to cultivate different crops to produce nutrient-rich foods for consumption. [12] noted that among South African households involved in home gardening, their dietary diversity was significantly higher than that of non-gardening households. It was highlighted that gardening households were more likely to consume vegetables and other nutrient-dense foods which are often lacking in low-income settings. Not only did such change improve the meals but also freed the diet from a hike in market produce since this may change at any point in time. In the same context, [6] established in a study conducted in Tanzania that women in the proximity of the households that engaged in home gardening had better diet quality irrespective of whether they engaged in home gardening or not. This discovery suggests that home gardening will have a 'ripple effect' within communities by promoting healthy eating among other households that do not practice gardening. In line with these findings, the study established that the likelihood of consuming foods from at least five food groups per day was higher amongst households that participated in home gardening. Similar to this, another study conducted in Myanmar also revealed that there had been a better diet quality and an increased intake of fruits and vegetables in households because of practicing home gardening. From the study which employed Focus Group Discussions (FGDs) [7], it was noted that the households possessing home gardens were relatively well fed and enjoyed good nutrient sufficiency during food insecurity periods than the other counterparts. This has encouraged the call to sustain home gardening as a worthy intervention in promoting dietary quality within resource-constrained environments [7]. Found [8] out that by practicing well-organized home gardens, intra-household micronutrient availability and dietary diversity among rural consumers were enhanced in Sri Lanka. As pointed out in the study, such gardens helped to avail different foods at all seasons and mostly foods that are regarded as vitamin-rich and green leafy. These gardens were well organized with consistent agricultural support and close supervision that strengthened their efficacy in increasing dietary diversity.

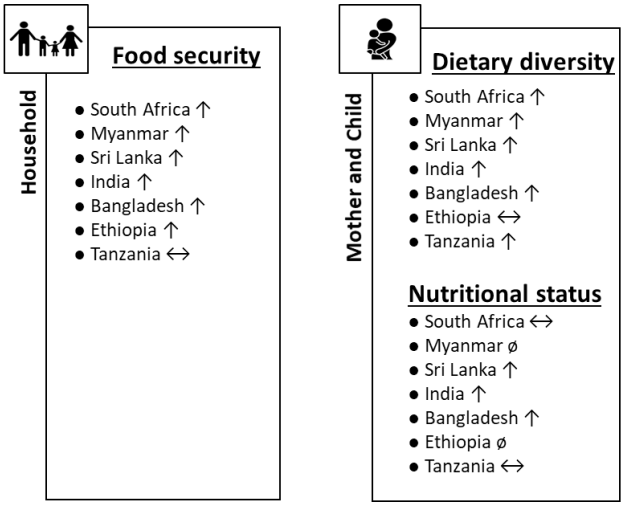

Figure 2: Direction of impacts of home gardening projects on nutrition outcomes among households, mothers, and young children. **Note:** ↑ improvement; ↔ no change; ø no data available.

Impact on household food security

Home gardening is significantly associated with Household Food Security (HHFS) since home gardens provide food more than from outside sources especially in LMICs where access to food is a challenge. In this regard, home gardening decreases reliance on external markets, moderates market volatility and

increases food security components of food stability. In Myanmar, [7] noted that households with home gardens were less likely to be food insecure than those without home gardens. One of the important findings of the study was that the home gardens gave the households a secure source of some food all through the years as they were able to continue producing food even during periods when there were economic or environmental shocks [7]. In South Africa, [13] have noted that increased food production through home gardens under nutrition-sensitive production programmes had a positive impact on household food security. The study concluded that families involved in home gardening had better nutrition status as they were offered a wide range of food groups including fruits and vegetables that are scarce among the food insecure families. The continuous production of these foods enabled the households to improve the dietary diversity, that in turn helped the households to minimize the risks of food emergency [13]. This was illustrated by another study carried out in Bangladesh by [9] showing that home gardening both at the compound and the household levels offered positive and sustainable solutions to the risk of household food insecurity. Households even after years of the intervention sustained improved vegetable production and better food security within three years of the intervention. This was due to the integration of home gardening with nutrition education, which not only helped in increasing food access but also boosted the overall food security of a household. In Ethiopia, [14] examined the difference in food insecurity between home garden and non-home garden households in a cross-sectional study. The study highlighted that home gardening reduced food insecurity citing that in areas where either prices of food or markets were unstable or unavailable home gardening offer a safety net.

Factors affecting long-term impacts

Factors relating to socioeconomic status, climate and education are key determinants of the effectiveness of home gardening in enhancing dietary diversity and household food security in the long run. These factors can either increase or decrease the possibility of reaping more benefits from home gardening depending on the practices being embraced and other related activities in the community.

Socioeconomic factors: This research identifies that household income as a variable is an important predictor of the potential benefits of home gardening. Those individuals with higher income levels, better access to resources and strong social networks are in a better position to sustain and even increase their home gardening activities. For example, [12] have demonstrated that the level of literacy of the household members and the economic status of the household influences their ability to continue home gardening and, consequently, improve dietary diversity and food security. On the other hand, the economically deprived families may lack capital to purchase necessary production factors like seeds, tools, and water hence reduced garden yields and output [12].

Climate: Other factors related to the climate with regard to the local environment can play a major role in the sustainability of home gardens. Natural factors which include rainfall intervals, temperatures and natural disasters influence the production of crops and the kinds of plants that can be cultivated. In Tanzania, home gardening was observed to be difficult to sustain because of unpredictable weather patterns, as observed in many parts of the world where there is drought. Some climates experience such weather causing the need for the adoption of sustainable agricultural practices like using crops that can withstand drought or appropriate water management methods to support home gardening [6].

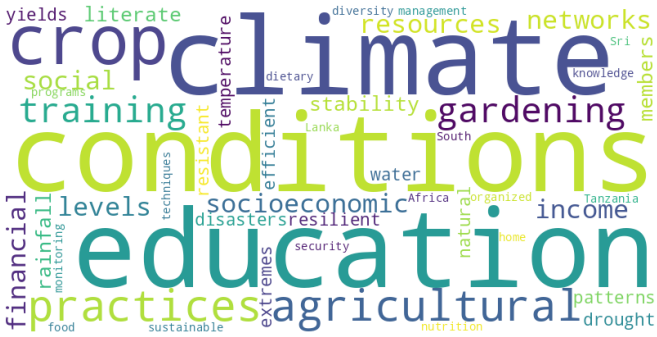

Figure 3: Word cloud representing the factors affecting the long-term impacts of home gardening on dietary diversity and household food security.

Note: The size of the words reflects the frequency of barriers reported in documents

Table 3: Eligibility criteria for included documents according to the Population–Exposure–Outcome–Study (PEOS) design framework.

Framework	Inclusion criteria	Exclusion criteria	Rationale
Population	Households or individuals engaged in home gardening in low- and middle-income countries.	Research involving commercial agriculture, non-participating populations, or studies from high-income countries.	Home gardening is often critical for food security in low- and middle-income countries, where vulnerable populations rely on it for subsistence (FAO, 2010) [29].
Exposure	Studies where the primary focus is on home gardening with outcomes measured over at least one year, including dietary diversity, nutritional adequacy, and food security.	Studies where home gardening is a minor component of broader interventions or research that only examines short-term impacts.	Home gardening interventions need sufficient time to demonstrate their impacts on key outcomes, particularly in resource-limited settings (Galhena, Freed, & Maredia, 2013) [5].
Outcome	Studies reporting outcomes related to food security, availability, access, utilization, stability, and dietary diversity over at least one year.	Outcomes unrelated to food security, dietary diversity, or where outcomes are only measured over a short period.	Focusing on these outcomes ensures that the study assesses critical aspects of food security and nutrition, which are primary goals of home gardening (Weinberger, 2017) [30].
Study design	Peer-reviewed studies, reports, university theses, and other academic documents reporting primary research in English.	Non-peer-reviewed articles, studies published in languages other than English, and documents not reporting primary research.	Emphasizing peer-reviewed and academic research ensures the inclusion of credible and high-quality evidence, necessary for drawing reliable conclusions (Higgins & Green, 2011) [31].

Table 4: Summary of included studies.

Author(s) & year	Study objectives	Study design	Sample size	Study location	Intervention specifics & duration	Outcomes	Limitations
Jacobs, B., Aliber, M., & Oyelana, A. (2016) [12]	To investigate the contribution of home gardening to household food security and dietary diversity	Cross-sectional study	50 households	South Africa	Home gardening practices compared between gardening and non-gardening households; duration not specified	Higher dietary diversity in gardening households compared to non-gardening households	Small sample size; duration of the intervention not specified
Blakstad, M., Bellows, A., Mosha, D., et al. (2019) [6]	To assess the impact of a neighbor's home gardening on dietary diversity among rural Tanzanian women	Cross-sectional risk factor analysis	3,289 women	Rural Tanzania	Influence of neighbor home gardening on dietary diversity; duration not specified	Positive correlation between neighbor gardening and higher dietary diversity among women	Limited to women in rural areas; no control for other dietary influences
Rammohan, A., Pritchard, B., & Dibley, M. (2019) [7]	To examine the role of home gardens in improving dietary diversity and food security in rural Myanmar	Household survey	3,230 households	Myanmar	Home garden ownership and its impact on food security and dietary diversity; duration not specified	Significant improvement in food security and dietary diversity in households with home gardens	Cross-sectional design limits causality inference; lacks detailed analysis of the sustainability of impacts
Thamilini, J., Wekumbura, C., Mohotti, A., et al. (2019) [8]	To assess the contribution of organized home gardens to micronutrient intake and dietary diversity in rural Sri Lankan households	Case study	120 households	Rural Sri Lanka	Organized home gardens with agricultural inputs and regular monitoring; duration not specified	Increased dietary diversity and micronutrient intake in households with organized home gardens	Small subsample for detailed analysis; intervention duration not clear
Krithika, S., Karthikeyan, C., Balasubramaniam, P., et al. (2023) [32]	To analyze the scope of kitchen gardens in achieving dietary diversity and food security in rural households	Exploratory study	270 households	Rural Tamil Nadu, india	Promotion of kitchen gardens in rural households; duration not specified	Kitchen gardens improved food security and dietary diversity, especially among poor households	Exploratory nature limits generalizability; results based on a single time-point
Hendriks, S., Viljoen, A., Marais, D., et al. (2020) [13]	To evaluate the impact of nutrition-sensitive production programs, including home gardening, on dietary diversity in rural South Africa	Mixed-methods study	558 households	South Africa	Home gardening within broader nutrition-sensitive programs; duration not specified	Home gardening led to increased consumption of diverse food groups and improved dietary diversity	Cross-sectional design limits causal inferences; variation in program implementation across sites
Baliki, G., Brück, T., Schreinemachers, P., & Uddin, M. (2019) [9]	To assess the long-term behavioral impact of an integrated home garden intervention on food security and dietary diversity	Longitudinal study	619 households	Rural Bangladesh	Integrated home gardening intervention combined with nutrition education; duration: 3 years	Sustained improvement in vegetable production, dietary diversity, and micronutrient supply	Potential recall bias; possible confounding factors not fully controlled
Motbainor, A., Arega, Z., & Tirfie, M. (2022) [14]	To compare food insecurity levels between households with and without home gardening in Ethiopia	Community-based study	505 households	Zege, Amhara region, Ethiopia	Comparison between households practicing home gardening and those without; duration not specified	Households with home gardens experienced lower levels of food insecurity	Cross-sectional design; potential self-reporting bias
Vijayaraghavan, K., Nayak, M., Bamji, M., et al. (2018) [33]	To evaluate the effectiveness of home gardening in combating vitamin A deficiency in rural India	Experimental study	200 households	Rural India	Home gardening focusing on vitamin A-rich vegetables; duration not specified	Home gardening effectively increased the intake of vitamin A and improved overall dietary diversity	Small sample size; short follow-up period limits long-term conclusions
Liny, S., Barrion, A., Juanico, C., et al. (2021) [34]	To compare dietary diversity and nutritional status of children in households with and without home gardens in Cambodia	Cross-sectional study	85 households	Siem Reap Province, Cambodia	Comparison of dietary diversity and nutritional status between children in households with and without gardens; duration not specified	Higher dietary diversity observed in children from households with home gardens	Small sample size; limited control for confounding variables

Education and knowledge: Ideally, for one to achieve the best results in gardening, there is the need to have sufficient knowledge in gardening practices, feeding and other aspects like sustainability. Families who are informed and educated on appropriate gardening practices, crop choices, and nutrition are more likely to have sustained changes in dietary quality and food security. Compared [8] the changes in dietary diversity and micronutrient intake among the households that were involved in the organized home gardening programmes with frequent training and follow-up and concluded that the households in the programme recorded a significant improvement in the two measures. This re-emphasises the need to provide follow-up education and training, to maintain the improvements in health from home gardening programmes in the future.

Discussion

Results and comparison with short-term effects

The objective of this study was to assess home gardening for improved dietary diversity and food security with respect to the extent and quality of the effects over time and others factors influencing these effects. As demonstrated by this review, home gardening is highly valuable in enhancing food self-sufficiency and improving nutritional quality in LMICs. This supports the opinion of [5] on the importance of home gardens in improving food security since they usually offer a better variety of foods to households. Another study carried out in Bangladesh, also depicted that home gardening is beneficial in increasing dietary diversity and reducing food insecurity status [15]. In comparison with the study conducted in Hawaii by [16], it is evident that the benefits of home gardening are not only on the immediate availability and consumption of food but on the overall nutritional status of households in the long run. The study emphasized how long-term gardening improved self-sufficiency and more frequent consumption of vegetables and fruits, similar to the long-term effects that were discussed in the papers included in this review [16]. Such comparisons indicate that improvement in dietary diversity and food security through home gardening is not only short-term but can be long-term if supported and equipped adequately. In addition, the observations from this review are also in agreement with the work of [17,18] regarding the contribution of urban agriculture in improving food security in Africa. In their study, it was identified that home gardens, which are part of urban agriculture, helped to enhance food security most especially in areas where fresh produce was hard to come by. This review has also helped to highlight home gardening as one of the most important activities in a situation of food insecurity, both in rural and urban areas, which underlines a rather universal role of this practice [17,18]. In comparing the short-term and long-term effects of home gardening, one can conclude that there is no doubt that both are beneficial, however, the long-term effects are more effective and long-standing. This agrees with the observation made by [19] who undertook a study on home gardening practices in developing nations. While a statistically significant increase in household gardening and dietary diversity was observed in the first six months of gardening, the most positive changes in food security and resilience in the long term were identified in those households that actively engaged in gardening for more than one year [19]. Similar to these findings, observed an improvement in food security and resilience to economic shocks where home gardening activities in Malawi persisted in the long term.

Furthermore, it is established from this study that home gardening can aid nutrition education and increase awareness toward healthy foods, which fosters long-term modification in consumers' behaviour. This is in line with [20] who pointed out that home gardening projects entail knowledge acquisition activities targeting changes in food values and healthy cooking to enable participants to make informed decisions on foods to grow for improved health status in future. Furthermore, a study pointed out that home gardening interventions, which are often linked to nutritional awareness programs, could make a significant contribution toward bringing about changes in dietary practices and consumption patterns, which are more permanent since the beneficiaries become better informed of how they can get the best from the produce [21]. The positive impacts of home gardening mentioned in this study include the community-wide effects which can also be confirmed by [22] who proved that home gardening makes a positive impact on the people of the households as well as the whole population of the society such as increased food security and access to more diverse diets. Similarly, [23] in their study discovered that in Burkina Faso, community gardening increased the general food security and nutritional benefits across an entire village. These studies collectively reinforce the need for home gardening as an approach that can help individual households and the surrounding community at large.

Policy implications

From the systematic review, several policy implications arise and need to be considered when designing and implementing sound home gardening interventions. For home gardening to positively impact dietary diversity and household food security, policymakers must ensure the creation of adequate cultivating environments to support home gardening in the developing world, especially LMIC countries. Among these recommendations include the call for governments to incorporate home gardening into policy on food security. According to the research conducted by [24], the kind of policies that offer assistance to the households in form of expert advises, finances and knowledge plays a major role in boosting the impacts and feasibility of home gardening activities. Also, urban and rural development policies should encourage home gardening as it would enhance the supply of fresh and healthy food to the communities. The policymakers should identify the patterns for expanding home gardening programs from pilot scale to other households. This indicates that home gardening can be combined with other agricultural and public health efforts as various research works including those by [25] have pointed out. When home gardening is integrated with agricultural extension services and health promotion initiatives, the different structures developed can be utilized to facilitate increased expansion and coverage of home gardening programs [25]. In addition, the scaling up of the efforts should involve developing capacity building activities that enable the impacted communities to increase their capacity in the enhancement of the production of gardens so that the task can be continued even after the intervention of the interest groups has ended.

However, more policies are required that target the challenges communities experience in accessing home gardening inputs. As noted by [26], equal land, water, and input access for all socioeconomic classes with a special focus on women and low-income households is vital as such groups are the primary target beneficiaries in home gardening. Policymakers should ensure that such groups are in a position to engage in home gardening by offering subsidies on seeds and tools, access to

water sources and land rights tenure. Another important factor is the adoption of home gardening into the academic sector learning sphere and as a community social activity. From the perspective of [27], a shift in cultural behaviour through appreciating gardening proficiency, and embracing nutritional practices through home gardening education among children and adults, could be beneficial for persuading more households to engage in the activity. Governments should offer and encourage school-based gardening projects as well as community-based forums that teach ways, shapes and forms of preserving food security and diversification. Home gardening interventions should have provisions for impact assessment that can be carried out frequently. Following this point, [28] highlighted that sound monitoring and evaluation can play a significant role in determining what practices work well and where policy changes can be made to ensure that effective strategies are incorporated. This way, governments can make proper evidence-based decisions on scaling up home gardening programs, by investing in data collection and analysis.

Limitations of the study

Despite the significant results, there are some limitations associated with this systematic review. The limitations include the exclusion of high-income countries, short follow-up duration for some of the studies, and heterogeneity of the methods used in the included studies that may impact the results. Furthermore, the study fails to examine policy support and cultural practices from an external environment, may have publication bias due to the restriction of using only English peer-reviewed articles and does not compare the result with the non-participating population, which hinders in exploring barriers for home gardening. Such restrictions indicate a necessity to conduct more extensive research to better estimate the long-term effects of home gardening.

Conclusion

This systematic review highlights the importance of home gardening in improving the choice of diet and the food security status in low- and middle-income countries (LMICs). Based on the evidence presented in this paper, home gardening is not only a viable means of improving diet quality by supplying readily accessible nutrient-dense foods but also enhances food security because it frees individuals and communities from reliance on external markets during economic and environmental vulnerability. However, the review also acknowledges the impacts of socioeconomic factors, climate conditions, and education on the sustainability of these benefits. Positive impacts of home gardening are apparent but long-term positive changes need to be supported through policy measures, awareness creation, and provision of essential commodities. For home gardening interventions to be optimally effective, it would be necessary for future studies to mitigate the methodological limitations observed in this review, such as limited follow-up time, heterogeneous sample populations, and limited consideration of contextual factors influencing home gardening metrics.

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