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THE SIGNIFICANCE OF HOME GARDENS TOWARDS HEALTHY COMMUNITIES: A CASE STUDY OF ABUJA HOUSING ESTATE

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ABSTRACT

***Purpose**: Community workers, public health officials, and urban planners are increasingly concerned about the declining physical and mental health of urban residents. The purpose of this study is to examine the extent to which home gardening contributes to healthy and sustainable community development in Zenco Garden Estate, Abuja, Nigeria.*

***Design/methodology/approach**: To achieve this aim, a quantitative research approach was adopted using a stratified random sampling technique. Data were collected from 184 residents through structured questionnaires. The study evaluated the environmental, social, educational, and economic contributions of home gardening to community development. Descriptive and inferential statistical tools were employed in analysing the data.*

***Findings:** The findings revealed that home gardening significantly enhances community well-being. Environmental benefits included improved microclimatic conditions, reduced erosion, and enhanced urban aesthetics. Social outcomes comprised improved physical and psychological health, increased social interaction, and stronger community cohesion. Economically, residents benefited from reduced household food expenditure and supplementary income from surplus produce.*

***Research limitations/implications**: The limitations of the study include the use of a single case study and reliance on self-reported data. The study contributes to knowledge by empirically establishing the role of home gardening as a practical strategy for promoting healthy and socially sustainable urban communities.*

***Practical implications**: The study recommends that urban planners, housing authorities, and public health agencies should integrate home gardening into residential development policies. Providing technical support, awareness programmes, and basic infrastructure will further enhance participation and long-term sustainability.*

***Originality/value**: This study provides empirical evidence on the multidimensional benefits of home gardening and highlights its relevance as a low-cost, community-driven approach to achieving healthy and sustainable urban development in Nigeria.*

Keywords: Home gardening; Community development; urban sustainability; Public health; Residential environment.

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1.0 INTRODUCTION

Home gardening has emerged as an increasingly important component of sustainable urban and rural development, offering a wide range of environmental, social, economic, and cultural benefits. Across the world, gardens are widely recognised for their restorative and therapeutic effects on human well-being, providing spaces for stress reduction, creativity, and interaction with nature (Gerlach-Spriggs et al., 1998; Stigsdotter & Grahn, 2002; Stuart-Smith, 2021). In parallel, rising global food insecurity, climate change, and urbanisation have led to renewed interest in household-level food production as a strategy for strengthening food systems and enhancing community resilience (Zhang et al., 2022).

Home and urban gardens contribute directly to environmental sustainability by reducing dependence on industrialised food production and long-distance food transportation, which are major sources of greenhouse gas emissions. Through the use of organic farming, composting, and native plant species, home gardening improves soil health, supports biodiversity, and minimises waste (Shabir et al., 2023). These environmental benefits align closely with global sustainability agendas, including climate mitigation, ecosystem protection, and circular resource use. Consequently, urban gardening is increasingly recognised not only as a household activity but also as a grassroots response to global environmental and public-health challenges (Santos et al., 2022).

Beyond environmental benefits, home gardening plays a critical role in social and economic development. Gardens function as spaces for learning, skills development, and social interaction, strengthening community cohesion and local participation (Thompson et al., 2007). They also support local economies by creating opportunities for small-scale food markets, cooperatives, and employment, particularly in low-income communities. Through improved access to fresh and nutritious food, home gardens enhance dietary quality and reduce household food expenditure, thereby improving overall well-being.

These benefits are particularly significant in Sub-Saharan Africa, where food insecurity and urban poverty remain major development challenges. Studies indicate that home gardening contributes up to 20% of household food supply in the region, while reducing food expenditure by approximately 20% a critical advantage in countries that rely heavily on food imports (Godfray et al., 2010; Wuyep, 2018; Akinola et al., 2020; Adeola et al., 2023). As urban populations expand rapidly, household-level food production provides a vital buffer against economic and climatic shocks.

In Nigeria, urban consolidation is reshaping cities such as Lagos, Abuja, and Port Harcourt, with increasing numbers of medium-density housing developments reducing access to private open spaces traditionally used for gardening and recreation. This transformation has heightened the importance of community and home gardens as alternative spaces for food production, social interaction, and environmental management (Dipeolu et al., 2024). In public housing estates, in particular, gardening has become a key strategy for improving household livelihoods and strengthening community networks.

However, the potential of home gardening in Nigeria is constrained by several structural and institutional barriers. Insecure land tenure discourages long-term investment in gardening, especially in rapidly urbanising areas where property rights are contested (Adeola et al., 2023). Limited access to water, particularly in drought-prone regions, further restricts productivity unless supported by efficient irrigation systems and rainwater harvesting infrastructure (Zhang et al., 2022). These challenges highlight the need for supportive policies, infrastructure investment, and community-based management frameworks. Despite these constraints, home gardens continue to provide

substantial social and health benefits. Gardening promotes physical activity, reduces stress, enhances mental well-being, and strengthens emotional connections to place and community (Russell et al., 2013; Ojobo et al., 2024). Regular access to affordable fresh produce also improves nutritional outcomes and household food security. Collectively, these effects position home gardening as a powerful tool for sustainable community development.

Against this background, this study investigates the role of home gardening in fostering sustainable community development within a low-density public housing estate in Abuja. The study pursues two main objectives: (i) to examine the environmental, social, and economic factors that shape the benefits of home gardening, and (ii) to identify the challenges and barriers that limit its effectiveness. By integrating international evidence with local empirical insights, this research contributes to the growing literature on urban agriculture and positions home gardening as a critical pathway for achieving sustainability, resilience, and improved quality of life in Nigerian cities.

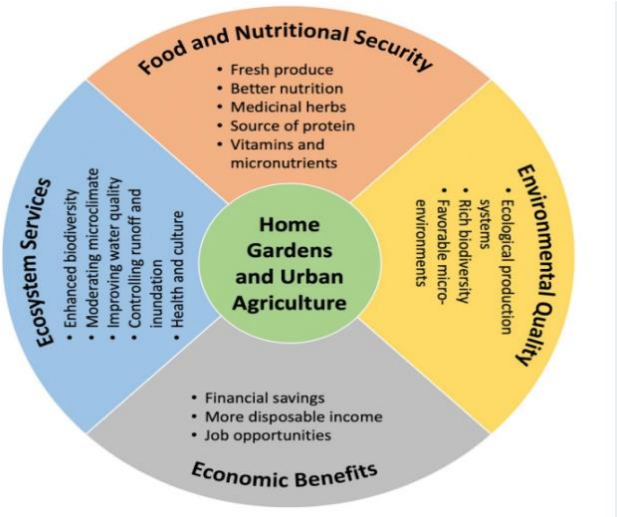

Figure 1: Home gardens and urban agriculture deliver a range of benefits Source: Lal, (2020).

2.0 LITERATURE REVIEW

2.1 Home Gardening as a Strategy for Environmental Sustainability

Home gardening is increasingly recognised as a viable environmental sustainability strategy, particularly in the context of rapid urbanisation and climate change. By reducing reliance on large-scale commercial agriculture and shortening food supply chains, home gardens significantly lower transportation-related carbon emissions and fossil fuel use (Lal, 2020). In addition, home gardens are increasingly incorporated into urban green infrastructure systems, contributing to improved air quality, stormwater management, and the mitigation of urban heat island effects (Nguyen et al., 2023). Home gardens also enhance ecological resilience by promoting the cultivation of drought-tolerant and climate-adapted crops, particularly in environmentally stressed regions such as Sub-Saharan Africa (Dissanayake, 2020; Agboola & Nia, 2023). Through practices such as rainwater harvesting, composting, and drip irrigation, households can optimise water use and reduce pressure on municipal resources while maintaining productive food systems. Research further indicates that even small-scale gardening can improve microclimatic conditions, lowering ambient temperatures

and increasing local humidity, which supports urban environmental stability (Nguyen et al., 2023). Moreover, by integrating native plant species and organic cultivation methods, home gardens contribute to biodiversity conservation and soil health restoration (Crews & Rumsey, 2017; De Corato, 2020). These ecological benefits position home gardening not merely as a household activity, but as an important contributor to broader environmental sustainability and urban ecosystem resilience.

2.2 Home Gardening as a Catalyst for Community Development

Beyond environmental gains, home gardening plays a critical role in strengthening social cohesion and community development. In urban and peri-urban environments, home and community gardens serve as shared spaces that promote social interaction, knowledge exchange, and intergenerational learning (Thompson et al., 2007; Fouseki et al., 2022). These social interactions foster trust, cooperation, and a sense of collective responsibility, which are essential for building resilient communities. Participation in home gardening has also been linked to improved physical and mental health outcomes. Gardening activities reduce stress, promote physical exercise, and enhance psychological well-being by providing individuals with a sense of purpose and accomplishment (Smith et al., 2021). These health benefits contribute indirectly to community stability by reducing healthcare burdens and improving overall quality of life. In addition, home gardening strengthens local food systems by increasing food availability and reducing dependence on external supply chains, which are often vulnerable to economic and environmental shocks (George et al., 2024). By producing food locally, communities gain greater control over food quality, nutrition, and affordability, thereby improving food security and social equity.

2.3 Economic Contributions of Home Gardening

Home gardening offers substantial economic benefits at both household and community levels. By producing fruits, vegetables, and herbs for domestic consumption, households can significantly reduce food expenditures, particularly in low-income communities (Kivuva, 2017). This cost-saving effect is especially important in developing countries, where food prices are volatile and household incomes are limited. Home gardening also promotes resource efficiency through composting, organic waste recycling, and water reuse, which reduce reliance on costly external inputs such as fertilisers and pesticides (Nguyen et al., 2023; Xu et al., 2024). The conversion of organic waste into nutrient-rich compost not only improves soil fertility but also lowers waste management costs and landfill pressure. At a broader scale, urban gardening contributes to local economic resilience by supporting small-scale food markets and community-supported agriculture initiatives, thereby strengthening local economies and reducing dependence on global food systems (Abdulsalam et al., 2024).

2.4 Cultural and Behavioural Influences on Home Gardening Adoption

Cultural norms and behavioural patterns strongly influence the adoption and sustainability of home gardening practices. In many societies, gardening traditions are deeply embedded in cultural heritage and passed down through generations, fostering strong community engagement (Rahman, 2023). Where such traditions persist, home gardening is more likely to be sustained and integrated into

everyday life. However, urbanisation, changing lifestyles, and modern consumption habits have weakened traditional gardening practices in many cities (Adeola et al., 2023). Time constraints, limited awareness, and perceptions of gardening as labour-intensive reduce participation, particularly among younger populations. Education and awareness programmes are therefore critical for promoting behavioural change and encouraging wider adoption of home gardening (Smith et al., 2021). Community gardening groups, urban farming networks, and training workshops play a vital role in reinforcing positive attitudes by providing technical knowledge, social support, and practical demonstrations of gardening benefits.

2.5 Institutional, Economic, and Policy Barriers

Despite its benefits, home gardening faces significant structural and institutional constraints. In low-income communities, the cost of seeds, tools, fertilisers, and irrigation systems can be prohibitive, limiting the ability of households to establish productive gardens (Kutiwa et al., 2010). Lack of technical knowledge further reduces productivity and discourages sustained engagement. Policy and regulatory frameworks also influence the feasibility of home gardening. In many cities, zoning laws, land-use regulations, and housing policies do not adequately support urban agriculture, restricting access to land and water resources. Without supportive policies and institutional backing, home gardening initiatives struggle to scale and sustain their impact. Overcoming these barriers requires coordinated action from local governments, urban planners, and community organisations to provide land access, financial incentives, training programmes, and supportive infrastructure.

2.6 Home Gardening and the Development of Resilient Communities

Home gardening contributes significantly to the development of resilient communities by integrating environmental, social, and economic benefits within local food systems. Access to land, water, and financial resources determines the productivity and sustainability of gardens, while environmental conditions such as soil quality and climate shape their long-term viability (Smith et al., 2021). Strong community networks further enhance resilience by facilitating the exchange of skills, seeds, and labour, creating a collaborative system of mutual support (Xu et al., 2024). The mental health and well-being benefits of gardening also strengthen social bonds and improve community stability. Through these combined pathways, home gardening emerges as a powerful mechanism for enhancing food security, environmental sustainability, and social cohesion, particularly in vulnerable urban and peri-urban communities.

3.0. AREA OF THE STUDY

3.1 Study Settings

The study was conducted at Zenco Garden Estate, located in Sabon Lugbe, Kabusa (900107) within the Federal Capital Territory (FCT), Abuja **(Figure 2**). The estate lies at approximately 9.0765° N latitude and 7.3986° E longitude, placing it within one of Nigeria's fastest-growing urban corridors. Zenco Garden Estate is a planned residential community characterised by modern housing layouts, mixed-income households, and basic urban infrastructure, including paved roads, drainage systems,

and organised residential plots. These features make it representative of many emerging middle-density urban neighbourhoods in Abuja and other Nigerian cities experiencing rapid population growth and spatial expansion.

Abuja experiences a tropical wet–dry climate, with high temperatures throughout the year and two distinct seasons: a rainy season from April to October and a dry season from November to March. Rainfall during the wet season supports vegetation growth, while the prolonged dry season places pressure on water availability and urban green spaces. These climatic conditions strongly influence household food production, water use, and environmental management practices, making the city an important setting for examining sustainable urban livelihoods such as home gardening. The combination of rapid urbanisation, changing land-use patterns, and increasing demand for food and environmental services presents significant sustainability challenges in areas such as Zenco Garden Estate. Issues related to food security, waste management, water use, and access to green spaces are becoming more pronounced as residential densities increase and traditional backyard spaces decline. At the same time, the socio-economic diversity of residents creates both opportunities and constraints for community-based sustainability initiatives.

Against this background, Zenco Garden Estate offers an ideal case study for exploring the role of home gardening as a strategy for enhancing environmental sustainability, household food security, and social well-being in a rapidly urbanising African city. Its urban location, climatic conditions, and evolving residential structure provide a realistic context for assessing how small-scale, household-level gardening practices can contribute to more resilient and liveable urban communities.

Figure 2: Map of Nigeria showing Abuja with Zenco Garden Estate and some home gardens

3.2 Study Design

This study adopted a mixed-methods research design to investigate the role of home gardening in promoting community development and sustainability in Zenco Garden Estate, Abuja. A structured quantitative survey was used as the primary data collection instrument, supported by qualitative interviews to capture residents' lived experiences, motivations, and perceived benefits of home

gardening. This approach enabled a comprehensive assessment of both measurable patterns and contextual meanings associated with gardening practices (Smith et al., 2021). The survey targeted residents aged 18 years and above, including both homeowners and tenants, in order to capture diverse socio-economic and demographic perspectives. The questionnaire measured key variables including socio-demographic characteristics, home-gardening practices, knowledge of sustainable methods, availability of resources, and the perceived environmental, social, and economic benefits of home gardening. The mixed-methods design strengthened the reliability of the findings by allowing statistical trends to be interpreted alongside participants' qualitative insights.

3.2.1 Data Collection

Data were collected using semi-structured questionnaires administered directly to residents of Zenco Garden Estate. The instrument was designed to capture information on household characteristics, gardening practices, factors influencing participation in home gardening, and perceived sustainability outcomes. To ensure accessibility and inclusiveness, the questionnaire was produced in English, Hausa, Igbo, and Yoruba, with all responses later translated into English for analysis. Prior to full deployment, a pilot survey involving 15 residents was conducted to test clarity, reliability, and relevance. Feedback from the pilot phase informed minor refinements to the questionnaire. Responses were recorded on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). Participation was voluntary, and respondents were assured of confidentiality and anonymity. Both oral and written informed consent were obtained before administering the questionnaires.

3.2.2 Sampling

A preliminary reconnaissance survey identified approximately 3,100 households within Zenco Garden Estate. From this population, 184 adult residents were selected as respondents. A stratified random sampling technique was applied to ensure representation across gender, age groups, tenancy status, and household types, thereby enhancing the validity and generalisability of the findings (Smith et al., 2021). This method helped to reduce sampling bias and ensured that the sample reflected the socio-economic diversity of the estate.

3.3. Data Analysis

After collection, data were edited, coded, entered, and cleaned to ensure consistency and accuracy (Brown & Anderson, 2023). The processed dataset was analysed using SPSS version 24. Descriptive statistics (frequencies, percentages, and charts) were used to summarise respondents' characteristics and gardening practices (Smith et al., 2021). To assess the relative importance of different benefits and influencing factors, the Relative Importance Index (RII) was employed. The RII is widely used in social and environmental research to rank perceptions and priorities based on respondents' ratings (Lu, 1999; Tonidandel & LeBreton, 2011). The RII was calculated using:

$$\text{Relative Important Index} = \frac{\sum W}{(A*N)}$$

Where:
W = weight assigned to each factor (1–5),
A = highest possible weight (5),
N = total number of respondents.

RII values range from 0 to 1, with higher values indicating greater perceived importance. In this study, the RII was used to rank the environmental, social, and economic benefits of home gardening and to identify the most influential factors driving community sustainability. Additionally, ordinal logistic regression was applied to examine the predictive relationships between socio-demographic variables, gardening practices, and perceived sustainability outcomes (Lu, 1999; Tonidandel & LeBreton, 2011). This combination of descriptive and inferential techniques ensured a robust and comprehensive evaluation of the role of home gardening in community development. Respondents' opinions on multiple benefits of home gardening that could foster healthy and sustainable community development. Using the equation below, the RII was derived.

W = weighting given to each factor by respondents (ranging from 1 to 5).
A = highest weight (i.e., 5 in this case).
N = the total number of residents surveyed.

The Relative Importance Index (RII) serves as a valuable tool for assessing the significance of prioritized strategies or elements (Smith et. al., 2021). In this research, RII was utilized to evaluate home gardening practices as a way to promote community development and to highlight the importance of its benefits in supporting sustainability. The RII is calculated by taking the ratio of the average score to the highest possible rank, which allows for the ranking.

4. RESULTS AND DISCUSSION

4.1 Characteristics of Respondents

The descriptive statistics reveal a diverse and well-balanced sample, providing a reliable basis for examining home gardening and community sustainability within Zenco Garden Estate. The gender distribution (Figure 3) is nearly equal, with 51.1% females and 48.9% males, ensuring that the perspectives of both men and women are well represented in the analysis. The age structure of respondents (Figure 4) indicates a predominantly mature population. The largest group falls within the 31–45 years category (34.8%), followed closely by those aged 46–60 years (29.9%) and respondents aged 61 years and above (26.1%). In contrast, younger adults aged 18–30 years represent only 9.2% of the sample. This distribution suggests that most participants are in middle or later adulthood, a demographic that is typically more engaged in household management, long-term planning, and community-based activities such as home gardening. Their life stage may therefore positively influence their interest in sustainability, food security, and neighbourhood wellbeing.

With respect to educational attainment (Figure 5), a substantial proportion of respondents have received technical or vocational training (50.5%), reflecting practical skills that may support

engagement in gardening and small-scale food production. This is followed by those with elementary education (22.3%) and tertiary education (20.1%), while only 7.1% reported having no formal education. Overall, this distribution suggests a relatively literate population with a strong practical orientation, which is advantageous for the adoption of sustainable home-gardening practices. In terms of marital status (Figure 6), the majority of respondents are married (72.3%), while 27.7% are single. This indicates that most households are family-based, which may increase the relevance of home gardening for meeting food needs, reducing household expenses, and improving nutritional security.

The ethnic composition of the respondents (Figure 7) shows that Hausa residents form the largest group (51.6%), with notable representation from Igbo (25.5%) and Yoruba (22.8%) communities. This ethnic diversity reflects the multicultural nature of Abuja and enhances the generalisability of the findings across different cultural backgrounds, potentially influencing gardening traditions, dietary preferences, and attitudes toward land use. Religious affiliation is also relatively balanced, with 47.8% Muslims and 44.6% Christians, indicating that no single religious group dominates the sample. This balance further strengthens the inclusiveness of the study. Regarding housing and household characteristics, 53.3% of respondents are tenants, while the remainder are homeowners. Most households are relatively small, with 63.0% having fewer than five members, which may affect land availability, food demand, and gardening intensity. The length of residence shows that 58.2% of participants have lived in the neighbourhood for 1–5 years, suggesting a relatively stable but still evolving community. This duration is sufficient for residents to have developed familiarity with local environmental conditions and community dynamics, both of which are important for sustaining home-gardening initiatives.

Finally, employment status indicates that 56.0% of respondents are employed, suggesting moderate economic stability among residents. This may influence their capacity to invest in gardening inputs such as seeds, tools, and irrigation, as well as their motivation to supplement household food supply through home gardening. Overall, these socio-demographic characteristics depict a diverse, mature, and relatively stable urban population, providing a strong foundation for analysing how home gardening contributes to community development, sustainability, and quality of life in Zenco Garden Estate.

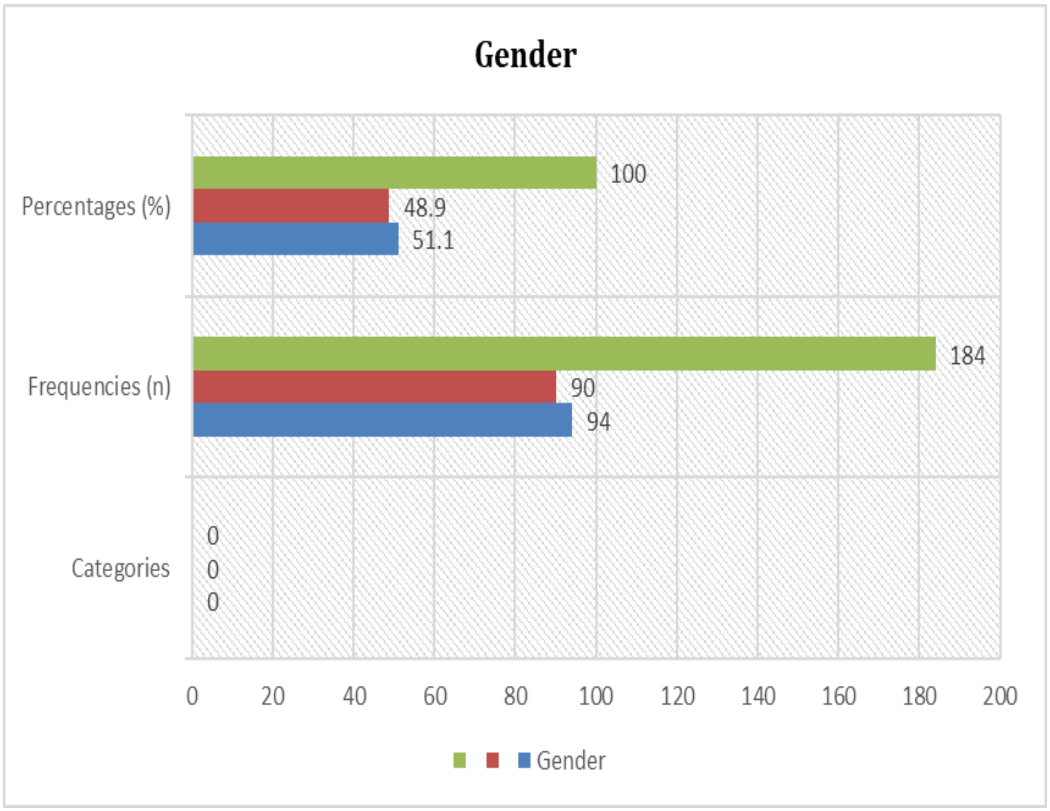

Figure 3. Respondents' Gender

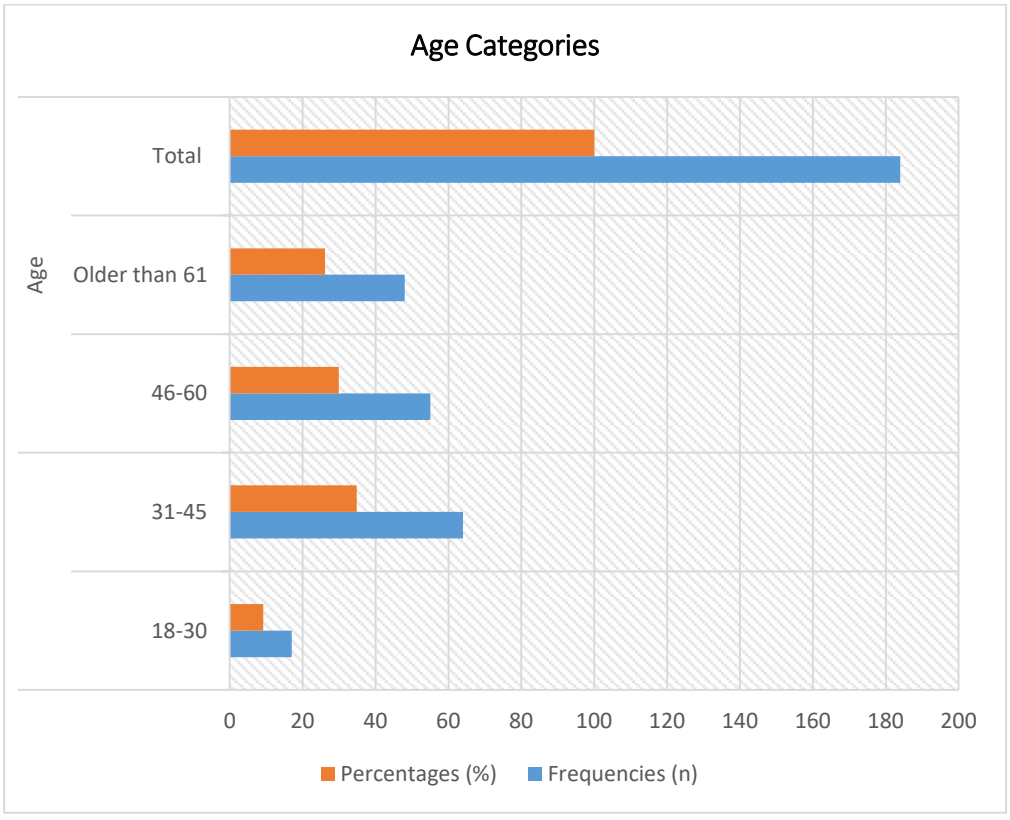

Figure 4. Respondents' Age Category

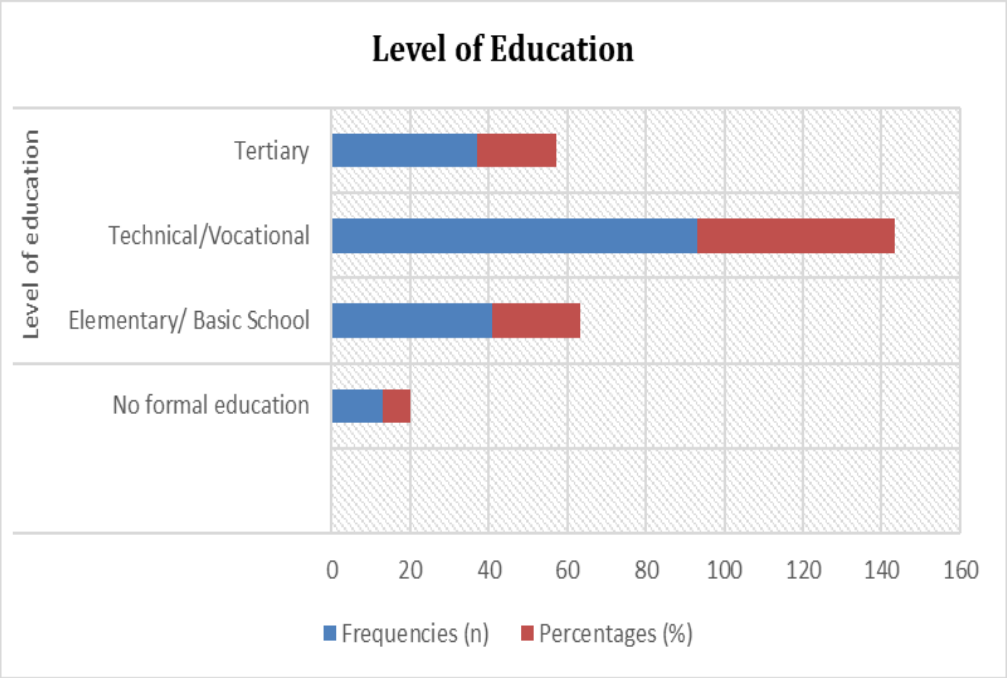

Figure 5. Respondents' Level of Education

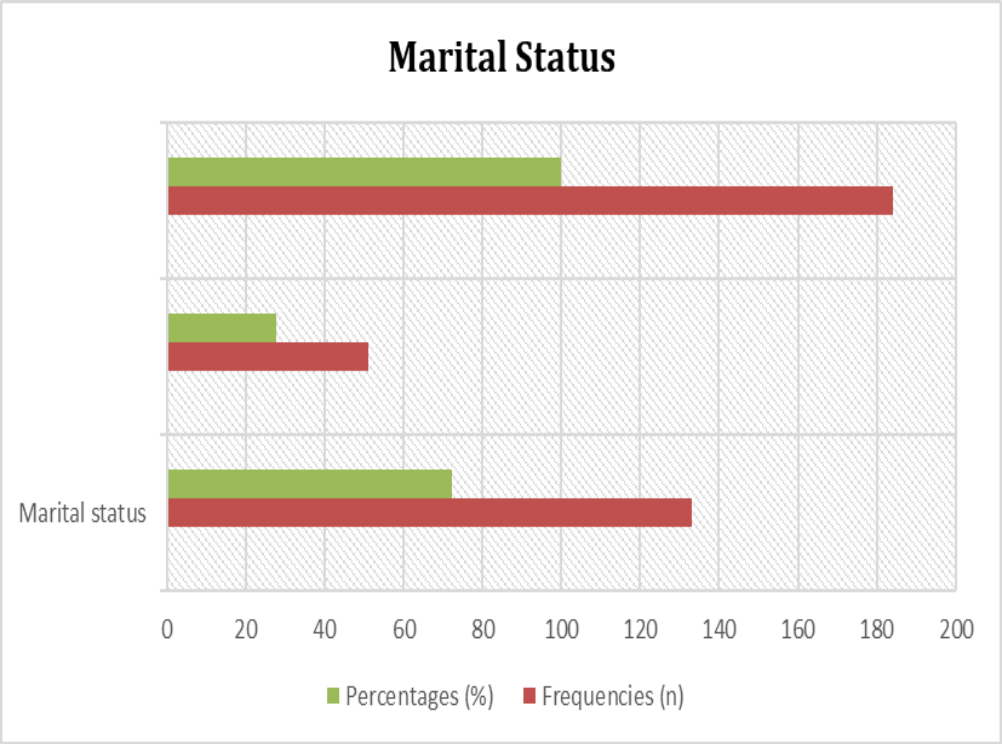

Figure 6. Respondents' Marital Status

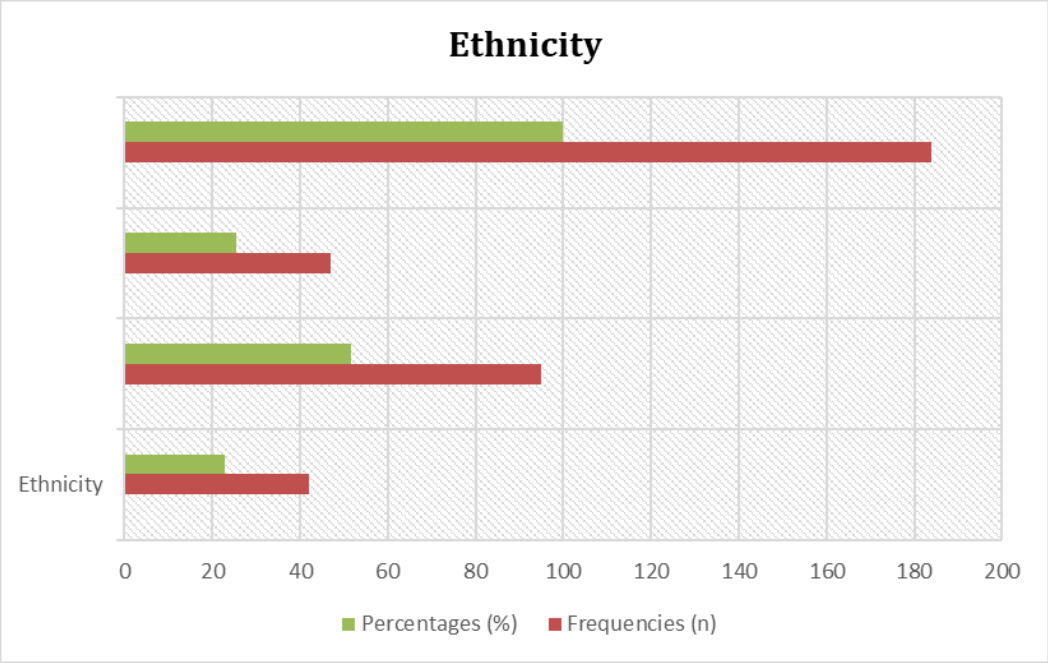

Figure 7. Respondents' Ethnicity

4.2 Benefits of Home Gardens for Sustainable Community Development

Table 2 presents the results of the Relative Importance Index (RII) and Ordinal Logistic Regression analyses for the sub-factors describing the benefits of home gardening in promoting sustainable community development. The regression results show that all evaluated benefit dimensions are statistically significant predictors of sustainable community development ($p < 0.001$), confirming the central role of home gardens in enhancing environmental quality, social well-being, economic resilience, and learning capacity within the community. Among environmental attributes, "Lower urban temperatures" recorded the highest relative importance (RII = 0.93) and a strong positive effect in the regression model (B = 1.30; Odds Ratio = 3.67), indicating that residents strongly perceive home gardens as effective in mitigating the urban heat island effect. This finding reflects the growing importance of vegetated spaces in moderating microclimates within densely built urban neighbourhoods.

Similarly, "Reduced soil erosion" (RII = 0.90; B = 1.20; OR = 3.32) and "Increased green cover" (RII = 0.88; B = 1.15; OR = 3.16) also showed high rankings and strong statistical influence, demonstrating that home gardens contribute meaningfully to ecological stability and landscape sustainability. In the social domain, "Strengthened community cohesion" emerged as one of the most influential benefits (RII = 0.92; B = 1.28; OR = 3.62), indicating that home gardening promotes social interaction, cooperation, and a shared sense of responsibility among residents. Likewise, "Improved physical well-being" (RII = 0.91; B = 1.25; OR = 3.50) highlights the role of gardening in encouraging physical activity, stress reduction, and healthier lifestyles. From an economic perspective, "Decreased food costs" (RII = 0.86; B = 1.10; OR = 3.01) demonstrates that home

gardening offers households measurable financial relief by reducing reliance on purchased food. This is particularly relevant in urban communities facing rising food prices and economic vulnerability. In the educational dimension, "Learning sustainable gardening techniques" (RII = 0.88; B = 1.20; OR = 3.32) ranked highly, indicating that residents value home gardening as a platform for acquiring practical environmental knowledge and sustainability skills that can be transferred within households and across the community.

Taken together, the RII and regression results show that while all benefit categories are significant, environmental and social benefits exert the strongest influence on how residents perceive the contribution of home gardening to sustainable community development. These findings suggest that home gardens are not merely food-producing spaces, but multifunctional systems that enhance urban climate resilience, social cohesion, economic stability, and sustainability awareness in fast-growing urban neighbourhoods such as Zenco Garden Estate.

Table 2: RII and Ordinal Logistic Regression Results for Home Gardening Benefits

Category	Sub-Factor	RII	Coefficient (B)	Standard Error	Wald Chi-Square	p-value	Odds Ratio
A. Environmental Benefits	1. Lower urban temperatures	0.93	1.30	0.15	75.0	<0.001	3.67
	2. Reduced soil erosion	0.90	1.20	0.14	73.2	<0.001	3.32
	3. Increased green cover	0.88	1.15	0.16	51.8	<0.001	3.16
	4. Improved air quality	0.87	1.10	0.17	41.5	<0.001	3.00
	5. Enhanced microclimate regulation	0.85	1.05	0.18	34.1	<0.001	2.87
	6. Better stormwater management	0.84	1.00	0.19	27.8	<0.001	2.72
B. Social Advantages	1. Improved physical well-being	0.91	1.25	0.16	60.2	<0.001	3.50
	2. Enhanced psychological health	0.90	1.22	0.17	51.5	<0.001	3.39
	3. Strengthened community cohesion	0.92	1.28	0.15	72.5	<0.001	3.62
	4. Increased intergenerational interaction	0.88	1.20	0.18	44.5	<0.001	3.32
	5. Greater cultural exchange	0.87	1.18	0.17	48.2	<0.001	3.26
	6. Enhanced social inclusion	0.89	1.24	0.16	54.8	<0.001	3.45

C. Economic Gains	1. Decreased food costs	0.86	1.10	0.19	33.2	<0.001	3.01
	2. Increased household profits	0.85	1.08	0.20	29.1	<0.001	2.95
	3. Reduced healthcare expenditure	0.84	1.05	0.21	25.0	<0.001	2.86
	4. Job creation opportunities	0.83	1.00	0.22	20.7	<0.001	2.72
	5. Boost to the local economy	0.82	0.98	0.23	18.3	<0.001	2.66
	6. Enhanced property values	0.81	0.95	0.24	16.2	<0.001	2.59
D. Educational Benefits	1. Learning sustainable gardening techniques	0.88	1.20	0.18	45.5	<0.001	3.32
	2. Hands-on experience with composting and recycling	0.87	1.18	0.19	42.8	<0.001	3.25
	3. Increased environmental awareness	0.86	1.15	0.20	39.0	<0.001	3.16
	4. Improved knowledge of horticulture and soil management	0.85	1.10	0.21	35.5	<0.001	3.00
	4. Improved knowledge of horticulture and soil management	0.85	1.10	0.21	35.5	<0.001	3.00
	5. Development of practical gardening skills	0.84	1.05	0.22	31.0	<0.001	2.87
	6. Promotion of community workshops and educational programs	0.83	1.00	0.23	28.0	<0.001	2.72

*Note: * indicates the significance of 5% ($p < 0.05$) and **indicates the significance of 1% ($p < 0.01$). N = 184 responses*

4.3 Results of the Challenges and Barriers to Home Gardening

Table 3 presents the descriptive statistics for the perceived barriers to home gardening. The results indicate that insecure land tenure is viewed as the most significant constraint, with a mean score of 4.6 reported by 150 respondents (55.6%), highlighting how disputed or uncertain property rights severely limit residents' willingness to invest in long-term gardening activities (Adeola et al., 2023). This is closely followed by limited access to reliable water sources, particularly in drought-prone periods, which recorded a mean score of 4.4 and was identified by 140 respondents (51.9%) as a major obstacle, underscoring the central role of water availability in sustaining home gardens.

High economic costs of gardening inputs and insufficient technical knowledge also emerged as substantial barriers, with a mean score of 4.3 from 135 respondents (50.0%), reflecting the combined financial and educational constraints faced by households. Similarly, inadequate infrastructure, including poor irrigation and water management systems, received a relatively high mean score of 4.1, as reported by 125 respondents (46.3%). In contrast, limited training and institutional support for modern gardening practices recorded a mean score of 4.0 (120 respondents; 44.4%), while restrictive zoning regulations and weak coordination between local authorities and community organisations were perceived as moderately less severe, with mean scores of 3.8 (110 respondents; 40.7%) and 3.7 (105 respondents; 38.9%), respectively. Overall, the findings demonstrate that structural and resource-based constraints particularly land tenure insecurity and water scarcity constitute the most critical barriers to the successful adoption of home gardening within the context of sustainable community development.

Table 3. Descriptive Results of Challenges and barriers to home gardening

Challenge/Barrier	Mean Score (5-pt scale)	Frequency (n)	Percentage (%)
Insecure land tenure due to contested property rights	4.6	150	55.6%
Limited access to reliable water sources in drought-prone areas	4.4	140	51.9%
High economic costs for gardening inputs and insufficient technical knowledge	4.3	135	50.0%
Inadequate infrastructure investments (efficient irrigation, water management)	4.1	125	46.3%
Lack of adequate training and support for modern gardening practices	4.0	120	44.4%
Restrictive zoning laws and land-use regulations	3.8	110	40.7%
Insufficient coordinated efforts among local governments and organizations	3.7	105	38.9%

4.4 Results of the Ranking of the Challenges and Barriers to Home Gardening

The results presented in Table 4 indicate that insecure land tenure constitutes the most critical barrier to home gardening, as evidenced by the highest Relative Importance Index (RII = 0.92) and a strong, statistically significant positive regression coefficient **(**B = 1.25, $p < 0.001$; Odds Ratio = 3.49). This finding suggests that households facing uncertain or disputed property rights are substantially less inclined to invest in home gardening, given the long-term nature of such activities.

Limited access to reliable water sources emerges as the second most influential constraint **(**RII = 0.89; B = 1.10, $p < 0.001$; Odds Ratio = 3.00), highlighting the critical role of water availability, particularly in drought-prone urban environments. High input costs and inadequate technical knowledge also significantly hinder participation in home gardening (RII = 0.87; B = 0.95, p = 0.001; Odds Ratio = 2.59**),** reflecting the combined effects of financial and skills-related barriers. Furthermore, insufficient infrastructure investment**,** particularly in irrigation and water management systems, presents a notable constraint (RII = 0.85; B = 1.05, $p < 0.001$; Odds Ratio = 2.86), while limited training and institutional support also reduces households' capacity to adopt gardening practices **(**RII = 0.83; B = 0.98, $p < 0.001$; Odds Ratio = 2.66**).** B**y** comparison, restrictive zoning regulations (RII = 0.80) and weak coordination between local authorities and community organisations (RII = 0.78) exert relatively lower—but still meaningful effects on home gardening uptake. Overall, the results demonstrate that structural constraints, particularly land tenure security and water availability, are the dominant barriers, while economic, infrastructural, and regulatory factors further shape the feasibility of home gardening as a pathway to sustainable community development.

Table 4. Relative Importance Index (RII) of the challenges and barriers to home gardening (N = 150 responses)

Challenge / Barrier	RII	Mean Score (5-pt scale)	Rank	Reference
Insecure land tenure due to contested property rights	0.92	4.6	1	Adeola et al. (2017)
Limited access to reliable water sources in drought-prone areas	0.89	4.4	2	Kone (2019)
High economic costs for gardening inputs and insufficient technical knowledge	0.87	4.3	3	Martin (2022)
Inadequate infrastructure investments (e.g., efficient irrigation and water management systems)	0.85	4.1	4	–
Lack of adequate training and support for modern gardening practices	0.83	4.0	5	–
Restrictive zoning laws and land-use regulations limiting urban agriculture	0.80	3.8	6	World Bank (2018)
Insufficient coordinated efforts among local governments and community organizations	0.78	3.7	7	–

4.5 Benefits of Home gardening in fostering healthy and sustainable community development

This study's findings are consistent with earlier research highlighting the advantages of home gardening for sustainable community development. The notable environmental benefits, such as reduced urban temperatures and increased greenery, support the conclusions of Lal, (2020); who pointed out the importance of green infrastructure in alleviating urban heat islands. The social benefits, including better physical health and stronger community ties, align with the work of Fouseki, et. al., (2022) and Smith, et. al., (2021), which found that gardening promotes improved health and enhanced social connections. Additionally, the economic benefits like lower food expenses reflect the insights of Brown et al. (2019), who noted home gardening's ability to decrease household costs and stimulate local economies. The educational advantages, especially in promoting sustainable practices, emphasize the value of community learning. Together, these results reinforce and build upon previous research, highlighting home gardening as a versatile approach to fostering sustainable community development. Home gardening stands at the intersection of environmental sustainability, social well-being, economic development, and cultural preservation.

The factors influencing its benefits are multifaceted and interdependent, ranging from environmental advantages such as reduced carbon emissions and enhanced biodiversity to social benefits that foster community cohesion and improved public health. Home gardening also contributes to food security at the community level. By producing fresh, locally grown produce, households can reduce their dependency on expensive, store-bought foods. This is particularly important in communities where access to nutritious food is limited. Additionally, restrictive zoning laws and poor coordination among local governments, though less influential, are consistent with issues identified by Smith, et. al., (2021). Overall, these findings underscore that addressing land tenure and water access is essential for realising home gardening's potential in sustainable community development.

4.6 Challenges and Barriers Impeding the Role of Home Gardening in Community Development

The findings of this study are highly consistent with the existing literature on barriers to sustainable urban home gardening and community-based food systems. Most notably, insecure land tenure emerged as the most significant constraint, reinforcing the conclusions of Adeola et al. (2017), who demonstrated that uncertainty over land ownership discourages long-term household investments in land-based activities such as gardening. When residents lack confidence that they will retain access to their land, they are less willing to commit time, financial resources, and labour to cultivating gardens that require continuous care and maintenance. This institutional and legal vulnerability therefore undermines the stability of home gardening as a tool for community development. Similarly, the limited availability of reliable water sources is a major structural barrier to urban and peri-urban agriculture, particularly in drought-prone and rapidly urbanising regions. In environments such as Abuja, where rainfall patterns are increasingly erratic, the absence of efficient irrigation systems significantly constrains the productivity and sustainability of home gardens, reducing their capacity to contribute meaningfully to food security and environmental resilience.

The influence of high economic costs and inadequate technical knowledge emphasised that both financial and skill-related barriers limit the adoption of sustainable gardening practices. Costs associated with seeds, tools, fertilisers, and water access can be prohibitive for low- and middle-income households, while insufficient knowledge of modern and climate-adaptive gardening techniques restricts productivity and discourages continued participation. Furthermore, the findings

regarding insufficient infrastructure investment particularly in water management, drainage, and irrigation, reinforce broader urban sustainability literature, which identifies weak physical infrastructure as a key limitation to community-based environmental initiatives. Likewise, the lack of adequate training and institutional support highlights the absence of effective extension services and community-based learning platforms that are necessary to translate interest in home gardening into successful long-term practice.

Taken together, these barriers reveal that while home gardening has strong potential to enhance sustainable community development, its effectiveness is constrained by interconnected structural, economic, and institutional challenges. Addressing issues of land security, water access, financial affordability, and technical capacity is therefore essential for enabling home gardening to function as a resilient and inclusive strategy for urban sustainability and community well-being.

5.0 CONCLUSION AND RECOMMENDATIONS

This study examined the role of home gardening in promoting sustainable community development by analysing the factors that shape its environmental, social, and economic benefits. The findings demonstrate that home gardening is a highly effective strategy for advancing key sustainability objectives. Environmentally, it enhances urban biodiversity, moderates local temperatures, reduces soil erosion, and improves soil quality, thereby supporting climate adaptation and energy efficiency. Socially, home gardening contributes to improved mental well-being, stress reduction, and stronger community interaction through shared knowledge, cooperation, and collective participation. These outcomes highlight home gardening as a powerful mechanism for improving both environmental sustainability and quality of life in urban communities.

Despite these benefits, the study also shows that the full potential of home gardening is constrained by several critical barriers, particularly insecure land tenure, limited access to water, financial constraints, and regulatory restrictions. Addressing these challenges is essential if home gardening is to function as a long-term driver of sustainable community development. Policymakers and urban planners should therefore prioritise land security, develop supportive regulatory frameworks, and invest in basic infrastructure such as irrigation and water management systems.
In practical terms, targeted interventions can significantly enhance participation in home gardening. These include providing subsidies or low-cost access to gardening inputs, establishing community-based training and extension programmes, and ensuring reliable access to water resources. Public awareness campaigns can also help highlight the environmental and health benefits of home gardening, encouraging wider adoption among urban households.

As urbanisation continues to reshape cities worldwide, home gardening represents a promising pathway to strengthen local food security, reduce environmental pressures, and foster social cohesion. Future research should focus on identifying effective strategies for overcoming the structural and institutional barriers that limit participation, particularly in densely populated and resource-constrained settings. Longitudinal studies are needed to track the long-term social, economic, and environmental impacts of home gardening initiatives, while comparative research across different cultural and geographical contexts would help refine policies and interventions to better meet the diverse needs of urban communities.

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