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RESEARCH ARTICLE

A SOUTH AFRICAN PERSPECTIVE ON HOME GARDENS: PROMOTING SUSTAINABILITY AND RESILIENCE POST COVID-19

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ABSTRACT

Home gardens are recognised globally and can address the challenges of food insecurity and malnutrition. However, climate change, infertile soil, reduction in freshwater supply and increasing demand for food, coupled with crisis pandemics, put further strain on food systems and society. The authors focused on a desktop review to understand the principles of home gardens and consolidate the suggestions provided in the literature to determine possible strategies for resilience and continuation of home gardens post-COVID-19 to ensure sustainability within rural households and communities within South Africa. Besides enhancing the food supply within each household, home gardens can improve family health, women empowerment, and possible individual economic benefits by selling excess food, which, in the bigger scope, contributes to the self-efficiency and sustainability of households and communities. The global pandemic has reinforced the strain on the societal issues within South Africa, namely unemployment, food supply and hunger. Recommendations from the literature reveal practical approaches towards educational material to better transfer skills amongst generations, provide better-quality seeds and promote the growth of nutrient-dense foods, such as indigenous foods.

KEYWORDS

hunger, climate change, insecurity, food supply, garden

1. INTRODUCTION

Famine, food insecurity, malnutrition, and poverty are challenges still faced in 2023, globally and in South Africa (Galhena et al., 2013). Coupled with drastic reduction in freshwater supply, infertile soil, climate change, overpopulation and the global pandemic COVID-19, severe strain is placed on local economies, governments, and domestic food systems (Hickey and Unwin, 2020). The global population is expected to reach a staggering 8.3 billion people by the year 2030, which will require a sustainable supply of food production (Food and Agriculture Organization, 2002). More than 700 million people, or 10 percent of the world's population, still live in extreme poverty today, struggling to fulfil the most basic needs like health, education, and access to water and sanitation, amongst others. About 79 percent of the world's poor live in rural areas. Worldwide, the poverty rate in rural areas is 17.2 percent, more than three times higher than in urban areas (UN, 2021).

It is reported that this would be the first-time poverty has increased globally in 30 years, since 1990 (Sumner et al., 2020). Current estimates show that nearly 690 million people are hungry, or 8.9 percent of the world population – up by 10 million people in one year and by nearly 60 million in five years (UN, 2019). With challenging trends persisting, the number of people affected by hunger will surpass 840 million by 2030. According to the World Food Programme, 135 million people suffer from acute hunger mainly due to man-made conflicts, climate change, economic downturns, and the impact of the COVID-19 pandemic, which placed an additional 130 million people at risk of suffering acute hunger at the end of 2020 (World Food Programme, 2020; UN, 2019). As many as 828 million people were affected by hunger in 2021 and 2.3 billion people in the world (29.3%) were moderately or severely food insecure in 2021 – 350 million more than before the outbreak of the COVID-19 pandemic (World Health Organization, 2022). The government's lockdown measures may have contributed to hunger through the curfews imposed, which affected the time available to access the markets, especially for those not having some form of produce around the dwelling (Paganini et al., 2020). Even small produce farmers could not supply the market with food during the lockdown.

Poverty is an underlying cause of food insecurity in South Africa and the problem can be addressed if there is a better supply and access to food (Misselhorn and Hendriks, 2017). Other factors, which have been identified amongst five other studies to negatively impact food security include the level of poverty and lack of available income, dependence on social grants, illness and health with the lowest factors being choice of energy-rich, cheaper foods and poor ecological surroundings for food (Misselhorn and Hendriks, 2017). With food demand and supply interrupted during pandemics, vulnerable families face more severe nutritional deficiencies, and it becomes essential to seek sustainable approaches. Ultimately, the focus must be placed on ensuring access to safe and nutritious foods among poor community members (Headey and Ruel, 2020; MacLaren, 2020).

The four pillars of food security, namely availability, access, stability, and utilisation are being stretched by climate and non-climate stressors (Human, 2022). Strategies must focus on multisectoral nutrition coalitions, which will provide dietary quality to the most vulnerable, ensuring nutritious and safe food, but also a constant supply of food (Headey and Ruel, 2020). For community members to have access to markets does not necessarily imply a solution to food security but having a vegetable garden can translate into the offering of food, which is cheaper

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and in some instances the cost factor makes the choices more appealing for the consumer (Misselhorn and Hendriks, 2017). Multiple strategies are required to address malnutrition and poverty around the globe. A feasible approach, one of many, is home gardening, which has been shown to provide resources to households and communities for many decades (Hendriks et al., 2020). Home gardens are associated with food availability for the immediate household and community and may ultimately assist in alleviating hunger and reduce food insecurity and malnutrition (Ngcaba and Maroyi, 2021).

The objectives of this review were to understand the concept of home gardens and review the literature, see what recommendations can be made, its applicability after COVID-19 and what, if any, additional recommendations must be considered to ensure sustainability and resilience during serious events and pandemics. The research questions, which guide this review, are: what can be learnt from the literature regarding home gardens especially during and after the COVID-19 pandemic and what recommendations can be made to suit the South African context?

2. Materials and Methods

A qualitative approach was utilised and the design for information collection was based on a digital location of articles through a desk study, or an analysis of secondary data. A search on publications related to home gardens was conducted on the internet through a public domain Google Scholar. The keywords 'home gardens' and 'COVID-19' were used and articles were selected. Analysis of documents with topics relating to home gardens in rural areas and communities to promote sustainability and resilience, post COVID-19 was done. Although there is extensive literature reflecting the benefits and impact of home gardens, the search was generalised to articles, which highlighted the issues of food insecurity and the impact of the global pandemic on society.

The inclusion criteria were articles with the emphasis on home gardens, whilst reports focusing on purely agricultural aspects and climate change were removed. Furthermore, only articles written in English were used, which resulted in 36 articles selected for analysis. Of the documents consulted, it was identified that the literature focused on the benefits at individual, household, and community level. The majority of the articles selected had discussions pertaining to the challenges experienced with the sustainability of the home gardens. Thematic data analysis was used, and the information presented in a literature review format and consideration will be made regarding how these approaches can be further enhanced within the South African context, which is the aim of this desktop review.

3. Results

3.1 Definition of home gardens

This form of agriculture dates back to ancient times and is defined as a farming system, or the growing of fruit and vegetables in both rural and urban areas, specifically around the home or near a place of residence, usually associated with privately owned land and is a supplemental food supply, rather than a primary source, produced for home consumption (Food and Agriculture Organization (FAO), 2021; Nicholls et al., 2020; Galhena et al., 2013; Landon-Lane, 2011; Galhena et al., 2013; Niñez, 1987). The home garden may take up various sizes, depending on land availability, needs and resources, but has the distinctive characteristic of the supply of edible plants (Landon-Lane, 2011). Cropping patterns are usually found to be irregular and rows are limited to the space available. Furthermore, simple hand tools are used, with some skills limited to cultural passing down or the educational material supplied during program handouts (Laurie et al., 2017; Maponya et al., 2021).

3.2 Aims and benefits of home gardens

Home gardens meet the criteria of being implementable and easy to maintain, provided the correct tools and resources are available (Galhena et al., 2013; Landon-Lane, 2011). The FAO also reports how the objectives of home gardens are not only to reduce poverty, but create diverse income and rural employment, improve the status of women and ultimately children and relieve pressure on wild food resources (Landon-Lane, 2011). Home gardens can provide an alternative, accessible fresh food supply to the family or household ultimately promoting dietary diversity and food security (Mohsin et al., 2017; Ngcaba and Maroyi, 2021). This type of food supply can also be regarded as inexpensive as it does not require additional packing and transportation. It coincides with the farm-to-fork approach, whereby food items are harvested and consumed within the household (Hickey and Unwin, 2020). The benefits of home gardens are summarised in Table 1 and represent not only the benefits at the individual and household level but also at the community level. Home gardens have proven to provide health-related benefits to individuals and communities, creating chances for easier access to food, although sometimes seasonal, but still offering nutrients and assisting in improving diversity in the diet (Ngcaba and Maroyi, 2021; Nzama and Ntini, 2022).

Home gardens provide an opportunity to interact directly with nature and there is the prospect of maintaining primary physical activity at home, encouraging outside activity and social interaction with the neighbours and community (Hume et al., 2022). Exposure to nature leads to a better quality of life and provides health, wellbeing, and psychological benefits (Cox and Gaston, 2016; Dean et al., 2018; White et al., 2019). Home gardens are being used to provide medicinal plants, especially when combined with indigenous foods (Hume et al., 2022; Ngcaba and Maroyi, 2021). Vegetable consumption usually increases amongst members of a household or community where home gardening is present and a diverse garden was found to be vital in meeting year-round nutritional needs and is also essential for soil fertility, pest management and income generation (Gerny et al., 2021).

Table 1: Summary of the benefits of home gardens

No.	Description of benefit
	INDIVIDUAL AND HOUSEHOLD LEVEL
1	As part of a school, home gardens provide more fruit and vegetable intake among children (Laurie et al., 2017; Mohsin et al., 2017)
2	Small-scale gardens in schools provide health and nutritional benefits to individuals and children (Hannah, 2020)
3	Enhancement of the food supply around a dwelling leads to a reduction in hunger and an additional source of food (Ngcaba and Maroi, 2021; Laurie et al., 2017; Mohsin et al., 2017)
4	Improved intake of fruit and vegetables contributes to a fresh supply of nutrients (FAO, 2021; Hendriks et al., 2020)
5	The supply of fruits and vegetables aids towards variety within the daily diet (Bahta and Owusu-Sekyeer, 2018; Bahta et al., 2018)
6	Creates an opportunity for the empowerment of women, especially in women-headed households (Bahta and Owusu-Sekyeer, 2018; Bahta et al., 2018)
7	Income generation for excess fruits and vegetables and more sustainability of household income; More money available for other items needed within the household (Bahta and Owusu-Sekyeer, 2018; Bahta et al., 2018; FAO, 2021; Ngcaba and Maroyi, 2021)
8	Provides for healthy activity or movement outdoors (Mohsin et al., 2017)
	COMMUNITY LEVEL
9	Communities are strengthened through supportive initiatives (Landon-Lane, 2011); Excess foods are shared with neighbours and families, thereby strengthening emotional relationships (Mohsin et al., 2017)
10	Sharing of knowledge and experience amongst community members (Landon-Lane, 2011; Mohsin et al., 2017)
11	Excess and discarded produce allows for waste disposal areas or compost (Hannah, 2020)
12	Recycling wasted food provides more nutrients and nourishment for the soil (Rajagopal et al., 2021)

3.3 Challenges faced with home gardens

Although the benefits outweigh the constraints or challenges faced with any program, it must be mentioned or reported on so that strategic action can be taken to learn from past events, behaviours, and outcomes. Challenges reported include lack of labour and input, community cooperation and hasty withdrawals from the projects. This is fueled by a lack of skills, land, and neglected leadership. Table 2 depicts the challenges faced with the success of home gardens and it appears that water supply is one of the most crucial factors or challenges to a home garden's success. In South Africa, 72 percent of impoverished people live in rural areas and are impacted by water availability (Carstens et al., 2021). Water is a source of life; without it, living organisms and plants would be unable to survive. Water scarcity is a reality and measures must be taken to reduce any unwanted or unnecessary waste (Chernick, 2016).

The availability of dams and rivers contributes to higher participation in home gardens and where no irrigation systems are available, hunger is usually evident (Hendriks et al., 2020). This emphasises the challenge of water and how the supply can impact any project and the sustainability thereof. Other reported challenges were poor-quality seeds, water, storage, and few available resources, which negatively impact the continuation and success of any home gardens (Rahman et al., 2008). During the COVID-19 pandemic, many individuals, households, and communities were challenged by the disease, which impacted health and activity levels (Center for Disease Control and Prevention (CDC), 2021). This may have influenced the amount of effort made in the garden. Although women are more vulnerable to malnutrition, the impact of COVID-19 on employment may also have changed the household's roles, ultimately impacting the level of participation and activity in home gardens (Depenbusch et al., 2021). Other challenges include access to land, adequate training and monitoring, money, and lack of technical support (Gerny et al., 2021).

Previous studies also found that many community members (up to 60 percent of South Africans) are dependent on state funds and grants, and this is evident across all areas of South Africa (Carstens et al., 2021; Ngcaba and Maroyi, 2021). Food shortages are influenced by the financial situation of the individual and household and the lack of money also impacts how and what foods are purchased (Ngcaba and Maroyi, 2021). It is also noted how many youths are moving to the city to seek employment and better opportunities (Nzama and Ntini, 2022). This leaves the elderly in rural communities to attend to home gardens, which is impacted by their activity levels, which may deteriorate with old age and possible malnutrition.

Table 2: Summary of challenges experienced with the sustainability of home gardens

No.	Description of challenges
1	Inadequate water supply, poor irrigation and water services and drought (Nzama and Ntini, 2022) A fresh supply of water with sustainability usually occurs in regions with high rainfall, dams and rivers (Hendriks et al., 2020)
2	When part of a school feeding program, there is a lack of technical support for stakeholders, insufficient funds to sustain the program and not enough tools, infrastructure and garden workers (Mohsin et al., 2017)
3	Quality of seeds impacts sustainability, coupled with a shortage of irrigation water and input costs (Rahman et al., 2008)
4	Lack of support from policymakers and the level of communication between policymakers is low (Nzama and Ntini, 2022)
4	Vandalism and damage from pests (Nzama and Ntini, 2022); insufficient knowledge on storage and preservation and inappropriate storage facilities (Rahman et al., 2008)
5	Lack of motivation due to low participation, loss in the family and crime, as well as understanding and support from the community and other family members; level of participation influences sustainability (Cerda, et al., 2022; Nzama and Ntini, 2022; Landon-Lane, 2011)
6	Lack of knowledge of how to harvest and care for the garden (Nzama and Ntini, 2022); knowledge is usually based on indigenous foods only (Nzama and Ntini, 2022); poor quality products associated with improper watering, infertile soil and lack of knowledge of sowing (Mohsin et al., 2017)
7	With unemployment levels being high and many members in the household, home gardens do assist but are usually not sufficient (Ngcaba and Maroyi, 2021)
8	Home gardening sustainability is further challenged by insufficient sunlight, lack of sufficient space and lack of resources (Cerda et al., 2022)

3.4 Recommendations from current and active home garden projects

Besides the global pandemic placing strain on society and families, climate change, caused by air, water and land pollution, amongst other things, is emphasising a need to develop home gardens that are more adaptable to climate changes, and also to suit the household needs and preferences. Diversity in seeds can contribute to nutrient-dense home gardens and a wider variety of fruits and vegetables, which hold soil and capture rainwater (Bhullar, 2020; Jindal and Dhaliwal, 2017; Landoon-Lane, 2011). This will lessen the burden financially, as these items are usually more expensive than staples, and less water is wasted (Bhattacharjee et al., 2006). Providing good quality seeds and hands-on training coupled with nutrition education will result in positive changes and an increase in the year-round supply of food occurred, with a higher intake of vegetables, as found (Depenbusch et al., 2021). The development of new seeds will also allow for off-season crops of high nutrient-dense quality (Bhattacharjee et al., 2006). However, this must be done in collaboration with communities, as further research is also required into understanding the food preferences among communities members (Bhattacharjee et al., 2006; Landon-Lane, 2011).

Emphasis must also be placed on educating communities to recycle water and develop compost heaps, giving information about grey water and how to recycle the water, catching of rainwater, promoting the growing of vegetables and fruits in any suitable containers around the dwelling and recycling of waste materials, such as skins, egg shells, coffee grounds and even tea as a means to promote nutrients within the soil (Sofo and Sofo, 2020). Food wastage needs to be minimised and if communities can be provided with information about the process of recycling and composting heaps, an opportunity exists to enrich the soil, ultimately providing better quality produce (Jindal and Dhaliwal, 2017). Previous studies found that where gardeners were able to adopt key strategies (mulching, composting and crop diversity), better quality produce was evident (Gerny et al., 2021).

Training and education are crucial, as the level of understanding and knowledge may impact the sustainability of home gardens (Hickey and Unwin, 2020). The UN encourages education and awareness about the benefits of home gardens to all, especially children, parents and caregivers, as a response to the socioeconomic impact of COVID-19 (UN 2019). Furthermore, free provision of literature through radio and mobile device apps, demonstrations and education is further recommended (Bhullar, 2020; UN, 2020). The use of technology can play a pivotal role in creating and maintaining gardener networks to promote food resilience in different areas. Moreover, because schools were closed during the lockdown, the UN encouraged take-home rations to be sent to the homes of the children. This, coupled with information pamphlets and free seed kits, may have encouraged participation and development of home gardens, post COVID-19. However, hands-on training is also recommended to promote active involvement (Depenbusch et al., 2021). A group researchers also found that education and additional training within schools could assist in ensuring the continuation of vegetable gardens at school, but may also encourage the sharing of information at home, by the children, with other siblings and seniors (Laurie et al., 2017). People draw inspiration through participation of others around them (Hannah, 2020). A group researchers propose that an approach must focus on changing peoples mindset of the benefits of fruits and vegetables, which may ultimately improve the shift towards participation in home gardening (Depenbusch et al., 2021). Furthermore, home garden projects can be successful when additional awareness is created, primarily through schools and community gatherings (Mohsin et al., 2017; Bhullar, 2020; UN, 2020; Jindal and Dhaliwal, 2017). The provision of more educational material will give opportunity to better transfer of skills among generations, coupled with the provision of seeds, the concept of home gardening can be promoted (Bhattacharjee et al., 2006; Depenbusch et al., 2021; Nzama and Ntini, 2022).

A group researchers highlights how the implementation and success of home gardens depends on understanding the key variables of gender roles within communities and cultures, food attitudes and practices within a specific location and country (Depenbusch et al., 2021). The role of women in society and within communities is vital as they are responsible for heading households, looking after the families and providing childcare and food (Landon-Lane, 2011). Some researchers note that women were the primary and sometimes only members tending to the garden (Gerny et al., 2021). Similarly, it has been reported that 67.6 percent of households in the Eastern Cape are female-headed, with 45.8 percent over the age of 50 and 66.7 percent of the community being unemployed (Ngcaba and Maroyi, 2021). With this said, home gardens have the benefit of empowering skills and knowledge to women, which, coupled with experience, can be a tool to promote collaboration and participation within households and the community. The more involvement amongst other family members, the easier the load on the responsibilities of women. Therefore, education to better skills and allow for the transfer of these skills to children and other household members will increase the likelihood of improvement (Hickey and Unwin, 2020). Recommendations therefore include the active participation of women and children in the home gardening concept (Mohsin et al., 2017). Similarly, found women to

reap more rewards from the home gardening, although both genders can benefit from a social perspective when actively involved in home gardening (El Khateeb et al., 2023). Combining the empowerment of women and rights-based approaches to decision making can perhaps contribute to synergy between household food security, adaptation and mitigation (Human, 2022).

There is a need to promote collaboration within communities and organisations to encourage donations of free seeds and information, community involvement and participation amongst the rural youth (Bhattacharjee et al., 2006; Nzama and Ntini, 2022). Many programs and projects have focused on home gardens over the last decade. The similarity of these approaches, such as the Siyakholwa Support Centre Care and the South African Homestead Food Garden Project, a collaborative effort between the Agricultural Research Council and the Department of Agriculture and Rural Development has also seen success with the provision of gardening tools, seeds and information pamphlets in the Gauteng province since 1997 (ForGood, 2021; Maponya et al., 2021). Similarly, a collaborative effort should be applied where donations of tools and seeds are made to communities. School home gardens can play a critical role in encouraging diversity in the diet and active engagement from parents in school-based garden projects will encourage practical application at home (Landry et al., 2021). It has been shown how age and income impact the consumption patterns of family members (Modibedi et al., 2021). Furthermore, inter-sectoral collaborations with restaurants, food markets and community centres to collect leftover food to promote compost heaps should be encouraged, as well as the reuse of suitable containers to use as garden containers for catching rainwater and composting. Results also show how collaboration is needed between councillors and municipalities, support from stakeholders and funding opportunities for tools and equipment is needed from policymakers (Nzama and Ntini, 2022). A positive impact of home garden strategies occurs when there is a focus on the country and communities. The variables clearly state that success can be achieved if strategies focus on design, local adaptation and participation from the population (Depenbusch et al., 2021). Alternatively, indigenous foods must be introduced into the home gardens. These foods have been known to grow and adapt to local climate conditions and are accepted culturally (Akinola et al., 2020). Furthermore, the benefits of using indigenous foods include the high nutrient value and the ability to tolerate drought, especially when considering the recent drought experienced in South Africa.

3.5 Sustainability within the South African Context

In order to consider an approach suitable for the South African context, reference must be made to the prevalence of poverty, malnutrition, unemployment levels (32.6%) (Statistics South Africa (StatsSA), 2021), reports of corruption and fraud, theft and disaster. Strategies must overcome these obstacles in order to alleviate the high levels of food insecurity within South Africa. Furthermore, the successful implementation of home gardens may be further burdened by matters such as income level, the amount of food needed for the household, the household size and the level of knowledge (Ngcaba and Maroyi, 2021).

The estimated land size of South Africa is 122.5 million hectares, and it has approximately 200 000 hectares of home gardens in rural homesteads and approximately 72 percent of impoverished people live in rural areas (Lal, 2020). This implies that less than 1 percent is utilitised for home gardening. Government, policymakers and municipalities must encourage and promote proper land-use practices by offering incentives, and municipalities must take responsibility for conducting maintenance on water supply pipes and leaks, to ensure continuous safe water supply, and minimize wastage (Nzama and Ntini, 2022). Consideration of runoff water to be filtered and distributed amongst communities may assist in alleviating the problem of water shortages.

The extensive review of home gardens emphasized the need to diversify home gardens to meet the changing needs of society (Rajagopal et al., 2021). Research must not only be implemented to understand the diverse preferences of communities but also to develop seeds that can withstand the conditions and requirements of each region within South Africa. The research community must take into consideration standard food practices within poor rural communities and combine this information with science to develop seeds which can yield foods that can withstand the South African climate, little rain and soil conditions (Depenbusch et al., 2021). By developing a South African-specific vegetable nutrition garden model, a wider variety of vegetables can be grown, adding to diversity in diet and a wider variety of nutrient intake, as found in studies done in India (Bhullar, 2020; Jindal and Dhaliwal, 2017).

The most common recommendations for the successful implementation of home gardens, which appear to be suitable for the South African context, include the following:

- Provision of infrastructure and maintenance and the provision of rainwater harvesting systems for use in home gardens.
- Training on matters pertaining to home gardens, which include 1) how to catch runoff water and use what is available to collect and use rainwater (i.e. plastic containers, drums); 2) incorporation of green practices such as development of compost heaps; 3) use tools and materials available for the planting of seeds, (i.e. buckets and containers); 4) the proactive measure of reducing food loss and wastage coupled with improved harvesting techniques, on-farm storage and proper packaging and storage.
- Policymakers and researchers need to recognise existing cultural and historical knowledge and find ways to harvest this into information suitable for communities to encourage productivity; embrace indigenous knowledge and incorporate crop preferences of local communities to accommodate specific consumer and household preferences.
- Implementation of public health policies, which focus on nutrition and awareness-raising campaigns encouraging two-way communications between growers and facilitating institutions; the forming and involvement of local committees and committing to long-term engagement and attention should be paid to the incoming community feedback; empowerment of women and knowledge transfer.
- Gardening should be promoted nationally and participation among community members and children into adulthood should be encouraged; provisioning of support according to garden experience and across levels of social differentiation; applying measures of success beyond just yield, such as nutrition profiles, especially in early stages and focus on growing high-density nutrient-rich foods; provide a stable supply of diverse propagation material and research on the adaptability and diversity of seeds.

Therefore, to conclude, South African-specific recommendations include regulation of stormwater runoffs, incorporating more cultural and indigenous knowledge, providing an opportunity for community engagement, providing funding for rainwater harvesting, considering site-specific land and promoting two-way dialogue and more importantly, overcoming any knowledge gaps through information and education (Carstens et al., 2021).

4. Discussion

Food systems need to be more resilient in the long term and sustainable approaches need to be either created or encouraged to positively address food insecurity and famine issues, especially during times of shock (Carstens et al., 2021). A challenge within society is ensuring good nutritional status amongst individuals, which can be addressed in short periods of time, but a long-term approach is needed to impact the problem of poverty and ensure overall nutritional status improvement, with development to improve income levels and access to food (Bahta et al., 2018; Rajagopal et al., 2021). Research highlights the need for support programs, which may increase the availability and consumption of nutrient-dense foods at the household level. Consideration must, however, be made to the impact of climate change on the atmosphere, surface temperature and fauna and flora (Sembe et al., 2022).

A definite need exists to alleviate poverty through the assistance of food supply to poor rural areas. Most poor community members rely on social grants and most of the expenditure is towards food (Misselhorn and Hendriks, 2017). Therefore, approaches must make additional food available during pandemics and economic difficulties, especially with rising unemployment. Making food more readily available may contribute to providing food and maintaining or encouraging a healthier food intake during times of lockdown and pandemics. Emphasis should be placed on the following approaches to assist home gardeners in ensuring success: The reduction of food waste and the introduction of recycling practices; development of a Vegetable Garden and Nutrition Model and Sustainable Livelihoods Framework; encouraging the collaboration between stakeholders, external organisations and communities; the introduction of a technical assistance model, diversification of seeds, promotion of mobile technology and continuous education and demonstration in all relevant aspects of home gardening (Jindal and Dhaliwal, 2017). The challenges experienced with rural communities are also present within some urban areas. A study by Kanosvamhira and Tevera found the variables of poor

soil, lack of proper water supply, unavailable land, vandalism, poor irrigation systems and poor-quality seedlings to impact the sustainability of home gardens even within urban areas (Kanosvamhira and Tevera, 2023).

5. Conclusion

With all the recommendations made through the literature, the aim was to understand the home garden approach and the applicability to the local situation. The link between the garden and home is evident as an important development and tool for poor and rural communities, as food may become more readily available. The literature does, however, indicate that home garden success stories must be applied and adapted to suit each environment and community. Furthermore, measures should be taken to encourage home garden development through all media and advertising. More awareness of climate change and the impact on the environment must be understood, which will emphasise and encourage diverse gardens and compost settings sustainable to the changing climate. Other recommendations for success included proper gardening tools, coupled with proper guidance, which can ensure better quality products and sowing abilities. Training should become a critical tool for improving and strengthening rural livelihoods through home gardens. Home garden success can be achieved if collaborative strategic approaches take into consideration culture, environment, people, and water supply.

Recommendations for Further Research

The authors acknowledge the limiting agricultural background but see opportunities for further development on the needs for assessing home gardening within South Africa, specifically within rural areas and amongst vulnerable children. Recommendations include the gathering of opinion and expression amongst community members implementing home gardens, especially after the impact of COVID-19. Furthermore, potential exists, through research projects, to understand and clarify amongst communities who were perhaps given resources but are unable to fully apply the concept.

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