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Occupational dimension of food security: A rural household level assessment in Kogi State, Nigeria

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Abstract

This study empirically assessed the occupational dimension of food security among rural households in Kogi State, Nigeria. The study adopted a multi-stage random sampling technique to select one hundred and forty-four (144) rural households for data collection. Primary data obtained from the respondents were analyzed using descriptive statistics, food security index (FSI), and a binary logit regression model. The results revealed a mean age of 43 years among the rural household heads. Married households accounted for 79.29% of the sample size with a mean household size of 4 members. The level of illiteracy was relatively low. The mean monthly income among the households was N71,796.43 ((\$154.40)). The majority (91.30%) of the farmers were food secure while only 8.70% were food insecure. The incidence of food insecurity was higher (77.8%) among the artisans, followed by household heads in other occupations, traders, and civil servants with an incidence rate of 58.3%, 54.8%, and 51.5%, respectively. It was also found that sex ($p < 0.01$) and farming as a major occupation of household head ($p < 0.01$) had a positive impact on rural household food security, while age ($p < 0.01$) had a negative impact on household food security. It was recommended that relevant stakeholders should encourage rural households to practice agricultural production and farmers should be supported by the government and other relevant actors to expand their scale of production as this will have a multiplier effect on rural households' food security.

Keywords: Farming; Food security; Household; Occupation; Rural

1. Introduction

The occupational dimension among rural households plays a vital role in shaping the economic, social, and cultural aspects of rural communities and has implications on food security. Rural occupations encompass various economic activities such as agriculture, livestock rearing, forestry, fishing, mining, handicrafts, and small-scale industries. These occupations are often influenced by factors such as geographic location, natural resources, technological advancements, market demand, and government policies (Bhatt *et al.*, 2020). Rural occupations contribute significantly to the economic well-being of rural households and communities. They provide employment opportunities, generate income, and enhance livelihoods. Studies have shown that agricultural activities remain a primary source of income for many rural households, while non-farm occupations, such as rural entrepreneurship, microenterprises, and rural tourism, have gained prominence in recent years (Food and Agriculture Organization, FAO 2023; Rune and Martin, 2023; Abebe and Dereje, 2016).

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Occupations in rural areas are not solely economic activities; they are deeply intertwined with social and cultural dimensions (Stephen *et al.*, 2023). Rural occupations often reflect the traditions, customs, and identities of rural communities. Farming practices, for example, are not only a means of livelihood but also an integral part of rural culture and heritage. Moreover, certain occupations, such as handicrafts and traditional arts, contribute to preserving local traditions and cultural diversity. Understanding the dynamics of occupations in rural areas and its role in defining households' food security status is essential for policymakers, researchers, and practitioners to develop effective strategies for sustainable development (Christopher *et al.*, 2023; Luitfred, 2023; Paudel Khatiwada, *et al.*, 2017). This study aims to explore rural household level data to provide valuable insights into the diverse occupational patterns and their implications on food security.

Food security encompasses access (physical, social and economic) to food by people of all social status at all times in sufficient, safe, and nutritious state that meets their dietary needs and food preferences for an active, healthy, and productive life (Food and Agriculture Organization, FAO, 2018; Shaibu, 2021). This definition focus on the key dimensions of food security: food availability, food access, utilization and stability. Carter and Barrett (2006) defined food security as the ability of food-deficit nations to meet target levels of consumption on an annual basis. It also involves access by all people at all times to adequate food for active, healthy (Reddy *et al.*, 2016), and productive life. According to Idachaba (2004), food security is the ability of individuals and households to meet the required or recommended food needs. It is also a state of affairs where all people at all times have access to quality, safe and nutritious food a healthy lifestyle (Okpanachi, 2004).

The outbreak of the global COVID-19 pandemic further intensified the political economy conversations surrounding food security issues, with emphasis on developing countries where majority of the population are already food insecure. Existing report showed that, more than half of the 135 million acutely food insecure people in the world in 2019 live in Africa (73 million people) (World Food Programme, WFP, 2020). Currently, about 345 million people globally are affected by acute food insecurity in 82 countries (World Food Programme, 2023).

Shaibu (2021) likened food security in a developing country like Nigeria to poverty alleviation and concluded that, hunger (food insecurity) and poverty are complementary. Particularly, the poverty phenomenon in Nigeria has attracted significant global attention in recent times. Evidence from literature and recent indices by relevant bodies/organizations identified Nigeria as one of the world's poorest countries and the country's economy largely depends on crude oil (65 per cent of total government revenues in 2018) (FAO, 2018), and agriculture as the primary source of income and food for her populace. Food (in)security can be at the household, sub-national, national and global levels; hence, household food (in)security, sub-national food (in)security, national food (in)security and global food (in)security.

No doubt, literature abounds on food security status among rural and urban households in Nigeria (see for example; Orjiakor *et al.*, 2023; Wudil *et al.*, 2023; Ayinde *et al.*, 2020; Osabohien *et al.*, 2018; Ajayi and Olutumise, 2018; Abu, 2014; Arene and Anyaeji, 2010; Amaza *et al.*, 2007; Oni *et al.*, 2011; Babatunde *et al.*, 2007; Fakayode *et al.*, 2009; Oluyole *et al.*, 2009). This present study adds to existing body of knowledge by establishing the nexus of rural household occupational engagement and food security status. This has become necessary since the multi-dimensional nature of well-being has been found more relevant than the uni-dimensional methods that characterize traditional welfare economics. Oni *et al.* (2011) submitted that the plurality of human life advocates that well-being be addressed as much as possible in its multi-dimensional form in order to develop sustainable policy issues. There is thus a need to move to other dimensions of understanding rural households' food security status. Treating the employment and income patterns underlying occupational structure as a reference point to food security analysis is critical because occupation not only determines income potential of an individual but further indicates social status. Socioeconomically, occupational drives are related to an individual's function in the economic system, and ability to access sufficient, safe, and nutritious food at the right time. Consequently, this study assessed the occupational dimension of food security among rural households in Kogi State, Nigeria.

2. Methodology

This empirical study was conducted in rural Nigeria - Ijumu Local Government Area (LGA) of Kogi State. The LGA has its headquarters in the town of Iyara with three administrative districts of Ijumu-Oke, Ijumu-Aarin and Gbede. Geographically, it is located on Latitudes 7°51' 5°58'N and Longitudes 7°85'5°96'E. The LGA has a total land area of 1306km² and a population of 118,593. A multistage random sampling technique was used to select respondents for the study. In stage one, the three (3) administrative divisions or districts of the LGA were selected. The second stage involved random selection of four (4) rural communities each from the three administrative divisions or districts, giving a total of twelve (12) rural communities for the study. In stage three, twelve (12) rural households were randomly

selected from each rural community. In all, one hundred and forty-four (144) rural households were selected for the study. However, 140 copies of the questionnaire, representing 97.22% response rate, were eligible for analysis. Primary data obtained through questionnaire administration were analysed using descriptive statistics, food security index and logit regression model.

2.1. Empirical Model

To establish the food security status (FSS) of various occupations of the rural households in the study area, the study constructed Food Security Index (FSI) which is represented by (Z_i). The FSI was computed as stated below:

$$Z_i = \frac{Y_i}{R_i}$$

Where

- Z_i = Food security index of given household (i^{th})
- Y_i = Actual daily calories intake of a given household
- R_i = The recommended daily calorie intake of a given household.

The decision rule is that if Z_i is ≥ 1 , then the household is considered food secure and if Z_i is < 1 , then the household is considered food insecure.

Based on the food security index, this study estimated other indices such as food insecurity incidence, gap, and severity.

The effect of occupation on household food security was determined using binary logit model. The explicit form of the logit regression model used in this study is specified in the equation below.

$$FSS = \frac{P_i}{1 - P_i} = Z_i = \beta_0 + \beta_1 AGE + \beta_2 SEX + \beta_3 EDU + \beta_4 HHS + \beta_5 ACD + \beta_6 FXP + \beta_7 FAO + \beta_8 TRO + \beta_9 CSO + \beta_{10} ASO + e_i$$

Where;

- FSS = Household Food Security Status (1 = food secure, 0 = food insecure)
- AGE = Age of the household head (years)
- SEX = Sex of the household head (1 = male, 0 = female)
- EDU = Educational level of the household head (years)
- HHS = Household size (number)
- ACD = Access to Credit by the household head (access = 1, no access = 0)
- FXP = Farming experience of the household head (years)
- FAO = Farming as household head's major occupation (Dummy)
- TRO = Trading as household head's major occupation (Dummy)
- CSO = Civil Service as household head's major occupation (Dummy)
- ASO = Artisanry as household head's major occupation (Dummy)

3. Results and discussion

3.1. Socio-Economic Characteristics of the Rural Households

The socioeconomic characteristics of the respondents are presented in Table 1.

Table 1 Distribution of respondents according to selected socioeconomic characteristics

Socioeconomic Indicators	Frequency	Percentage	Mean/Mode
Age (years)			
20 – 40	60	42.86	
41 – 60	67	47.86	43 years
Above 60	13	9.28	
Sex			
Male	81	57.86	Male
Female	59	42.14	
Education			
No formal education	3	2.14	Tertiary education
Primary education	20	14.29	
Secondary education	39	27.86	
Tertiary education	78	55.71	
Marital Status			
Married	111	79.29	Married
Unmarried	29	20.71	
Household Size			
Below 5	71	50.71	4 persons
5 – 7	64	45.71	
Above 7	5	3.57	
Major Occupation			
Farming	46	32.86	
Trading	31	22.17	Farming
Civil Service	33	23.57	
Artisanship	18	12.86	
Others	12	8.57	
Average Income per Month (₦)			
Below 50,000	17	12.14	
50,000 – 100,000	50	35.71	71,796.43 (\$154.40)
101,000 – 150,000	53	37.86	
Above 150,000	20	14.29	

Source: Field Survey, 2021 NOTE: 1\$ = ₦465 (Central Bank of Nigeria's rate as at June 1, 2023)

The mean age of 43 years is an indication that household heads are in their active age group. The age of rural household heads is expected to have impact on its labour supply for food production. It is expected to have impact on ability to seek and obtain off-farm jobs and income, which could guarantee food security. Age is very important in agricultural production and livelihood activities; younger people are stronger and are expected to cultivate large-size farms than old people. The favourable percentage of female headed households may have positive implications on pattern of food consumption with respect to dietary diversity. The study recorded low illiteracy level. Education as a social capital could

impact positively on household ability to take good and well-informed production and nutritional decisions. Married households accounted for 79.29% of the sample size with a mean household size of 4 members.

The result of the finding shows that most (32.86%) of the respondents had farming as their major occupation and this may have implications on household food security status. In addition to agriculture, rural households often engage in cottage industries and handicraft production. These activities involve the creation of products such as textiles, pottery, woodcraft, and traditional arts. Cottage industries provide additional income sources and contribute to the preservation of cultural heritage. However, challenges include limited market access, low profit margins, and the need for skill development and product diversification.

The mean monthly income of ₦71,796.43 obtained in this study is an indication that the respondents are earning reasonable amount per month and this is expected to increase their access to safe and sufficient food.

3.2. Occupational dimension of Food Security

The occupational dimension of food security status among rural households in the study area is presented in Table 2. The result shows that majority (91.30%) of the farmers were food secure while only 8.70% were food insecure. Further, 45.16% 48.48%, 21.22%, and 41.67% of the traders, civil servants, artisans, and household heads in other occupation were food insecure. It can also be deduced from the result that the incidence of food insecurity was higher (77.8%) among the artisans, followed by household heads in other occupations, traders, and civil servants with an incidence rate of 58.3%, 54.8%, and 51.5%, respectively. The incidence of food insecurity among rural households with farming as major occupation of the household head was very low (8.7%). Furthermore, the food insecurity gap which is a measure of depth of food insecurity showed that farming households fell short of the recommended calorie intake by 1.5% only; that is, on average, the farming households need to be supplied with 1.5% of the daily minimum calorie requirement to get out of the food insecurity problem. However, rural households with artisans, other occupation, traders and civil servants as household heads fell short of the recommended calorie intake by 13.9%, 13.9%, 13.1% and 8.7%, respectively. This implies that, on average, these households need at least the respective percentage of the daily minimum calorie requirement to get out of the food insecurity problem.

Table 2 Occupational Dimension of Food Security

Food security indices	Farming	Trading	Civil Service	Artisan	Others
Food secure	42 (91.30)	14 (45.16)	16 (48.48)	4 (22.22)	5 (41.67)
Food Insecure	4 (8.70)	17 (54.84)	17 (51.52)	14 (77.78)	7 (58.33)
Total	46 (100.00)	31 (100.00)	33 (100.00)	18 (100.00)	12 (100.00)
Food Insecurity Incidence (P_0)	0.087	0.548	0.515	0.778	0.583
Food Insecurity Gap (P_1)	0.015	0.131	0.087	0.139	0.139
Food insecurity Severity(P_2)	0.004	0.50	0.26	0.043	0.052

Source: Computed from Field Survey Data, 2021 Figures in bracket are percentage (%)

The findings from this study suggests that farming households in rural areas of Nigeria are more likely to have sufficient access to food and are better able to meet their dietary needs compared to households engaged in other occupations. The high food security rate among farming households can be attributed to their direct involvement in agricultural activities, which provides them with a more reliable and consistent source of food. On the other hand, the lower food security rates among households engaged in trading, civil service, and artisan occupations indicate that these groups may face challenges in accessing an adequate food supply. This could be due to factors such as lower income levels, limited access to agricultural resources, or reliance on external sources for food. These findings highlight the importance of addressing food security issues among households in non-farming occupations in rural Nigeria. Policies and interventions should focus on improving access to nutritious and affordable food for these groups, promoting income-generating opportunities, and enhancing agricultural support services to diversify livelihood options.

3.3. Effect of Occupation on Food Security Status

Table 3 presents the result of logit model analysis on the effect of occupation on food security status of rural households in Kogi State, Nigeria. The result showed that the probability of households being food secure in rural areas of Kogi state is determined by age, sex and farming as the major occupation of the household head. The coefficient of age was found

to be negative and significant at 1% implying that food security declines with increase in age. A negative coefficient suggests that as age increases, the likelihood of being food secure decreases. This finding implies that older individuals in rural areas of Kogi State, Nigeria may face higher vulnerability to food insecurity compared to younger individuals. There could be several reasons for this relationship. For instance, older individuals might have reduced income-earning opportunities, limited access to productive resources, or face health challenges that affect their ability to secure an adequate food supply. This finding suggests that addressing the specific needs and challenges faced by older individuals in rural areas can be crucial for improving food security outcomes. Tailored interventions and social support programmes that consider age-related factors and promote sustainable livelihoods among the elderly population can contribute to enhancing their food security status.

Table 3 Estimates of the logit regression model on the effect of occupation on food security status

Variables	Coeff.	Std. Error	P>/Z/	Decision @ P < 0.05
Age (years)	-0.925	0.304	0.002***	Significant
Sex (dummy)	2.002	0.560	0.000***	Significant
Education (years)	-0.018	0.392	0.964	Not Significant
Household size (number)	-0.586	0.459	0.202	Not Significant
Access to credit (dummy)	-1.074	0.566	0.058	Not Significant
Farming experience (years)	0.459	0.322	0.154	Not Significant
Farming occupation (dummy)	3.587	1.062	0.001***	Significant
Trading occupation (dummy)	1.011	0.952	0.288	Not Significant
Civil Service occupation (Dummy)	1.455	0.976	0.136	Not Significant
Artisanship occupation (Dummy)	-0.377	1.088	0.729	Not Significant
Constant	0.777	1.725	0.652	Not Significant
LR Chi ² = 84.59***		Pseudo R ² = 0.443		Log likelihood = -53.009

Source: Authors' Computation from Field Survey Data, 2021 *** = coefficient sig. @ 1%

The coefficient of sex was positively signed and significant at 1% level of probability. This implies that the probability of rural households being food secure increases with the male headed households as compared with their female counterparts. The contribution of men to household food security could be associated with their income status and access to productive resources for better livelihood. This position agrees with Fabiyi *et al.* (2007) who reported that women have little access to assets like land, agricultural inputs, capital that will make agricultural work easier and enable them to make more income which will boost food security in rural households. The findings from this study suggests that being male is associated with a higher likelihood of being food secure compared to being female. This finding implies that there may be gender disparities in access to food and resources, with males having better access and experiencing lower vulnerability to food insecurity. To address the gender-related factors affecting food security, it is essential to promote gender equality and empower women in rural areas. This can involve initiatives that improve women's access to education, income-earning opportunities, productive resources, and decision-making power. By addressing the underlying gender disparities, efforts can be made to enhance the food security status of women and promote more equitable outcomes in rural communities.

Table 3 further shows that the coefficient of farming as the major occupation was positively signed and significant at 1% level of probability. This implies that the probability of being food secure among rural households increases with farming households as the major household head's occupation. This finding suggests that farming provides a favorable condition for ensuring food security, as it allows households to directly produce or have more reliable access to food. The significance of the coefficient implies that the relationship between farming as the major occupation and food security status (as previously observed) is not due to chance. Rural farming households are expected to have a wider range of livelihood options available to them than those with other forms of occupation. These farming households are more able to preserve their lives and feed their family members in the face of food shortages or hikes in food prices. On the other hand, the respondents who are not so much involved in farming activities could be much more vulnerable to shocks. Shocks have been reported to contribute to negative livelihood outcomes, leading to a downward spiraling poverty in rural areas. The findings of this study highlight the importance of supporting agricultural activities and rural

farming communities in Nigeria to improve food security. Enhancing agricultural productivity, providing access to resources, training, and market opportunities for farmers can contribute to increasing food availability and reducing vulnerability to food insecurity.

Agriculture remains a primary occupation in rural areas, forming the backbone of rural livelihoods. Crop cultivation, livestock rearing, and fisheries are common agricultural activities found in rural households. Literature highlights the importance of agriculture for food security, income generation, and rural development. Challenges associated with traditional agricultural occupations include limited access to modern technology, climate change impact, market uncertainties, and the need for sustainable farming practices. Additionally, factors like limited access to resources, inadequate infrastructure, technological disparities, market fluctuations, and climate change pose significant obstacles to sustainable rural occupations. However, these challenges also present opportunities for innovation, policy intervention, and capacity-building initiatives. Efforts should focus on promoting inclusive growth, enhancing skills and knowledge, improving market linkages, and strengthening rural institutions to overcome these challenges.

4. Conclusion

The study assessed the occupational dimension of food security among rural households in Kogi State. It can be concluded from the findings that, food insecurity was higher among artisans, traders, and civil servants as compared to the farmers. Rural household heads with farming as the major occupation were more food secure compared to their counterparts in trading, artisanship, civil service, and other forms of occupation. Further, sex and farming as a major occupation had a positive impact on rural household food security, while age had a negative impact on household food security. Consequently, rural households in other forms of occupation aside from farming should be encouraged and strengthened to get involved in farming, through the provision credit facilities, extension services, agricultural inputs, processing, storage and marketing services. Also, government should assist the rural farmers in accessing credit and other resources as all these are relevant for increased production with its multiplier effect on rural household food security.

Further Aspect

Gender plays a crucial role in shaping the occupational dimension of rural households. Women often engage in agricultural activities, agri-processing, cottage industries, and informal services. However, they face gender-based constraints such as limited access to land, credit, and education, which hinder their full participation and economic empowerment. Addressing gender disparities and promoting women's involvement in diverse occupations are vital for rural development, gender equality and food security. Future studies could also focus on analyzing the impact of technological advancements on rural occupations, assessing the role of rural entrepreneurship in fostering economic growth, establishing the linkages between rural occupations and sustainable development goals, and exploring innovative approaches for enhancing the resilience of rural households.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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