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ASSESSMENT OF FOOD SECURITY STATUS AND NUTRITIONAL OUTCOMES OF RURAL FARMING HOUSEHOLDS IN SOUTH-SOUTH, NIGERIA

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Abstract

Food insecurity and poor nutrition remain major challenges undermining rural livelihoods in South-South, Nigeria. despite the region's agricultural potential. This study assessed the food security status and nutritional outcomes of rural farming households, determined their dietary diversity using the Household Dietary Diversity Score (HDDS), and examined the relationship between food security and nutritional outcomes. A multistage sampling technique was used to select 360 rural farming households across three States, Akwa Ibom, Cross River, and Rivers, and data were collected using a structured questionnaire. Food security status was measured with the Household Food Insecurity Access Scale (HFIAS), while nutritional outcomes were assessed through HDDS based on a 24-hour recall of 12 food groups. Results revealed that only 20.0% of households were food secure, while 80.0% experienced varying degrees of food insecurity, 30.0% mildly, 35.0% moderately, and 15.0% severely food insecure. Nutritional outcomes showed that 25.0% of households had low dietary diversity (≤3 food groups), 52.5% medium (4–6), and 22.5% high (≥7). A chi-square test ($\chi^2 = 64.28$, $df = 6$, $p < 0.001$) confirmed a significant relationship between food security status and dietary diversity. The study concludes that most rural households face food insecurity and limited dietary diversity, reflecting poor access to nutrient-rich foods. It recommends that agricultural extension services enhance farmers' access to inputs and climate-smart technologies; nutrition officers intensify community nutrition education; and policymakers integrate food security and nutrition interventions to promote sustainable rural wellbeing.

Keywords: *Assessment, Food security, status, rural households, nutrition outcomes*

1.0 Introduction

Food security remains a critical foundation for human survival, social stability, and sustainable development. It entails access to sufficient, safe, and nutritious food for all people at all times to maintain a healthy and active life (Peng and Berry, 2018). The multidimensional framework of Clapp *et al*. (2022) extends this concept beyond availability and accessibility to include utilization, stability, agency, and sustainability. However, global challenges such as climate variability, economic inequality, and demographic pressures have made the attainment of food security increasingly complex, especially in sub-Saharan Africa (Wang *et al*., 2025). In Nigeria, food insecurity persists despite vast agricultural potential and human capital. Inadequate productivity, post-harvest losses, and socio-economic vulnerabilities continue to constrain households' access to diverse and nutritious foods (Chiaka *et al*., 2022).

Food security is closely linked to nutrition outcomes, as the quantity, quality, and diversity of foods consumed determine household nutritional wellbeing (Duncan *et al*., 2022). Dietary diversity, measured through the Household Dietary Diversity Score (HDDS), serves as a reliable proxy for assessing nutritional adequacy (Adeyemi *et al*., 2025). Studies across Africa show that households with higher dietary diversity have improved nutrition, reflecting better access to varied food groups and micronutrient-rich diets (Nkegbe and Mumin, 2022; Fadumo, 2024). Consequently, nutrition-sensitive agricultural interventions have been recognized as vital to achieving Sustainable Development Goals on zero hunger and good health (Marie *et al*., 2018).

In Nigeria, several studies have examined determinants of food security and dietary diversity. Amao *et al*. (2023) found that crop diversity enhances food security,

while Omotayo (2020) linked agricultural practices with household health outcomes. Folorunso and Makwin (2022) observed that dietary diversity among fonio farming households was influenced by food availability and income stability. In the northeast, Oyediran and Olajide (2023) compared food security assessment methodologies, while Thomas and Eforuoku (2020) established a strong link between food insecurity and poor nutrition. Adepoju and Coker (2018) also reported that food insecurity undermines dietary diversity, especially among vulnerable groups. Despite these contributions, food insecurity and poor nutrition remain widespread, underscoring the need for localized, evidence-based research to guide policy and interventions.

In South-South Nigeria, a region endowed with arable land and diverse food resources, the paradox of food insecurity and malnutrition persists. Studies in the region (e.g., Odega and Agadaga, 2022; Akpan *et al*., 2023; Ekanem *et al*., 2023) have reported that rural farming households experience fluctuating food availability and limited access to nutritious diets due to climatic shocks, market instability, and declining agricultural productivity. The implications of this are far-reaching: malnutrition, reduced productivity, poor health outcomes, and increased poverty among rural populations. If the problem remains unaddressed, the region's food system could become increasingly fragile, threatening both household welfare and regional food stability.

However, there are critical gaps in existing literature that this study aims to address. Most prior studies on food security in Nigeria have concentrated on its determinants (e.g., Amao *et al*., 2023; Salawu *et al*., 2024; Ashagidigbi *et al*., 2025) or methodological approaches to measurement (Oyediran and Olajide, 2023), with limited integration of the relationship between food security status and household nutritional

outcomes. While few studies, such as Thomas and Eforuoku (2020) and Ukonu *et al*. (2023), have attempted to link food security with dietary diversity, evidence remains sparse for the South-South region, where environmental, economic, and livelihood dynamics differ markedly from other parts of the country. Moreover, there is insufficient empirical data on how household food security status translates into measurable nutritional outcomes, as proxied by HDDS, among rural farming households. This knowledge gap limits the design of nutrition-sensitive agricultural interventions tailored to local realities.

Therefore, this study assessed the food security status and nutritional outcomes of rural farming households, determined their dietary diversity using the Household Dietary Diversity Score (HDDS), and examined the relationship between food security and nutritional outcomes. Addressing this gap is crucial for informing agricultural extension strategies, guiding food policy decisions, and improving the overall well-being of rural households in the region.

2.0 Objectives of the Study

3.0 Methodology

The study was conducted in the South-South geopolitical zone of Nigeria, an area endowed with fertile soils, abundant rainfall, and a rich network of rivers that support diverse agricultural activities. The zone comprises six states, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers, known for their significant contributions to Nigeria's food production and rural livelihoods.

The study population consisted of all rural farming households across the South-

South region. A multistage sampling procedure was employed to ensure representativeness. First, three States, Akwa Ibom, Cross River, and Rivers, were purposively selected from the six states in the zone based on their agrarian nature and the presence of active rural farming communities, In the second stage, two Local Government Areas (LGAs) were purposively chosen from each selected State due to their high concentration of farming households and accessibility for fieldwork. The third stage involved the random selection of two rural communities from each LGA, giving a total of twelve rural communities. Finally, thirty household heads were randomly selected from each community, making a total sample of 360 respondents.

Primary data were obtained through the administration of a structured questionnaire using the Open Data Kit (ODK) platform, which ensured real-time data capture and minimized entry errors. The questionnaire was designed to collect information on respondents' socio-economic characteristics, food security status, and dietary diversity. The Household Food Insecurity Access Scale (HFIAS) was used to assess food security status following the standardized procedure developed by the Food and Nutrition Technical Assistance Project (FANTA). Nutritional outcomes were measured using the Household Dietary Diversity Score (HDDS), which assessed consumption across 12 food groups based on a 24-hour recall period.

Data were analyzed using both descriptive and inferential statistical tools. Descriptive statistics such as frequency counts, percentages, and mean were used to summarize the socio-economic characteristics of respondents, their food security status, and dietary diversity levels. The HFIAS and HDDS indices were computed to categorize households into different levels of food security and dietary diversity, respectively.

Inferential analysis, particularly the chi-square (χ^2) test, was employed to examine the relationship between food security status and nutritional outcomes among rural farming households.

4.0 Results and Discussion

4.1 Food Security Status of Rural Farming Households in South-South Nigeria

Table 1 shows that few (20.0%) of rural farming households in South-South Nigeria were food secure, while 30.0% were mildly food insecure. A larger (35.0%) proportion were moderately food insecure, and 15.0% were severely food insecure. Overall, about 80.0% of the households experienced some form of food insecurity, indicating that food access remains a major challenge among farming households in the region.

The predominance of food-insecure households reflects widespread vulnerability among rural farmers, consistent with Adesomoju *et al*. (2024) and Oni *et al*. (2024), who reported similar patterns in other Nigerian States. Bjornlund *et al*. (2022) emphasized that structural limitations such as inadequate infrastructure, poor extension coverage, and low farm productivity continue to undermine food access across sub-Saharan Africa. The situation in South-South Nigeria may also be aggravated by ecological and climatic disruptions that affect production cycles (Nkeme *et al*., 2023). Furthermore, limited crop diversification and unstable markets, as noted by Amao *et al*. (2023), likely constrain household resilience to food insecurity. These findings highlight the need for interventions that strengthen livelihood diversification and promote climate-smart agricultural practices to stabilize household food availability.

Table 1: Household Food Security Status among Rural Farming Households in South -South Nigeria (n = 360)

Food Security Status	Frequency (n)	Percentage (%)
Food secure	72	20.0
Mildly food insecure	108	30.0
Moderately food insecure	126	35.0
Severely food insecure	54	15.0
Total	**360**	**100.0**

Note: Food security status was measured using the Household Food Insecurity Access Scale (HFIAS). Categories were classified following the standardized HFIAS algorithm.

4.2 Nutritional Outcomes of Rural Farming Households in South-South Nigeria

Table 2 shows that 25.0% of the respondents had low dietary diversity (≤3 food groups), majority (52.5%) had medium dietary diversity (4–6 food groups), and 22.5% had high dietary diversity (≥7 food groups). The predominance of medium dietary diversity indicates that most rural farming households consumed diets of moderate variety, while a considerable number still exhibited limited dietary quality.

The distribution of dietary diversity aligns with by Adeyemi *et al*. (2025) Folorunso and Makwin (2022), who observed similar dietary trends among rural households in Nigeria. These moderate diversity levels may stem from seasonal variations and economic constraints limiting access to animal protein, fruits, and vegetables. Langer *et al*. (2024) and Kolliesuah *et al*. (2023) observed comparable results in rural African contexts, suggesting that dependence on starchy staples dominates rural diets. In addition, rising food prices and income

instability, as noted by Ignowski *et al*. (2023), reduce households' capacity to consume nutrient-rich foods. The persistence of low dietary diversity among a substantial proportion of respondents implies the need for nutrition-sensitive agricultural extension and community education initiatives aimed at improving dietary practices and food utilization.

Table 2: Nutritional Outcomes of Rural Farming Households in South -South Nigeria

Dietary Diversity Category	Frequency (n)	Percentage (%)
[illegible]	90	25.0
Medium dietary diversity (4 –6 food groups)	189	52.5
[illegible]	81	22.5
Total	**360**	**100.0**

Note: Nutritional outcomes were measured using the Household Dietary Diversity Score (HDDS) based on a 24 -hour recall of 12 food groups. Categories were defined as: low (≤3), medium (4 –6), and high (≥7).

4.3 Relationship between Food Security Status and Nutritional Outcomes

Table 3 indicates a clear association between food security status and dietary diversity. Among food-secure households, 50.0% had high HDDS, 41.7% had medium HDDS, and only 8.3% had low HDDS. In contrast, severely food-insecure households showed the opposite pattern, with 44.4% in the low HDDS category and only 16.7% in the high HDDS group. The chi-square test ($\chi^2 = 64.28$, df = 6, $p < 0.001$) confirmed a statistically significant relationship between food security status and dietary diversity among rural farming households in South-South Nigeria.

The significant association between food security and dietary diversity supports previous

research linking improved food access to better nutritional outcomes (Adeyemi *et al*., 2025; Ukonu *et al*., 2023). Thomas and Eforuoku (2020) and Folorunso and Makwin (2022) similarly observed that households with stable food access tend to consume more varied diets. This relationship is influenced by household income, agricultural productivity, and market accessibility, which determine both the quantity and quality of foods available (Amao *et al*., 2023; Usman and Haile, 2022). The results also reinforce findings by Morales and Berkowitz (2016) and Samuel *et al*. (2023), who established that food insecurity often leads to dietary monotony and nutritional deficiencies. Overall, the evidence underscores the interdependence between food security and nutrition, as highlighted by Righettini and Bordin (2023) and Duncan *et al*. (2022), emphasizing that sustainable rural development policies must integrate agricultural and nutritional objectives to improve household wellbeing.

Table 3. Relationship between Food Security Status and Nutritional Outcomes among Rural Farming Households in South -South Nigeria (n = 360)

Food Security Status	**Medium HDDS (4–6)**		**Total (n)**
Food secure	6 (8.3%)	30 (41.7%)	36 (50.0%)	72
Mildly food insecure	18 (16.7%)	66 (61.1%)	24 (22.2%)	108
Moderately food insecure	42 (33.3%)	72 (57.1%)	12 (9.5%)	126
Severely food insecure	24 (44.4%)	21 (38.9%)	9 (16.7%)	54
Total	**90 (25.0%)**	**189 (52.5%)**	**81 (22.5%)**	**360**

Chi -square (χ^2) = 64.28, df = 6, p < 0.001

5.0 Conclusion and Recommendations

5.1 Conclusion

The study assessed the food security status and nutritional outcomes of rural farming households in South-South Nigeria. Findings revealed that majority (80%) of the households experienced some degree of food insecurity, indicating persistent challenges in food access and stability. Most respondents had medium dietary diversity, suggesting moderate dietary quality but limited consumption of nutrient-dense foods. The statistically significant relationship between food security status and dietary diversity further underscores the close link between food access and nutritional wellbeing. Overall, the results demonstrate that improving household food security directly enhances dietary diversity and nutritional outcomes among rural farmers.

5.2 Recommendations

Based on the findings, the following recommendations are proposed:

1. The Federal and State Ministries of Agriculture, in collaboration with Agricultural Extension Services, should intensify support for rural farming households through improved access to farm inputs, credit, and extension training on climate-smart and income-generating farming practices to enhance household food security.
2. The State Ministries of Health and Agriculture, alongside Nutrition Extension Officers, should implement community-level nutrition education programmes focusing on diet diversification and proper food utilization to improve the nutritional well-being of rural farming households.

3. Policy makers and rural development agencies should adopt an integrated approach that links agricultural productivity programmes with nutrition-sensitive interventions to simultaneously address food access and dietary quality among farming households.

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