AN ASSESSMENT OF ANIMAL PROTEIN CONSUMPTION PATTERNS AMONG RURAL DWELLERS IN OSUN STATE, NIGERIA

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ABSTRACT

The study assessed animal protein consumption patterns among rural dwellers in Osun State, Nigeria. A multi-stage sampling technique was employed to select 120 respondents. Data collected were described using frequency count, percentage, means and standard deviation. Multiple regression and chi square analyses were used to explain the relationships between socio-economic characteristics and rural dwellers' consumption patterns of animal proteins. The mean age of respondents was 27.4 years while 57.5 percent, 42.5 percent were males and females respectively. Also 66.7 percent were married while 88.3 percent had formal education ranging from primary to tertiary education. More than half (69.2%) of the respondents had between 5 and 8 household members. Farming was the major occupation of 75.0 percent of the respondents. The most consumed animal protein sources were fish (41.0%), milk (42.0%) for breakfast, while for dinner, beef (62.2%), fish (45.1%) were the major sources of animal protein consumption, chickens were not commonly consumed by rural households because it is only during festivals that chickens are commonly consumed. The results of the co-efficient of multiple regression (R^2) showed that 83 percent variation in the dependent variable was explained by the independent variables included in the regression model. The co-efficient of age (X_1) showed a negative (b =-0.063) relationship to the dependent variable, likewise, sex (b =- 0.108), religion and occupation (b =- 0.146) were not statistically significant to animal protein consumption patterns of the respondents. However, marital status (b = 0.142, $p \leq 0.01$), educational status (b = 0.114, $p \leq 0.01$), household size (b = 0.146, $p \leq 0.01$) and household income per annum (b = 0.262 $p \leq 0.01$) were statistically significant. It was recommended that government and non-government organizations should intensify nutrition campaigns to rural dwellers that would help in enlighten them on the importance of protein of animal sources in their diets.

Key Notes: Assessment, animal protein, consumption patterns.

INTRODUCTION

Malnutrition is still widespread in Nigeria due to the decline in protein intake occasioned by the scarcity and unaffordable price of animal protein food sources such as milk, egg, meat and fish (Asiabaka *et al.,* 1999, Obiasi, 2003). Nigeria like many other developing countries is faced with a worsening situation of inadequate protein consumption. The Nigerian population may not necessarily be at the

point of starvation but definitely, the people are highly undernourished. For instance World Health Organization (2007) reported that 35.3 percent of Nigerian children between the ages of 0.5 and 5.99 years in urban areas are malnourished. While 40.0 percent of children of same age bracket in rural areas were underweight. The usefulness of protein in the human diet cannot be overemphasized. The proteins are constructed from a set of 20 amino acids and are virtually important in all cell functions. Some are involved in structural support, while others are involved in bodily movement or defense against germs. Proteins do not only act as antibodies or in contractile and structural forms but they also act as enzymes, hormones and as storage or transport protein. Proteins are so important in the body because of the essential and non-essential amino acids they contain (Haddad et al 1996). The essential amino acids are ten (10) for children i.e. plus arginine for growth and nine for adults cannot be reproduced by the body except taken through diet and supplementation. Failure to receive even one of these amino acids results in serious health problems and muscle and bone degradation over time as the body actually strips them from the muscle and bone structures. Proteins in human nutrition can be of two types, animal sources and plant sources. The animal sources of protein are richer in these essential amino acids than proteins from plant sources. The reason for this is that animal sources of protein contain all the

20 amino acids required for the body tissue synthesis while no one plant protein source contains all the 20 amino acids (Cattlemen's Beef Board and National Cattlemen's Beef Association, 2009). The issue lies in the fact that the absence of one of the amino acids in one's daily diet, body tissue synthesis cannot be done hence a waste of otherwise useful amino acids (Wolfe, 2006).

The plant protein sources are alright but they are deficient of the very valuable essential amino acids that include methionine and lysine that can only be served through diets rich in animal protein. Elamin, (2010) asserted that in developing areas of the world, people often have diets low in energy and an attendant shortage of protein. This results in widespread under nutrition and malnutrition that affect all age groups in Nigeria. People who consume too little protein and food energy can go on to develop protein energy malnutrition (PEM). Malnutrition included by dieting and related factors contributes to the breakdown of a wide range of human defense mechanisms that protect against disease infection. Aside from this, cognitive development and school performances are impaired by poor nutrition and health with consequent losses in productivity during adulthood (Haddad *et al.,* 1996).

The low level of animal protein consumption in Nigeria as reported by the Food and Agriculture Organization (FAO, 2009) revealed that the diet of an average Nigerian contains 20 percent

less than the recommended requirement. This is no doubt responsible for most problems of malnutrition among all age groups particularly children and infants.

Statement of Problems

Nigeria is faced with an acute nutrition problem which is mostly due to inadequate food supply, poor income and lack of proper education on food selection. This problem leads to malnutrition, a consequence of unbalanced diet which in turn leads to poor physique and low energy output. Nutritional related diseases thus occur with consequences in reduced productivity.

Aromolaran and Igbaro (2007) asserted that in South Western Nigeria, the average monthly expenditure on animal product was 21 percent of average monthly income of household heads. Of this, the total monthly expenditure on animal protein source of beef accounted for 31.35 percent, fish for 34.88 percent, eggs for 10.77 percent and chicken, pork, goat meat, turkey, bush meat and mutton accounted for 5.23 percent, 4.6 percent, 4.3 percent, 4.13 percent, 3.4 percent and 1.05 percent respectively. This is quite low compared to what the situation is in the European Union and this is accompanied by productive and health consequences. This calls for an urgent solution to off-setting or ameliorating this imbalance.

Accelerated consumption of products of animal origin in our diets is a major solution to close the protein gap in Nigeria. This can be feasible through the promotion of livestock sub-sector which comprises of cattle, sheep, goats, pigs, poultry etc. The livestock industry serves as a source of high quality protein in form of meat, milk, eggs, cheese. However, there is still a complication which are consequences of many social and economic factors which make people to have discriminative attitudes towards the consumption of these various products. An instance of this is the religious or traditional taboo associated with the consumption of pork. There is therefore the need to undertake an assessment study of consumption pattern of animal protein among rural dwellers in the study area to bridge the animal protein gap among the very easily accessible sources of chicken, beef, fish and egg. It is on this basis that this study is set out to examine the following objectives: describe the socio-economic characteristics of rural dwellers in the study area; determine the proportions of different animal proteins' inclusion on daily basis in the diet of the rural dwellers in the study area; examine the respondents' preferences on the consumption of animal protein in the study area: estimate the proportion of income spent on animal protein and determine the relationship that exists between socio-economic characteristics of rural dwellers and their consumption patterns of animal proteins.

Methodology

The Study Area

The study was conducted in Osun State, Nigeria. The state has a population of 2,423,535 (National Population Commission 2006). The state is located

in the south western part of Nigeria and lies within latitude 70^0 and 90^0 north of equator and longitude 2.75^0 and 6.76 east of Greenwich meridian. It shares common boundaries to the north with Kwara State, to the South with Ogun State, to the West with Oyo State and to the East with Ondo State. Osun State is made up of 30 local government areas with 3 Agricultural Development Programmes (ADPs) Zones.

Sample and Sampling Technique

Primary data were collected for the study using a well structured questionnaire. A multistage random sampling technique was employed in the selection of the respondents for the study. The first phase involved the random selection of the two local government areas (LGAs) from each of the three ADPs zones. At the second stage, two communities were randomly selected from each of the LGAs sampled for the study. At the final stage, ten rural dwellers were randomly selected from each community selected for the study. A total of one hundred and twenty respondents were taken for the study.

Analytical Techniques

Data collected were described using frequency counts, percentage, means and standard deviation. Multiple regression and chi square were used to analyze the relationship between socio-economic characteristics and rural dwellers' consumption patterns of animal proteins.

Results and Discussion

Data in table 1 show that rural dwellers who have attained the age of 50 years and above constituted 45.0 percent and

respondents within the age range of 30-39 years was 23.3 percent whilst 24.1 percent of the respondents were between 40 and 49 years, The mean age of the respondents was 49.4. This showed that majority of the rural households were ageing hence prone to diverse protein consumption patterns due to age differences. Table 1 also shows that male respondents was 57.5 percent while female rural dwellers were 42.5 percent. The implication of this findings was that men were seen to be in charge of dietary needs of rural households in the study area. Majority of the respondents (66.7%) were married and this indicated that there was every likelihood that respondents' protein consumption or intake might increased. Majority of the respondents (88.3%) could read and write and hence have the knowledge of the dietary importance of food from animal protein sources. Table 1 further shows that majority of the rural dwellers (86.7%) in the study area were Christians. The household size was mainly between 5 and 8 persons. Data in table 1 also show that the major occupation of the respondents was farming with 75.0 percent engaged in it. About 12.5 percent of the respondents engaged in trading, 8.3 percent were civil servants while 4.2 percent were Artisans. The implication of these findings is that respondents could have access to animal protein sources from the livestock sector, since farming was their main occupation. The mean annual income of the respondents was N263,607.28 indicating that the annual

incomes of the respondents was low, hence they were poor. The statuses of the respondents in their various households indicated that 49.2 percent were fathers, while 40.8 percent were mother indicating that parent (father and mothers) in the course of discharging their assignments of parenthood were responsible for providing foods for their households especially proteins of animals source.

The results in table 2 show the distribution of respondents based on daily inclusions of animal proteins in their diets. It was revealed that beef and fish were included in all diets of the respondents (i.e breakfast, lunch and dinner). Beef and fish were largely and fairly largely included in the dinner meals of the respondents with 62.2 percent and 45.1 percent respectively. It was revealed from the study that rural dwellers commonly take solid meals in the night after returning from their daily works. Also the consumption was attributed to the unique taste and tender nature of beef and the availability and ease of preparation of fish. Vension was not usually included in the diets of the respondents as shown in table 2, hence breakfast (0.0%), lunch (21.0%) and 36.5 percent for dinner. Almost half (42.5%) did not include it in any of their meals. This might probably be the uncommon nature of the product.

Data in table 3 show the distribution of respondents based on the proportion of income spent on animal protein sources. Here, the proportions of income of the respondents expended on animal protein sources were too small. Less than half (43.3%) of the respondents spent 15.0 percent of their income on animal protein sources while 26.7 percent expended between 11.0 and 15.0 percent of their monthly income on animal protein sources. Also, 27.5 percent of the respondents expended between 6.0 percent and 10.0 percent of the monthly income on animal protein sources while just 2.5 percent of the respondents spent 0.5 percent on same. The implication of the findings show that rural dwellers were poor and importance of the proteins from animal origin was not sufficient known by them. These findings are in tandem with finding of Aromolaran and Igbaro (2007) also asserted that in south western Nigeria the average monthly expenditure on animal products of household head was low.

Table 1:   Socio-Economic Characteristics of Respondents

Variable	Frequency	Percentage (%)
Age (Years)		
Below 20	4	3.33
20-29	5	4.17
30-39	28	23.3
40-49	29	24.1
50 and above	54	45.0
Mean age=47.4		
Sex		
Male	69	57.5
Female	51	42.5
Marital Status		
Married	80	66.7
Single	23	19.2
Divorce	10	8.3
Widow(er)	07	5.8s
Educational Status		
No formal education	14	11.7
Primary education	26	21.6
Secondary education	60	50.0
Tertiary education	20	16.7
Religion		
Christianity	104	86.7
Islamic religion	13	10.8
Traditional religion	03	2.5
Household size		
Below 5	23	19.2
5-8	83	69.2
9-12	14	11.6
Occupation		
Farming	90	75.0
Trading	15	12.5
Artisans	05	4.2
Civil Service	10	8.3
Income (₦) (Per Annum)		
Below 100,000	11	9.2
100,000 – 200,000	39	32.5
200,001 – 300,000	38	31.6
300,001 – 400,000	20	15.7
400,001 – 500,000	07	7.5
Above 500,000	03	2.5
Respondents' Status in the Family		
Fathers	59	49.2
Mothers	49	40.8
Children	07	5.8
Relations	05	4.2

Source: Field Survey, 2015

Table 2: **Distribution of respondents based on Animal protein inclusion in the diets on daily basis**

Sources	Breakfast (%)	Lunch (%)	Dinner(%)	None(%)
Beef	24.5	13.3	62.2	0.0
Chicken	14.3	8.5	15.3	61.9
Fish	41.0	13.9	45.1	0.0
Mutton	23.0	22.0	35.2	18.8
Snail	24.0	26.0	22.0	28.0
Milk	42.0	38.0	12.0	8.0
Egg	39.0	23.0	18.0	20.0
Pork	8.0	13.0	12.0	67.0
Vension	0.0	21.0	36.5	42.5

Source: Field Survey, 2015

Multiple responses, recorded

Table 3: **Distribution of Respondents Based on Proportion of Income Spent on Animal Proteins   (n=120)**

Proportion of total income spent on food of animal Protein sources monthly	Frequency	Percentage(%)
<0.05	3	2.5
0.06-0.10	33	27.5
0.11-0.15	32	26.7
>0.15	52	43.3
Total	120	100.00

Source: Field Survey, 2015

Data in table 4 show the distribution of the respondents based on preferences for different animal protein sources. The most source was fish with 72.5 percent of the respondents who indicated this while the preferred animal protein sources were beef and milk as indicated by 76.2 percent and 74.2 percent respectively. The preference given to these animal protein products was as a result of the fact that these products were commonly accessible and also were free from religious taboos. Also from the table the least preferred animal protein sources were snail (83.3%), pork (78.3%) and egg (66.7%). The least preference given to these products might be due to non-availability, cost of the products and religious taboos. Animal protein sources which were not preferred at all were mutton (57.5%) vension (48.3%) and chicken (42.5%). This was attributed mainly to scarcity of the products particularly mutton and vension, chickens are not commonly consumed by rural households, this is because the consumption of chickens by the respondents is usually during festivals and some occasions like Christmas, Easter festivals birthday ceremony.

Table 4: **Distribution of respondents based on preferences for different Animal protein source**

Sources	Most Preferred		Proffered		Least Preferred		Not Preferred	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Beef	12	10.0	91	76.2	17	14.2	-	0.0
Chicken	15	12.5	28	23.3	26	21.6	51	42.5
Fish	87	72.5	09	7.5	16	13.3	08	6.7
Mutton	-	0.0	42	35.0	09	7.5	69	57.5
Snail	-	0.0	-	0.0	100	83.3	20	16.7
Milk	-	0.0	89	74.2	14	11.7	17	14.2
Egg	-	0.0	14	11.7	80	55.7	26	21.7
Pork	-	0.0	12	10.0	94	78.3	14	11.7
Vension	14	11.7	10	8.3	38	31.7	58	48.3

Source: Field Survey, 2015

The multiple regression analysis was used to determine the relationships which exist between some socio-economic characteristics of the respondents and their animal protein consumption patterns. The result of the co-efficient of multiple determination R^2 showed that 83 percent variation in the dependent variable was explained by the independent variables included in the regression model. The co-efficient of age (x_1) showed a negative (b = -0.063) relationship to the dependent variable and was not statistically significant. This implies an inverse relationship between the age of the respondents and their animal protein consumption of these proteins.

Table 5: **Regression Analysis of the Relationship between Socio-Economic Characteristics of Rural Households and their Animal Protein Consumption Patterns**

Variable	Unstandardized Co-efficient (b)	t-value	p-value
Constant	2.452	2.380	0.000
Age	-0.063	1.517	0.008
Marital Status	0.146*	1.320	0.000
Educational Status	0.114*	1.180	0.007
Household size	0.142*	1.412	0.000
Income/Per Annum (Household)	0.262*	4.211	0.012

*Significant at ≤ 0.01 Significant at ≤ 0.08
$R^2 = 0.836$
Adj $R^2 = 0.826$

Likewise as shown in table 6, sex (χ^2 = 0.824, p≤ 0.02), religio (χ^2 = 10.98, p≤0.13) and occupation (χ^2=2.109,p≤0.348) were not statistically significant to animal protein consumption patterns of the respondents. For instance, religion as a variable had negative relationship simply because Christians dominated the area sampled for the study and Christianity does preach against the consumption of any animal protein. However, marital status (χ^2=6.233, p ≤ 0.043), educational status (b = 0.114, p ≤ 0.01), household size (b = 0.146, p ≤ 0.01) and household income per annum (b = 0.262 p≤ 0.01) were statistically significant to animal protein consumption patterns of the respondents.

Table 6:   Chi – square result of the relationship between the socio-economic characteristics of Rural households and their Animal protein consumption pattern.

Variable	χ^2	df	f-value	Deviation
Sex	0.824	1	0.022	NS
Religion	10.98	2	0.13	NS
Occupation	2.109	3	0.348	NS
Marital status	6.233	2	0.043	S

Source: Field survey, 2015
NS: Not Significant

This corroborates the submission of Wange and Bessler, (2002), that expectedly, consumers with large household size are likely to consume greater proportion of meat. Also, educational status had positive relationship with protein consumption patterns of the respondents simply because they had knowledge of the various foods and their nutrients which invariably gave them the opportunity to choose the best of animal products. The result was in consonance with Wange and Bessler (2002) who stated that an educated consumer is likely to be rational in decision making and responsive to the protein needs of the family. With the household income per annum, apriori expectation was met here that the higher the household's income per annum of the respondents, the higher the consumption patterns of foods and directly or indirectly from animal protein sources. This agrees with findings of Falusi (1985) and Amadi (1990) in Okojie et al (2011) who submitted that household income and size play major roles in the monthly expenditure on chicken.

Conclusion

The study assessed animal protein consumption patterns among rural dwellers in Osun State, Nigeria. It was found that rural dwellers were fairly old more than half of them had married indicating their responsibilities to provide protein needs of their family members. Majority of the respondents had formal education which enable them to read and write while the average household size was with the majority engaging in farming. The mean income per annum of the respondents was N263.607.28 meaning that the respondents were generally poor The most commonly included animal protein in their diets of the respondents were beef and fish. The proportion of income spent on animal protein source was too small. The most preferred animal protein source was fish Some of the socio-economic characteristics such as marital and educational status and income mbj households per annum were significantly related to their consumption patterns of protein of animal origin.

Recommendations

The following recommendations are made to improve the proteins consumption levels of rural dwellers in Osun State and Nigeria at large

- Government and non-government organizations should intensify nutrition campaigns to rural dwellers that would help in enlighten them on the importance of animal protein sources in the diets.

- Rural dwellers should be assisted to diversify their investments which in turn will reduce poverty, once the sources of income are diversified.

Peasant farmers who are in the majority in the rural areas should be encouraged by the government via the extension agents to be rearing livestock of various types which will serve as sources of animal proteins.

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