

Influence of Food Culture and Practices on Household Food Security in North Central Nigeria

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Abstract The culture of a place and the cultural practices contribute directly or indirectly to the food security situation of a given society. This study assessed the influence of food culture and practices on household food security among Tiv, Igala and Eggon ethnic groups in North Central Nigeria in 2011. A sample of 120 Tiv, 108 Igala and 112 Eggon households was interviewed using a structured questionnaire and focus group discussion. The data were analyzed using descriptive statistics and a logistic regression procedure. Findings revealed that all households consumed carbohydrate based foods, men (93%) dominated agricultural decision making and undertake land preparation and ridging while women carried out weeding and food processing. All households practiced subsistence farming, 94.7% practiced mixed cropping, 93% acquired farmland through inheritance and 67 % sourced farm labour from the family. Males controlled household income (95%) and had preference in household food sharing (78%). Food culture and practices that significantly influenced household food security were control over household income (-1.056; $p \leq 0.05$) and preference over household food sharing (0.834; $p \leq 0.05$). The study concluded that culture was a dominant factor in number of meals consumed per day, household food choices, agricultural decision making, cropping system, division of labour, land acquisition, control over household income, preference in household food sharing and hence food security. It is recommended that both male and female farmers should be encouraged to diversify their income sources and make more money accessible for food purchases. Also, both gender should be provided access to productive resources for increased agricultural production and productivity for food security. Furthermore, farmers should be encouraged to produce and consume food of increased quality and diversity for improved nutrition and food security and household food should be fairly distributed in order to take care of the nutritional needs of all family members.

Keywords: food, culture, practices, households, Nigeria

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1. Introduction

Food security is physical and economic access to sufficient, safe and nutritious food to meet the dietary needs and food preferences by all people, at all times for an active and healthy life [1]. The major elements of food security are food availability, food access, food utilization and protection of access. Food availability for farm households in rural areas means assurance that they can access sufficient food through their own production or through purchase from markets, given sufficient purchasing power. Food access is ensured when households, and all individuals within them, have adequate resources to obtain appropriate foods for a nutritious diet. The key determinants of food access are economic, physical, political and socio-cultural factors [2]. Food utilization means ensuring nutritional outcome [3]. Stability of food supplies means that households do not risk losing access to food due to adverse weather conditions, political instability or economic factors such as unemployment or rising food prices [4].

Food security is a global challenge as reflected in the Millennium Development Goal (MDG) of eradicating extreme poverty and hunger. This includes reducing by half the proportion of people who suffer from hunger between 1990 and 2015. In 2010 an estimated 925 million people in the world were hungry, of which 907 million (98%) were in developing countries [5,6]. The food security situation in Nigeria has improved slightly recording only 6 percent level of undernourishment in 2006/2008. Both the number and proportion of undernourished individuals decreased from 16.3 million people in 1990/1992 to 9.4 million in 2006/2008 [7]. However, food availability does not necessarily ensure food accessibility at the household level.

Availability of food and access to food depend largely on the food culture and practices of a people among other factors. Culture is defined as the way of life of a particular society and it refers to the roles, uses, position and symbolism of individuals, ideas and objects such as food in all aspects of a society, including beliefs, values, norms, taboos, institutions, language, rituals and arts [8]. The culture of a place is intrinsically linked to the food consumed in the region as culture prescribes the

interaction between people, between people and land, and between land and food [8,9]. Culture impacts on food and nutrition security through the systems of crop production, distribution and utilization [8,10,11]. Ethnicity is also related to food security because the environments where people live and their ancestral origins influence food culture and practices with food and food cultures passed on from one generation to another [8]. Furthermore, the specific socio-cultural norms that govern control over income and household food allocation can influence access to food [12].

Studies on the cultural dimensions of food security in Nigeria are scanty. Some of the works that have been done in this area in Nigeria dwell mainly on listing traditional food taboos and their implications for food and nutrition security [13,14]. However, the understanding of how food culture and practices influence household food security among ethnic groups is essential in order to take appropriate measures to ensure food security. This paper, therefore, examined the food culture and practices of the respondents and determined their effects on household food security in a study carried out in North Central Nigeria and provided this understanding.

2. Methods

The data examined in this paper were part of a large survey of households' food security situation among selected ethnic groups in North Central Nigeria. A mixed methods approach was employed using a questionnaire and semi-structured interviews to collect quantitative and qualitative data.

2.1. Study Population and Setting

North Central Nigeria is known for its diversity of ethnic groups, including the Ibara, Nupe, Gwari, Eggon, Pyem, Goemai, Kofyar, Jukun, Igala, Idoma and Tiv who obtain their living from agricultural production. The study population comprised three of these ethnic groups and one village per ethnic group purposively selected based on differences in language and culture.

2.2. Quantitative Data Collection and Analysis

A random sample of 120 Tiv, 108 Igala and 112 Eggon households were interviewed using a structured questionnaire. Food security, which is the dependent variable, was measured as follows: Firstly, the household's calorie intake was obtained by requesting the person responsible for food preparation in the household to report the quantities of every food item consumed in the household in the past 24 hours. Secondly, the quantities were converted to grams and the calorie content was estimated using the available food consumption tables [15,16]. Thirdly, per capita calorie intake was calculated by dividing the estimated total household calorie intake by the number of Adult Equivalent (AE) in the household using the consumption factor for age-sex categories [17]. Based on FAO criteria, the food security line for Nigeria was 2766 kcal [18]. Consequently, households whose daily per capita calorie supply per AE was greater than 2766 kcal were regarded as food secure and were assigned

a value of 1 while households experiencing a calorie deficit were regarded as food insecure and were assigned a value of 0.

Five explanatory variables (cropping systems, land tenure systems, labour use, control over household income and preference in household food distribution), all measured as discrete variables, were identified to be major food culture and practices that influence household food security in this study. Except for control over household income and preference in household food distribution, the remaining three variables were a priori expected to have a positive impact on food security.

The Logit regression model was used to estimate the food security status of households as a function of a set of food culture and practices. The model has been widely used for binary dependent variables [19,20]. The Logit regression model was used to determine the influence of food culture and practices on household food security is represented as:

$$Z = \ln \frac{p_i}{1 - p_i}$$

$$= \ln Ya + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4$$

$$+ b_5x_5 + b_6x_6 + b_7x_7$$

Where:

Z = probability of food security (1 = food secure; 0 = food insecure).

bs = coefficients of explanatory changes in z caused by change in the independent variables.

X1 = Cropping systems (monocropping=1; Mixed cropping=0).

X2 = Land tenure systems (inheritance=1; purchase=0)

X3 = Labour use (family=1; hired, exchange=0).

X4 = Control over household income (household head=1; wife=0)

X5 = Preference over household food sharing (husband/adult males=1; wife, children=0).

2.3. Qualitative Data Collection and Analysis

Focus group discussions were held separately with groups of 10 men and 10 women in each village to elicit information on the cultural context of food and gender participation in agriculture.

3. Results

3.1. Cultural Context of Food and Gender Involvement In Agriculture

3.1.1. Cultural context of Food

The focus group discussions revealed that among the three ethnic groups, food is taken for survival and consumption of 3 meals per day is customary. The foods consumed regularly by the households were yam, guinea corn and cassava by Tiv; cassava and maize by Igala and rice and beans by Eggon communities. At special events such as marriages and burials, pounded yam, cassava/corn food and rice are served by the Tiv, Igala and Eggon households respectively. In addition, the Eggon households serve local beans ('Ijeingbeckme') at traditional marriages and rice and beans at the naming of a new born child.

3.1.2. Traditional gender Involvement in Agriculture

Both the men and the women groups reported that household heads, who are usually men, took the decisions on agricultural production activities such as what fields to use, which crops to plant, who in the household should plant which crops and who should carry out what activity.

The group discussions further revealed that both men and women in Tiv farm households undertake the production of both food (yam, guinea corn and maize) and cash crops (beniseed, rice and groundnut). Gender disaggregation by agricultural activities in Tiv farm households is such that both men and women take part in planting, fertilizer application, seed storage and sale of produce. Men are responsible for land preparation, ridging, herbicide application and pest management while women carry out weeding, crop harvesting and processing.

Among the Igala ethnic group, men grow food crops such as cassava, yam and maize while women produce cassava, bambaranut and cocoyam. The cash crops for men include maize, yam and pigeon pea and those for the women are cassava, bambaranut and pepper. Both men and women undertake planting harvesting and storage of harvested crops. Men have the sole responsibility of land preparation, ridging, fertilizer application, pest management and seed storage while women undertake the tasks of weeding, crop processing and sale of produce.

Eggon men produce food crops such as rice, cassava, maize and guinea corn and the women grow cassava and rice. Both men and women grow cash crops such as rice, cassava, melon and beniseed. While the men are responsible for land preparation; ridging, fertilizer application, herbicide application and sale of produce the women carry out planting, weeding, seed storage and crop processing. Both men and women are involved in crop harvesting and storage.

3.2. Households' Food Culture and Practices

The results of household food culture and practices are summarized in Table 1.

3.2.1. Cropping System

Majority of the households practice mixed cropping (Tiv-91.7%, Igala-96.3%, Eggon-96.4%). In all, 94.7% of farmers in North Central Nigeria practice mixed cropping.

3.2.2. Land Tenure Systems

Findings revealed that majority (93%) of the households acquired farm lands through inheritance, although a small proportion (6.5%) cultivated lands they personally owned through outright purchase.

3.2.3. Labour Use

The types of labour used in agricultural production among the ethnic groups can be classified into three categories: family labour, hired labour and exchange labour. Of these, family labour was the main source of labour among the ethnic groups studied. Family labour accounted for 67.6% of total labour used in agricultural production whereas exchange labour contributed about 25% and hired labour 7%.

3.2.4. Control over Household Income

Majority of the households reported that husbands had control over household income (Tiv-92.5%, Igala-91.7%, Eggon-99.7%).

3.2.5. Preference in Household Food Sharing

Majority of the households across the ethnic groups reported that husbands were served first in household food distribution (Tiv-70.4%, Igala-83.9%, Eggon-77.9%). A small proportion of the households served children first (Tiv-9.2%, Igala-28.7%, Eggon-16.1%) while a minority served women and younger girls first (Anter-11.7%, Ikem-1%).

Table 1. Percentage distribution of food culture and practices among ethnic groups in North Central Nigeria

Food culture/practices	Tiv (n=120)	Igala (n=108)	Eggon (n=112)	Pooled (n=340)
Cropping systems				
Mixed cropping	91.7	94.4	95.3	94.7
Both monocropping and mixed cropping	8.3	5.6	4.5	5.3
Land tenure systems				
Inheritance	97.5	91.7	84.8	92.5
Purchase	2.5	8.3	15.2	6.5
Labour use				
Family labour	67.5	71.3	64.2	67.6
Hired labour	7.5	9.3	4.5	7.1
Labour exchange	25.0	19.4	31.2	25.3
Control over family income				
Husband	92.5	91.7	77.7	95.4
Wife	7.5	8.3	22.3	12.6
Preference in food sharing				
Husband/adult male	79.2	0.9	83.9	77.9
Women/children	20.9	57.4	0.0	22.0

Table 2. Logit estimation results of the effect of food culture and practices on household food security in North Central Nigeria

Food culture and practices	B	S.E	Wald	DF	Sig	(Exp (B))
Constant	-21.64	6674.51	.000	1	.997	.000
Cropping systems (X ₁)	-1.29	.86	2.23	1	.135	.277
Labour use (X ₂)	2.52	.295	72.99	1	.000	12.46
Land tenure system (X ₃)	21.80	6674.51	.000	1	.997	29388026
Control over household income (X ₄)	-1.06*	.48	4.829*	1	.028	.338
Preference over household food sharing (X ₅)	.83*	.37	5.008*	1	.025	2.302

*Significant (p ≤ 0.05).

3.3. Food Culture and Practices Influencing Household Food Security

The results of the logistic regression in Table 2 revealed that two out of the five variables on food culture and practices included in the model were significant in explaining the variations in the food security status of households in the study area. These variables are control over household income (-1.056; $p \leq 0.05$) and preference in household food sharing (0.834; $p \leq 0.05$). Control over household income was negative and significant at 5% level, implying that control over household income by husbands decreases the probability of food security. Preference over household food sharing was positive and significant at 5% level. This indicates that giving priority to husbands/adult males in household food distribution increases the probability of household food security.

4. Discussion

The fact that the ethnic groups studied consumed mostly carbohydrate based foods the previous day suggests a low quality diet in North Central Nigeria. This may have far-reaching health and nutrition consequences in both the short and the long term. A diet too high in carbohydrate can upset the delicate balance of the body's blood sugar level, resulting in fluctuations in energy and mood that leave one feeling irritated and tired [21]. In addition, too much carbohydrate can lead to weight gain, obesity, diabetes and potentially other diet related diseases [22].

The domination of the household heads who are usually males in agricultural decision making may be attributed to the patriarchal nature of society and power relations as well as access to resources that has been structured in a way to favour men. This is despite the fact that women contribute about 70% of agricultural labour, 50% of animal husbandry related activities and 60% of food processing activities in Nigeria [23]. The exclusion of women from household decision-making could impact negatively on household food security.

The striking difference in the traditional gender division in agriculture among the three ethnic groups is that while women in Igala farm households undertake the sale of farm produce, men carry out the same task in Eggon farm households while in Tiv households both men and women are involved. Generally, the traditional division of agricultural activities among the three ethnic groups is such that men are responsible for heavy tasks of land preparation and ridging while women carry out the lighter tasks of weeding and crop processing. Increased agricultural productivity for farm households for food security, therefore, depends on increased access by both men and women to productive resources.

The practice of mixed cropping in the study area could have a positive influence on food security by providing security for farmers against pests, disease and unexpected climatic conditions. It may help small-scale farmers obtain higher yields, provides farming communities with a range of products with multiple uses and values as well as varieties of crops for immediate consumption and for long-term storage [24]. In the traditional mixed cropping

system the diverse crop species usually grown together complement one another by using resources in different ways, scarce labour is sufficiently utilized, weeds and insects are suppressed, erosion is controlled, there is sequential harvesting and the risk of total crop loss is averted. In the light of this, being subsistence farmers, the practice of multiple cropping found to be dominant in the region should be encouraged while research and extension activities should focus on developing and promoting appropriate technologies, including use of inputs that can raise productivity in mixed cropping system.

The analysis of the method of land acquisition indicated that inheritance was the most important means of acquiring farm land in North Central Nigeria. Similar result was obtained in South West Nigeria [25]. However, it must be noted that the traditional land tenure system, including land inheritance, hinders large scale farming or cultivation. It also restricts the freeing of land to would be investors for socio-economic development, particularly in rural areas of Nigeria [26]. In view of the fact that the livelihoods of over 70% of the inhabitants of the area are linked to land and natural resource exploitation, access to land and provision of necessary inputs and incentives by governments in North Central Nigeria would increase agricultural production and productivity leading to food security and sustainable development in the region.

The importance of family labour in farm work and the lack of mechanization in agricultural production imply that the availability of family labour is a prerequisite for a household to increase farm size. In addition, the use of family labour reflects the subsistence nature of the farming system, which is mainly for family survival. Labour is a key asset for smallholder households in rural Nigeria. In the context of Nigeria's smallholder production where farm mechanization is virtually non-existent and all farm work is done manually, having access to necessary labour for agricultural production directly affects the levels of household farm income and hence food security.

The finding of this study on control over the household income by men concurs with the report of the United Nations that, in areas where men are in control of household income, less money is spent on food when compared to those where women have control over income [27] but contrasts the research in Bangladesh which showed that, increases in fathers' income share lead to increased spending on food [28]. However, numerous studies have found that increases in women's income share are associated with a variety of improved child outcomes or with spending on goods likely to benefit children. For instance, income in mother's control has been found to be associated with improvements in child health in Brazil [29] and increased spending on nutrients, health and housing in rural Mexico [30]. In Cote d'Ivoire, it was found that wife's income share had a positive effect on the budget allocated to food [31]. In addition, it has been reported that the income controlled by women has greater immediate benefits for the family's nutritional well-being than male-controlled income [32]. It should be noted, however, that cultures assign responsibility for different household domains to women and men, and these gendered social arrangements influence how money is used. These differential impacts of male-and female-controlled income can have important implications for the

design and evaluation of income-related projects or policies for improving food security. It is, therefore, suggested that more research be conducted on implications of male versus female controlled income for family members' food consumption and nutritional status in the region before any substantial resources are devoted to this issue in the policy arena.

The general practice in household food sharing in North Central Nigeria is for husbands to be served first. The finding of this study indicates that giving priority to husbands/adult males in household food distribution increases the probability of household food security. This is so because in the traditional division of labour in agricultural activities in North Central Nigeria, males undertake the heavy agricultural tasks while females carry out the lighter tasks. Besides, farm work is manually done in the study area. Therefore, the males may require more food in order to produce enough food for household consumption and for enhanced income, which could be used for purchases during food crisis. However, this could threaten the nutritional wellbeing of the vulnerable members of the family. The finding also agrees with other studies [33,34,35] which revealed that inequalities in food distribution within families in many countries have favoured men over women, among other variables. Furthermore, it has been found that, in Bangladesh women eat after men and children have eaten and what is left after all others have eaten [36]. However, giving priority to the head of the family and the income-earning members of the household in eating could result in mothers and young children receiving a smaller share of the family's food relative to their nutritional needs [37] even though a household may have enough food. There is, therefore, the need to create awareness among all family members and particularly fathers of the benefits of adequate nutritional intake for the nutritional well-being and productive capacities of all household members.

5. Conclusion

The study concluded that culture is a dominant factor in number of meals consumed per day, household food choices, agricultural decision making, cropping system, division of labour, land acquisition, control over household income, preference in household food sharing and hence food security. Food culture and practices that significantly influenced household food security were control over household income and preference over household food sharing.

Although decision making in agriculture is often seen as a male task, women's capacities should be built through training to use their bargaining power to negotiate their participation. Additionally, farmers should be encouraged to produce and consume food of increased quality and diversity for improved nutrition and food security, and household food should be fairly distributed in order to take care of the nutritional needs of all family members. Both male and female farmers should be encouraged to diversify their income sources and make more money accessible for food purchases. Furthermore, both male and female farmers should be provided access to productive resources for increased agricultural production and productivity for food security.

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Statement of Competing Interests

The authors have no competing interests.

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