MOOR JOURNAL OF AGRICULTURAL RESEARCH

Journal homepage: https://iart.gov.ng/moorjournal/index.php/mjar/

Assessment of Food Security Status among Farming Households in Ogun State, Nigeria

Salawu M.B., *Hamzat O.A., Yusuf M.A., and Taiwo O.D.

Department of Agribusiness Management, Federal College of Animal Health and Production Technology, Ibadan, Oyo State. Nigeria.

Article Info

Article history:
Received: August 4, 2024
Revised: October 8, 2024
Accepted: November 6, 2024

Keywords:
Food security
Dietary diversity
Food intake
Farming households

Abstract

Inadequate food intake has adverse effect on farm performance, productivity and economic growth and the need to combat food insecurity and enhance productivity remain important in the achievement of Sustainable Development Goals. This study assessed food security status of farming households in Ogun State. Data were collected with the aid of well-structured questionnaire. Data on household food intake was collected from 180 farming households, using 24-hrs food consumption re-call with the aid of a well-structured questionnaire. Descriptive statistics, Household Dietary Diversity Score (HDDS) and Logit regression were used to analyse the data. The results revealed that about 60% of the respondents were married with an average age of 43.87years. More than 90% of households consumed oil and condiments. Over 80% of households consumed cereals while Over 70% of households consumed fish and vegetables. About 49%, 54%, 64% of households consumed pulses/legumes/nuts, fruits and root/tuber respectively. Percentage of households that consumed meat and poultry; eggs, milk/dairy products and beverages/confectioneries were 36.67%, 30%, 17.78% and 12.78% respectively over the period of 24-hrs. The HDDS result showed that households had mean of 7. The HDDS category showed that 57.22% and 42.78% of households fell into adequate dietary diversity category and inadequate dietary diversity category respectively. The logit regression revealed that household size, farming experience, access to credit, number of under-five children in the household and nutrition information awareness have effect on household dietary diversity. Therefore, farmers should be sensitized on the importance of adequate dietary diversity to improve the food security status of their households.

Introduction

The importance of food as basic necessity and a means of sustenance of life cannot be over-emphasized. Adequate food intake and dietary diversity is a key for healthy and productive life (FAO, 2013). Good nutrition is of great importance for the well-being of both children and adults as inadequate food intake and low dietary diversity could result in various health challenges that can reduce productivity of farm families or households on the long run. The issue of hunger and food insecurity is a global problem and this will persist if adequate and proper measures are not taken to develop policies and interventions to improve food security. About 690 million people globally do not have enough food to meet with their basic nutritional needs (FAO, 2021). Dietary diversity is the number of different foods or food groups consumed by the household over a period of time not regarding the frequency of consumption (Kolliesuah *et al*, 2023; Hoddinott *et al.*, 2002).

It is known that no single food can contain all nutrients needed by the human body therefore the more food groups included in daily diet, the greater the likelihood of meeting nutrient requirements which is sufficiently diverse to reflect nutrient adequacy

Corresponding author: Tel: +2347067028328
Email address: hamzatolatunji22@gmail.com (O.A. Hamsat)

(Lebadarios *et al.,* 2011). One of the main problems in recent decades has been the issue of global food security. In recent years, plans to achieve food security in developing countries have not been completely revised due to the rising cost and scarcity of resources, such as food, land, and water (Pieter *et al*, 2013). The cost of low dietary diversity and poor food intake to families and the nation as a whole is considerably high, these includes vulnerability to diseases, lack of vitality, weakness of the body, low immunity, lack of vigor and strength (Ajani, 2010). The outcome of this is low productivity which will in turn increase poverty thereby having a detrimental effect on the nation. A well-fed and healthy individual have effective and efficient contribution to economic development (Ogbo *et al.,* 2015).

Most rural communities in developing countries lack adequate dietary diversity (Govender *et al.,* 2017). They depend mostly on starchy staples with less animal products, fresh fruits and vegetables (Harris *et al.,* 2023). Morbidity and mortality among African children that resides in rural communities have been attributed to malnutrition and low dietary diversity (Geng *et al.,* 2018; Block *et al.,* 2013). The attainment of the Sustainable Development Goal of zero hunger depends on efforts put in place to manage food and nutrition situation especially among farming households. From the aforementioned, the main objective of this study was to investigate the food security status among farming households in Ogun State. The specific objectives were to:

(i) profile household consumption of various food groups
(ii) assess the adequacy of food intake of farming households
(iii) examine the factors influencing food security status

Materials and Method

Study area

This study was conducted in Ogun State, Nigeria. The state lies within the south-west geopolitical zone of Nigeria between latitudes $7^0$09‘to 20^0.56’’N and longitudes 3^0 20‘ to 42^0.32’’E.

Data collection

Data were collected with the aid of well-structured questionnaire. Data were collected on socio-economic characteristics and consumption of various food groups by the respondents etc.

Sampling technique

A multi-stage sampling technique was employed in selecting the households for this study. The first stage involved the random selection of 4 local governments where farming is a major occupation out of the 20 local government areas in Ogun State. The second stage involved random selection of 3 villages from each of the four Local Government Areas. The third stage was the random sampling of 15 farming households from each selected village to give a total of 180 farming households.

Methods of data analysis

The methods of data analysis adopted to meet the objectives of this study include Descriptive statistics, Household Dietary Diversity Score (HDDS) and Logistic Regression model.

Descriptive statistics

Descriptive statistics such as frequency, percentages and mean were used to profile the socio-economic characteristics and the various food groups consumed by households.

Household dietary diversity score (HDDS)

Data on household food intake was collected using 24-hr recall dietary intake. The information collected on dietary consumption was used to calculate a dietary diversity score (DDS). A list of meals, dishes and all food items and beverages consumed in the last 24-hr was recorded. Following food variety score used by past study (Taruvinga *et al.,*2013), the household with DDS of ≤6 classifies as a low or inadequate dietary diversity category (food insecure) in food groups. However, households that score >6 in the food groups were regarded as high or adequate dietary diversity category (food secured).

Logistic regression analysis

The probability that a household is classified in one dietary diversity category compared to the other is restricted to lie between zero and one ($0 \leq P_i \leq 1$). P_i represents the probability of a household to be classifi-

ed in the IDD category and $(1 - P_i)$ represents the probability of a household to be either classified in the IDD category or the ADD category. Thus, the model was therefore used to assess the odds of: IDD and ADD.

$$\ln (P_i / 1 - P_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e.. \text{ (i)}$$

Where, P_i = Dietary Diversity Category (i.e. Inadequate Dietary Diversity IDD)
$1 - P_i$= Adequate Dietary Diversity, ADD);
β_0 and β_{1-9} are the estimated coefficients of the parameters.
X_1 = Sex (Male =1, Female =0),
X_2 = Age of household head (Years),
X_3= Household size (Number),
X_4 = Years in farming,
X_5= Access to credit (Yes =1, No =0),
X_6 =Number of under 5-year-old children,
X_7 = Farm size (Hectare),
X_8 = Output consumed,
X_9 = Nutrition awareness (yes=1, No=0),
e= Error term

Results and Discussion

Socio-economic and enterprise characteristics of households

Table 1 shows the description of the socio-economic characteristics of farming households. The result indicates that 60% of the household heads were male while 40% of the respondents were female. This can be linked to the patriarchy nature of family. The distribution of age of the respondents revealed that about 20.56% of the respondents were less than or equal to 30years old while 30.56% of the respondents were between 41-50years.

Table 1: Distributions of socio-economic and enterprise characteristics of households

Variable	Frequency	Percentage	Mean±SD
Gender of household head			
Male	108	60.00	
Female	72	40.00	
Level of Education			
No Formal Education	59	32.78	
Primary	81	45.00	
Secondary	40	22.22	
Household Size			
≤5	75	41.67	6±3
6-10	90	50.00	
>10	15	8.33	
Farming experience			
≤10	108	60.00	11.56±7.69
11-20	50	27.78	
>20	22	12.23	
% of Output Consumed by Household			
≤20	71	39.44	31.15±19.54
21-50	93	51.67	
>50	16	8.89	
Age			
≤30	37	20.55	43.87±12.96
31-40	33	18.33	
41-50	55	30.56	
>50	55	30.56	

Source: Data analysis, 2024

The mean age was 43.87years. This implies that most of them were active young adults who could apply maximum physical labor and skills to assess more food. It was further revealed that about 33% of the respondents had no formal education, 45% had primary education while 22.22% had Secondary education. With reference to the Household size, the analysis showed that 41.67% of respondents had household size of 1-5 members, 50% of the respondents had household size of 6-10 members while 8.33% had household size with more than 10 members. The mean household size was 6 members. Majority (60.00%) of the respondents had less than or equal to 10 years of farming experience with mean year of experience being 11.56years. The result further showed that about 51.67% of the respondents consumed between 21- 50% of their farm output within the household. It implied that households that consume less of their total farm output stand a chance of being food secured as they have enough left to be taken to the market for sale thereby generating more income.

Food group consumed by households

Table 2 shows the percentage of households that consumed one or more of the food groups within the 24-hr recall. The three most consumed food groups were spices/condiments/beverages; oil and cereals while the three least consumed food groups were confectioneries, milk/dairy products and eggs as respondents. This is consistent with findings from Osypova et al., (2023) that explains that some essential foods are often less consumed especially in lower income demographics where staple foods are prioritized.

Number of food groups consumed by households

The result in Table 3 showed the number of food group consumed by the households within the 24hr recall. The minimum number of food group consumed by the households was four (4) while the maximum number consumed was eleven (11) with a mean consumption of seven (7) food groups. Therefore, households that consumed greater than or equal six food groups in 24hrs were categorized as households with adequate dietary diversity (food secured) while households that consumed less than six food groups were categorized as households with inadequate dietary diversity (food insecure).

The result in Table 4 showed the dietary diversity disaggregation. The sampled households showed that 57.22% of households had adequate dietary diversity while 42.78% had inadequate dietary diversity. This implies that a considerable number of households had inadequate dietary diversity in the area.

Table 2: Distribution of Food Groups consumed by Households

S/No	Food group	Yes	No
1	Cereals	149 (82.78)	31 (17.22)
2	Roots and tubers	115 (63.89)	65 (36.11)
3	Vegetables	140 (77.78)	40 (22.22)
4	Fruits	97 (53.89)	83 (46.11)
5	Flesh and organ meats	66 (36.67)	114 (63.33)
6	Eggs	54 (30.00)	126 (70.00)
7	Fish and Sea foods	133 (73.89)	47 (26.11)
8	Pulses legumes and nuts	89 (49.44)	91 (50.56)
9	Diary/milk products	32 (17.78)	148 (82.22)
10	Oil	174 (96.67)	6 (3.33)
11	Confectioneries	23(12.78)	157(87.22)
12	Spices, condiments and beverages	179 (99.44)	1 (0.56)

Source: Data analysis, 2024. ***Figures in parenthesis are percentages

Table 3: Distribution of different food groups consumed by Households

Number of food groups	Frequency	Percentage
4	3	1.67
5	23	12.78
6	51	28.33
7	44	24.44
8	34	18.89
9	14	7.78
10	9	5.00
11	2	1.11

Source: Data analysis, 2024

Table 4: Category of household dietary diversity status

Category	Frequency	Percentage
Adequate Dietary Diversity	103	57.22
Inadequate Dietary Diversity	77	42.78

Source: Data analysis, 2024

Factors influencing food security among farming households

The result in Table 5 revealed that household size, farming experience, access to credit, number of under-5 children in the household and adequate nutrition awareness were the significant variables that affected food security status of farming households in the study area. Household size was negative and significant at 5%, this implies that households with fewer members were more likely to be food secured than large households. This finding is in line with the work of Mamo *et al* (2024). Farming experience was positive and significant at 1%, this implies that increase in farming experience predisposes farmers to acquisition of skills and better farming practices which will increase food production and households' food security. This is in tandem with the work of Wudil *et al* (2023). Access to credit is positive and significant at 1% which implies that households that had access to credit are more likely to be productive, have better life which will in turn contribute to their food security status of being food secured. This finding is consistent with the result of Kehinde and Kehinde (2020). The number of under- 5-year-old children in the household was positive and significant at 1%, this implies that households with more under-5-year-old children are more likely to be food secured. Nutrition awareness was positive and significant at 1%, this implies that households with adequate nutrition awareness are more likely to be food secured because the knowledge they have ultimately influences the nutritional decisions of the households. This finding is in line with the work of Mousa and Dardas (2023).

Table 5: Logistic Regression Result of Factors influencing Adequacy of Diet among Households

Variable	Marginal Coefficient	Standard Error
Constant	-0.6431	0.8917
Sex of Household head	0.9827	0.9106
Age	-0.0093	0.0209
Household size	-0.2293**	0.0949
Farming experience	0.0984***	0.0380
Access to credit	1.3324***	0.4747
Number of under-5 children	0.4820***	0.2694
Farm size	0.0279	0.0421
Output consumed	0.0042	0.0105
Nutrition awareness	0.8751***	0.3500
Log likelihood	108.795	
Chi-squared	28.17	
Prob> Chi^2	0.0017	

Data analysis, 2024. ***, **, * indicates Significant at 1%, 5% and 10%

Conclusion and Recommendations

Based on the major findings of the study, the following conclusions were drawn. Though more than half of the studied households had adequate dietary diversity (food secured), significant number were yet to have adequate dietary diversity (food insecured). Also, household size had a negative effect on food security while farming experience, access to credit, number of under five-year-old children within the household and nutrition awareness had positive effect on food security. It is therefore recommended that farmers should be given proper education and awareness with a view to orientate households on the importance of certain food items which could improve the nutritional status of their household and on the long run reflect in a better health status. Households need to be educated on the consequences of wrong nutritional decisions; this is of great importance for households with inadequate dietary diversity so that they can attain a better standard of living. Credit should be made accessible to the farmers as this will in turn promotes better farm production among the farming households

References

Ajani, S.R. (2010), "An Assessment of Dietary Diversity in Six Nigerian States", Afr. J. Biomed. Res., 13: 161 -167.

Block, S. (2013), "Maternal Nutrition Knowledge and the Demand for Micronutrient-Rich Foods: Evidence from Indonesia", Tufts University, Waltham, MA.

FAO (2021). The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition, and affordable healthy diets for all. Food and Agriculture Organization of the United Nations. https://www.fao.org/publications/sofi/2021/en/

FAO. (2013). Food and Agriculture Organization of the United Nations (FAO), "Guidelines for Measuring Household and Individual Dietary Diversity," Rome. 2013.

Geng, S., J. Ma., S. Liu., J. Zhang and X. Sheng (2018): Lack of Dietary Diversity contributes to the Gaps in Micronutrient Status and Physical Development between Urban and Rural Infants. *Iranian Journal of Public Health* 47(7): 958-966.

Govender, L., K. Pillay, M. Siwela, A. Modi and T. Mabhaudhi (2017): Food and Nutrition Insecurity in Selected Rural Communities of KwaZulu-Natal, South-Africa-Linking Human Nutrition and Agriculture. International Journal of Environmental Research and Public Health 14(1):17.

Harris, J., de Steenhuijsen Piters, B., McMullin, S., Bajwa, B., de Jager, I., Brouwer, I.D. (2023). Fruits and Vegetables for Healthy Diets: Priorities for Food System Research and Action. In: von Braun, J., Afsana, K., Fresco, L.O., Hassan, M.H.A. (eds) Science and Innovations for Food Systems Transformation. Springer, Cham. https://doi.org/10.1007/978-3-031-15703-5_6.

Hoddinott, J. and Yohannes, Y. (2002). Dietary diversity as a food security indicator. Washington, D.C.: Food and Nutrition Technical Assistance, Academy for Educational Development.

Kehinde, A. D. and Kehinde, M. A. (2020). The impact of credit access and cooperative membership on food security of rural house-holds in south-western Nigeria. J. Agribus. Rural Dev., 3(57): 255–268. http://dx.doi.org/10.17306/J.JARD.2020.01337256.

Kolliesuah, N.P, Olum, S and Ongeng, D. (2023). Status of household dietary diversity and associated factors among rural and urban households of Northern Uganda. *BMC Nutr*. 9(83). doi: 10.1186/s40795-023-00739-4

Labadarios, D., Steyn, N.P., and Nel, J. (2011), "How diverse is the diet of adult South African?" *Nutrition Journal*, 10: 33.

Mamo, D.N, Worku. K.M, Adem, Y.F, Shibabaw, A.A, Habte, A and Haile, Y. (2024). Household food security status and its associated factors among pensioners in Arba Minch town, South Ethiopia. *Front. Nutr.* 11:1363434.

Mousa, T.Y and Dardas, L.A. (2023). Nutrition knowledge, food security, and other risk factors in a sample of college students in Jordan: A cross-sectional design. *Cogent Food Agric.*, 9 (2): 2265109

Ogbo, F.A. Andrew P., Idoko, J., Claudio F., and Agho K.E., (2015). Trends in complementary feeding

indicators in Nigeria, 2003–2013. *Bio Medical Journal* 5 (10): 9-15.

Osypova, O., Horna, M., Vashchaiev, S., Ishchuk, Y., and Pomazun, O. (2023). Convergence of food consumption across Ukrainian regions: approach using spatial panel data models. *Agricultural and Resource Economics: International Scientific E-Journal*, 9: 28 – 43.

Pieters, H., Guariso, A., and Vandeplas, A. (2013). Conceptual Framework for the Analysis of the Determinants of Food and Nutrition Security. FOODSECURE Working Paper No. 13. doi: 10.22004/ag.econ.285141.

Taruvinga, A., Muchenje, V. and Mushunje, A. (2013). Determinants of rural household dietary diversity: The case of Amatole and Nyandeni districts, South Africa. *International Journal of Development and Sustainability*, 2(4): 2233-2247.

Wudil AH, Ali A, Aderinoye-Abdulwahab S, Raza HA, Mehmood HZ and Sannoh AB (2023) Determinants of food security in Nigeria: Empirical evidence from beneficiaries and non-beneficiaries rice farmers of the Kano River Irrigation Project. *Front. Sustain. Food Syst*. 7:999932. doi: 10.3389/fsufs.2023.999932