

SOCIO-CULTURAL DETERMINANTS OF PLANT PROTEIN SOURCES CONSUMPTION AMONG RURAL HOUSEHOLDS IN ENUGU STATE, NIGERIA.

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ABSTRACT

The study examined socio-cultural determinants of plant protein sources consumption among rural households in Enugu state, Nigeria. The specific objectives of the study were to: determine socio-economic characteristics of the respondents assess the frequency of consumption of plant protein sources among respondents and determine households' socio-cultural factors affecting plant protein consumption in the study area. A multi-stage random sampling procedure was employed in selecting 150 respondents across the six Agricultural zones in the study area. Structured questionnaire was also utilized to collect data from the respondents. Data obtained for the study were analyzed using descriptive statistics such as frequency counts, mean and percentages as well as Probit Regression model. Finding from the study showed that most respondents (97.7%) indicating that Okpa was the foremost source of plant protein grown by the rural households followed by dry cowpea (beans) (96.0%), green cowpea (Akidi) (92.7%), bread fruit (Ukwa) (92.0%), while the least grown was African yam bean (Odudu) (41.3%). Furthermore, the result showed that okpa ($\bar{x} = 5.0$) was the only frequently consumed plant protein source among rural households in the study area. Nevertheless, dry cowpea ($\bar{x} = 4.5$), groundnut ($\bar{x} = 4.3$), pigeon pea ($\bar{x} = 4.0$), green cowpea ($\bar{x} = 3.9$), soy bean ($\bar{x} = 3.5$), bread fruit ($\bar{x} = 3.5$) and African yam bean ($\bar{x} = 2.7$) were regularly consumed by the respondents in the study area. Again, the results revealed that household size and composition, religion of the household, household's likeness for meat, and households' value attached to meat have negative influence on the frequency of plant protein sources consumption in the study area while their engagement in cultural affiliations has positive influence on the consumption of plant protein sources. It is thus recommended that agricultural extension agencies in the State should mount campaigns on cultivation and consumption of common plant protein sources as a way of encouraging people to utilize their available local protein sources for the well being of rural households in the study area.

Key words: Socio cultural factors, Consumption, Plant Protein Sources, Rural households

INTRODUCTION

Protein is required for the growth, maintenance and repair of all body tissues. Protein form the foundation of muscles, skin, bone, hair, heart, teeth, blood and

brain and the billions of biochemical activities going on in the body every minute. When inadequate amount of protein is consumed the blood and tissues can become either too acidic or too alkaline (Adetunji and Adepojo, 2011). Lack of dietary protein can retard growth in children and in adult, can be a contributing factor in chronic fatigue, depression, slow wound healing and the decreased resistance to infections (Iyangbe and Orewa, 2009)

It has been estimated that the daily minimum crude protein requirement of an adult in Nigeria varies between 65 and 85g per person. However it is recommended that 35g of this minimum requirement should be obtained from animal products (Oloyede, 2005 and Britton, 2003). The inadequate intake of these nutrients hinders healthy growths, affects the individual's ability to undertake productive activities, and lowers the utilization of other nutrients (Aromolaran, 2004). So the starting point towards arresting the problem of malnutrition and undernourishment and raising the level of nutrition must be first to ascertain the consumption pattern of essential food like protein which are indispensable for growth and development especially animal protein which contains more of the amino acid needed by the body.

It is well-known that Nigeria's per capita intake of high quality protein is too low. The health hazards of protein malnutrition have been well documented (FAO, 1990). Even in Enugu State Nigeria, there are observable incidence of infant mortality, low resistance to diseases, poor child growth and development, mental retardation common among children of rural household which comes as a result of inadequate protein in the diets. An adult needs approximately 3,500 calories and 50grams of protein per day; a one-year-old child needs about 1000 calories and 15grams of protein per day. Yet, these quantities of essential nutrients are deficient in the diets of many rural household in Nigeria who consume mostly staples of grains such as maize, without adequate nutritional supplements. Thus, dependence on these staples cause malnutrition especially among resource-poor households (Robert *et al.*, 2000). The level of poverty in Nigeria is on the increase due to low level of income, high cost of food products particularly protein foods due to the recent economic recession, as well as inadequate production of protein foods by the predominantly peasant rural farmers. Consequently, rural farm households in Enugu State in an effort to cope with

the harsh economic situation in the country cut down on expenditure as well quantity of protein consumed. Aromolaran, (2001) reported that Nigeria is still struggling to meet up with the minimum food and nutrient requirements. The evidence of poor nutrition is reflected particularly amongst low income rural households. It has been estimated that 7,300 children die of malnutrition annually in Nigeria, before they reach the age of four years; while 73,000 to 84,000 infants born every year suffer from malnutrition. The pre-school children are not left out of the ill wind of malnutrition blowing in Nigeria (Ajayi and Chukwu, 2008). The presence of low height for adult age has been reported among school children and adolescents and this was attributed to inadequate intake of protein. The adults and the elderly ones have their own fair share of some degrees of malnutrition. Conditions such as gingivitis, angular stomatitis, loss of strength, low productivity, low morale, lethargy and retardation are common in this category of people. These conditions are directly or indirectly as a result of malnutrition. Pregnant and lactating women in Nigeria were reported to have low intakes of many nutrients such as protein, calcium, niacin and riboflavin. Figures on average crude protein consumption per day in Nigeria fall short of the recommendations of Food and Agriculture Organization (FAO) (Ajayi and Chukwu, 2008). The deficiency of protein in the diet will invariably affect the income generating ability, manpower development and overall contribution to the nation's Gross Domestic Product.

There has been a paucity of research that addresses consumption of the plant protein sources among the rural farm households Nigeria. All the while, knowledge of consumption of plant protein sources in Enugu State, Nigeria has been based on mere assumption and not on any empirical evidence. There is therefore the need to examine the socio cultural factors that influence the consumption of plant protein in the area especially among the resource poor rural farm households. Therefore, this paper seeks to analyze the socio-cultural determinants of consumption of plant protein sources among rural farm households in Enugu State, Nigeria. The specific objectives of the paper are to:

- i. examine socio-economic characteristics of the respondents;
- ii. ascertain the major plant protein sources in the study area;
- iii. assess the frequency of consumption plant protein sources
- iv. determine household socio-cultural factors influencing frequency of consumption of plant protein sources in the study area.

METHODOLOGY

This study was conducted in Enugu State Nigeria. Enugu State is located in the Southeast geopolitical zone of Nigeria. The State is made up of 17 Local

Government Areas. It has a land area of about 8,022.95km², and is bounded on the East by Ebonyi State, on the North by Benue and Kogi States, on the South by Abia State and on the West by Anambra State. The major occupation of the people is farming. Major crops grown are cassava, yam, maize, rice, melon, groundnut, palm oil, bambara nut (Okpa), cowpea and a variety of fruits and vegetables.

A multi-stage random sampling technique was employed in selecting respondents for the study. In the first stage, three (3) Agricultural Zones were purposively selected out of 6 Agricultural Zones in the State because they represent the Northern, Central and Southern parts of the State. The zones were Awgu, Enugu and Nsukka Agricultural Zones. The second stage was random selection of two(2) Local Government Areas in each Agricultural Zone giving a total of six (6) Local Government Areas. The third stage was random selection of five (5) communities in each sampled L.G.A giving total of thirty (30) communities. The fourth stage was random sampling of five (5) rural households in each of the sampled communities giving a total of one hundred and fifty respondents which was the sample size for the study.

Data obtained for the study were analyzed using descriptive statistics such as frequency counts, mean and percentages. Specifically, in assessing the frequency of consumption of plant protein sources among rural farm households, a list of common plant protein sources consumed in the study area was made and the respondents were ask to tick the frequency of consumption using a 7 point type Hedonic scale of measurement weighted as follows: Every day =7; 5 – 6 times in a week=6; 3 – 4 times a week=5; 1 – 2 times a week=4; Once in a week=3; Only during festivities=2; None=1. The maximum weight of 7 was further divided into 3 to obtain a class interval of 2.33 which was successively subtracted from the seven towards 0 to obtain three distinct class ranges that formed the three 3 categories of consumption frequencies as follows: 1.00- 2.33=rarely consumed; 2.34- 4.66 = regularly consumed; 4.67 – 7.00= frequently consumed. Furthermore, Probit regression model statistics estimating the relationship between selected households' socio-cultural factors and the consumption frequency of animal protein source was employed. The model is explicitly expressed as follows

$$Y_i^* = B_i X_i^* + e_i \dots\dots\dots (1)$$

$$Y_i^* = 0 \text{ if } X_i^* = 0 \dots\dots\dots (2)$$

$$Y_i = 1 \text{ if } X_i^* > 0 \dots\dots\dots (3)$$

Where,
 Y = consumption frequency of plant protein sources (proxied by the pooled mean scores)
 X₁ = Use of Household's menu (Yes=1 otherwise=0)
 X₂ = Households' composition (Yes=1; otherwise=0)

X₃ = Household's Educational status (Yes=1; otherwise=0)
 X₄ = Household's Cultural affiliation (Yes=1, otherwise=0)
 X₅ = Households' Religion (Yes= 0 otherwise)
 X₇ = Wealth status of the Household (Yes=1; otherwise=0)
 X₈ = Household's likeness for Meat (Yes=1; otherwise=0)
 e = error term

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

Results in Table 1 show that the mean age of the respondents was 48years old. However,38% of the

respondents were within the age bracket of 40-49 years while 24% of the respondents in the study area were within the age bracket of 31-40 years. This implies that most of the respondents in the study area were still in their active stage in life which will enhance their farming activities as well as agricultural production efficiency for household food security. This result conformed to findings of Nze and Azubuiké (2016) that most farmers in Abia State were in their productive ages and were thus able to cope with the challenges of agriculture. Furthermore, results in Table1 show that males were majority of the respondents (68%). This indicates that males are actively committed to ensuring food availability in their households as well as determining what should be consumed.

Table 1 Distribution of respondents according to their socio-economic characteristics

Variable	Frequency	Percentage	variable	frequency	percentage
Age			Estimated monthly income		
<30	1	2.0	≤ 20,000	5	10.0
31-39	10	20.0	21,000-30,000	6	12.0
40-49	19	38.0	31,000-40,000	9	18.0
50-59	12	24.0	41,000-50,000	10	20.0
60 and above	8	16.0	51,000 and 60 above	5	10.0
mean	48.0600		61 and above	15	30.0
			Mean	54,6000	
sex			Involvement in farming		
female	16	32.0	Full time farming	20	40.0
male	34	68.0	Part time farming	30	60.0
Marital status			Household size		
married	43	86.0	1-5	18	36.0
Single/divorced	2	4.0	6-10	32	64.0
widow	5	10.0	11 and above	0	0
Educational status			Mean	5.9	
No school	1	2.0			
primary	22	44.0			
secondary	14	28.0			
Post secondary	13	26.0			

Source: Field survey, 2017

Also, results in Table 1 reveal that most of the respondents (86%) were married while 10% were widowed. The results conformed to Adegboye (2016) who reported that 90% of the sampled respondents in Northern Nigeria were married thus supporting Ozor, Ozioko and Acheampong (2015) that marriage is vital in rural areas where wives usually supported their households in agricultural production, processing and marketing. The results further show that 28% of the respondents had secondary education while (26%) of them had post secondary education. The results imply that there was relatively high level of literacy among the respondents in the study area which could enhanced their level of production and consumption of protein source. The more educated the respondents are, the better they can adopt

innovations more readily that will lead to increased output (Nwachukwu, 2014). The distributions of the respondents by involvement in farming shows that majority (60%) of the respondents were part time farmers while 4% engaged in full time farming. This implies that farming was not the major source of income of respondents in the study area. This finding is contrary to the views of Akin-Olagunju and Omonona (2014) who reported that agriculture represents the main income source in the rural economy. Furthermore, 64% of the respondents has a household size of between 6-10 persons/household while 36% of them had a household size of 1-5 persons/household. The mean household size of the respondents was 6 persons per household. This

implies that the respondents in the study area had a fairly large household size.

The distribution of the respondents by monthly estimated income shows that 30% of the respondents earned #61,000 and above every month while 20% of the respondents in the study area earned #41,000-#50,000 per month. However, the mean monthly estimated income of the sampled respondents in the study area was #54,600. This result implies that the monthly income of the respondents in the study area is low and might affect the level of consumption of protein source among the rural farm households.

Major Sources of plant Protein readily grown by Rural Households in the Study Area

Similarly, the result further shows the major types of plant protein sources that were equally grown in the study area. A local delicacy Okpa considered the foremost source of plant protein grown by the rural households with (97.7%) followed by dry cowpea (beans) (96.0%), green cowpea (Akidi) (92.7%), bread fruit (Ukwa) (92.0%), pigeon pea (Fiofio) (91.3%), groundnut (88.0%), soy bean (83.3%) and the least consumed was African yam bean (Odudu) with (41.3%). The implication of the result is that there are several plant protein sources readily grown and available for consumption by rural households in Enugu State. This result is in line with the finding of Boye *et al.*, (2010) who reported that okpa flour is made from a very high protein source.

Table 2: Distribution of respondents according to major types of Protein Sources Consumed by the respondents in the study area

S/N	Variable	AWGU N= 50		ENUGU N= 50		NSUKKA N = 50		ENUGU STATE N = 150	
		Freq	%	Freq	%	Freq	%	Freq	%
1	Dry Cowpea (Bean)	47	94.0	47	94.0	50	100	144	96.0
2	GreenCowpea (Akidi)	45	90.0	48	96.0	46	92.0	139	92.7
3	Soybean	40	80.0	43	86.0	42	84.0	125	83.3
4	Okpa	48	96.0	49	98.0	48	96.0	145	96.7
5	Pigeon Pea (fiofio)	44	88.0	45	90.0	48	96.0	137	91.3
6	Groundnut	44	88.0	43	86.0	45	90.0	132	88.0
7	Odudu(African Yam bean)	28	56.0	14	28.0	20	40.0	62	41.3
8	Bread Fruit (Ukwa)	50	100	46	92.0	42	84.0	138	92.0

Source: Field Survey, 2017

Frequency of Plant Protein Sources Consumption by Rural Households in the Study Area

Table 3 shows the results of frequency of plant protein sources consumption by the rural households in Enugu State. The results show that okpa ($\bar{x} = 5.0$) was the only frequently consumed plant protein source among rural households in the study area. Nevertheless, dry cowpea ($\bar{x} = 4.5$), groundnut ($\bar{x} = 4.3$), pigeon pea ($\bar{x} = 4.0$), green cowpea ($\bar{x} = 3.9$), soy bean ($\bar{x} = 3.5$), bread fruit ($\bar{x} = 3.5$) and African yam bean ($\bar{x} = 2.7$) were regularly consumed by the respondents in the study area. The result shows that okpa is highly consumed while African yam bean (odudu) rarely consumed by the rural farm household in the study area. This may be attributed to the fact that okpa is a generally accepted delicacy in the study area and it is highly affordable too. Also the low frequency of consumption of African yam bean

(odudu) may be as a result of the fact that the respondents who are farmers are not planting enough for their household consumption or high cost of the commodity in the market as well as time consumed in cooking. This is in line with the findings of Ogunniyi (2011), who reported that majority of the respondents in Oyo State consumed staple food that are available which prices are highly affordable when prepared irrespective of the nutritional value of the food. Furthermore, variations in the frequency of protein consumption as found in Table 3 could be attributed to changes in the physiological state of the body, to various factors associated with different households such as availability and facility of essential goods and services, time use, information, social barriers and the household setting among others (HAI.2000)

Table 3: Mean score distribution of respondents according to frequency of consumption of plant protein sources in the study area

Plant Protein sources	Awgu zone Max=7	Enugu zone Max=7	Nsukka Zone Max=7	Enugu State Max=7	Remarks
Dry Cowpea (Bean)	4.41	4.5	4.5	4.5	Regularly consumed
Green Cowpea (Akidi)	3.92	3.8	4.0	3.9	Regularly consumed
Soybean	3.51	3.5	3.5	3.5	Regularly consumed
Okpa	5.71	4.8	4.6	5.0	Frequently consumed
Pigeon Pea (fiofio)	4.16	4.0	3.9	4.0	Regularly consumed
Groundnut	4.39	4.1	4.4	4.3	Regularly consumed
Odudu (African Yam bean)	3.16	2.1	2.5	2.7	Regularly consumed
Bread fruit	3.62	3.5	3.4	3.5	Regularly consumed
mean				3.93	Regularly consumed

Source: Field Survey, 2017

Key: 1.00- 2.33 = rarely consumed; 2.34- 4.66=regularly consumed, 4.67 -7.00=frequently consumed

Estimates of the Relationship between selected Household's Socio-Cultural Factors and Consumption frequency of plant Protein Sources

The results show that the coefficient of households' size was negatively signed and significant at 5% level of probability. This implies that any decrease in household size will lead to a corresponding increase in the consumption frequency of plant protein sources. The coefficient of religion of the household was negatively signed and significant at 10% level of probability. The coefficient of households' cultural affiliation was positively signed and highly significant at 1% level of probability indicating a direct relationship. This implies that any increase in the households' engagement in their cultural affiliations will lead to a corresponding increase in the consumption frequency of plant protein sources. The coefficient for households' likeness for meat was negatively signed and significant at 5% level of probability. This implies that any increase in households' consumption of meat will lead to a

corresponding decrease in the consumption frequency of plant protein sources. The coefficient of the value attached to meat was negatively signed and significant at 5% level of probability indicating an indirect relationship in the consumption frequency of plant protein sources. This implies the any increase in the value attached to meat by households will lead to a corresponding decrease in the frequency of plant protein source by such a household. The Chi-square value of 3600.391 was highly significant at 1% level of significance indicating a goodness of fit of the Probit regression line. Therefore, the hypothesis which stated that there was no significant relationship between selected households' socio-cultural factors and the consumption frequency of plant protein sources in the study area was rejected and the study therefore concluded that there was a significant relationship between selected socio-cultural factors and the consumption frequency of plant protein sources in the study area.

Table 4. Probit Regression estimates of the socio-cultural determinants of consumption frequency of plant protein sources in Enugu State.

Variables	Estimate	Std. Error	Z	Sig.
Intercept	-1.469	.068	-21.618	.000
Type of Meal household's menu	-.063	.048	-1.302	.193
Household Size and composition	-.120	.049	-2.441	.015
Knowledge of relevance of Protein	.042	.050	.839	.402
Household's Educational Status	-.079	.054	-1.473	.141
Religion of the Household	-.137	.075	-1.835	.067
Household's Cultural Affiliation	.199	.059	3.392	.001
Wealth status of the Household	.099	.061	1.622	.105
Household's likeness for Meat	-.119	.049	-2.442	.015
Households' value attached to Meat	-.116	.054	-2.152	.031
Availability of Meat in the house	.031	.050	.607	.544
Chi Square	3600.391***			
Log Likelihood				
Degree of Freedom	125			

Source: Field survey data, 2017

CONCLUSION AND RECOMMENDATIONS

The paper examined socio-cultural determinants of plant protein sources consumption among rural households in Enugu state, Nigeria. The results of the study show that Okpa was considered the foremost source of plant protein grown and consumed by most rural households (97.7%) followed by dry cowpea (beans) (96.0%), green cowpea (Akidi) (92.7%), bread fruit (Ukwa) (92.0%), pigeon pea (fiofio) (91.3%), groundnut (88.0%), soy bean (83.3%) while the least consumed was African yam bean (Odudu) with (41.3%). Similarly, Bamba nut (Okpa) was most frequently consumed while dry cowpea, green cowpea, groundnut, pigeon pea (fiofio), bread fruit (Ukwa) and soy bean were regularly consumed among respondents in the study area. The study shows that certain socio-cultural factors were major determinants of the consumption frequency of plant protein sources among rural households in the study area. Specifically, household size and composition, religion of the household, household's likeness for meat, and households' value attached to meat have negatively determined the frequency of plant protein sources consumption among rural households in the study area while their engagement in cultural affiliation has positive influence on the consumption frequency of plant protein sources. It is thus recommended that extension agencies in the State should mount an enhanced campaign on cultivation and consumption of common plant protein sources in the study area as a way of encouraging people to utilize their available local protein sources for the well being of rural households.

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