



## Urban Vertical Farming and Household Dietary Diversity

*A Qualitative Exploration of Food Security in Low-Income Lagos Neighbourhoods*

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### Author notes

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### ABSTRACT

Rapid urbanisation in African cities exacerbates food insecurity, particularly in low-income neighbourhoods where access to diverse, nutritious food is constrained. Urban agriculture is promoted as a potential mitigation strategy, yet the specific role and impact of technologically novel vertical farming initiatives on household-level dietary outcomes remain underexplored in this context. This study aimed to qualitatively explore the perceived impact of recently introduced urban vertical farming projects on household dietary diversity and to understand the mechanisms through which these interventions influence food security in low-income urban settings. A qualitative, exploratory case study design was employed. Data were collected via in-depth, semi-structured interviews with 24 household primary food providers participating in vertical farming initiatives, and via focus group discussions with project facilitators. Thematic analysis was conducted using a hybrid inductive-deductive approach. Participants reported a marked increase in the regular consumption of leafy green vegetables, a food group previously described as economically inaccessible. A prominent theme was the 'substitution effect', whereby money saved from home production was redirected to purchase other nutrient-rich foods, such as legumes and animal-source proteins, thereby enhancing overall dietary variety. The findings suggest that urban vertical farming can contribute to improved dietary diversity in low-income households by directly increasing access to specific food groups and indirectly enabling the procurement of a wider range of foods through income substitution. Policymakers and urban development practitioners should integrate subsidised vertical farming infrastructure into social housing programmes. Future initiatives should couple technical training with nutritional education to maximise the dietary diversity benefits of home-based food production. urban agriculture, food security, dietary diversity, Nigeria, low-income households, qualitative research This study provides novel empirical evidence on the 'income substitution' mechanism through which small-scale, technology-assisted urban agriculture influences dietary choices, offering a nuanced understanding for food security policy in dense informal settlements.

**Keywords:** *Urban agriculture, Food security, Dietary diversity, Sub-Saharan Africa, Qualitative research*

### Article Highlights

- Participants reported a marked increase in consumption of

### Policy Implication

Integrate subsidised vertical farming infrastructure into

<p>previously inaccessible leafy green vegetables.</p> <ul style="list-style-type: none"><li>• Findings reveal a key 'substitution effect' where savings enable purchase of other nutrient-rich foods.</li><li>• Study suggests vertical farming can directly and indirectly improve household dietary diversity.</li><li>• Integration with social housing and coupled training are recommended for policy.</li></ul>	<p>social housing programmes and couple technical training with nutritional education.</p> <p><i>This qualitative study explores the mechanisms linking novel urban agriculture to dietary outcomes in Lagos.</i></p>
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