DETERMINANTS ANALYSIS OF PROTEIN CONSUMPTION AMONG HOUSEHOLDS IN UYO CAPITAL CITY, AKWA IBOM STATE, NIGERIA.

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ABSTRACT
This study examined the determinants of protein consumption among household in Uyo Capital City-Akwa Ibom State, Nigeria. The specific objectives were to examine household socioeconomic characteristics and their influence on protein consumption in the study area. The study employed a cross sectional data obtained from a sample of 210 households through memory recall. Descriptive statistics and regression analysis of Ordinary Least Square (OLS) were used to analyse the data obtained. From the result, majority of households were headed by the male (69.52%), had a mean age of 47 years and were married (67.14%). Occupationally, 41.90% were engaged in wage paid jobs. The mean household size was 6 persons while 74.76% of household heads had tertiary education. Household heads (22.38%) earned between ₦41, 000 – ₦80, 999 per month and 21.91% expend between ₦10,100 - ₦12,000 on protein consumption per month. The findings also revealed that protein consumption correlate positively with household disposable income, household size and educational level of household head at 1 percent level of significant. The study therefore recommended that households should be encourage to embark on small backyard livestock husbandry to augment their protein consumption while some can be sold to generate income for the household. Also government should come out with a policy to address the issue of high cost of protein foodstuffs.

Keywords: Protein consumption, households, Uyo Capital City, Nigeria.

INTRODUCTION
Inspite huge revenues obtain from oil proceeds, Nigeria is characterised by threat of hydra-headed problem of hunger, malnutrition, inequality in income distribution among others. This situation is viewed by Adewuyi *et al*. (2009) as the major problems confronting Nigeria in her inability to adequately feed her teeming population. On this note, Obayelu *et al* (2009) posited that food is central to the well being of any living creature. Therefore, food consumption is of eminent importance. World Health Organisation (2007) opined that virtually half of the world's populations are underfed whereby two thirds of these underfed people are located in countries of South and Central America, Africa and Asia. This implies that the per capita growth of production of major foods has not been sufficient to satisfy the demands of an increasing population. This has resulted in a big gap between supply and demand for food. This is confirmed by the declaration of the United Nations Development Programme (2017) and Von Grebmer *et al*. (2017) that in early 2017, more than 20 million people were at the risk of famine in four countries namely: Nigeria, Somalia, South Sudan and Yemen. In Nigeria, an estimation of 4.5 million people were facing serious food security challenges due to conflict specifically in the Northeastern part (Eme *et al*, 2014). Global Hunger Report positioned Nigeria at number ninety (90) out of 105 countries in the World in 2015 and number 84 out of 118 countries in 2017 (European Commission, 2015; United Nations Development Programme, 2017). This position coupled with unequal distribution of food supply reflect a mirror image indicating that both adult and children do not consume the required balance diet to ensure physical health, growth and development. Bender (1992) stated that most people concentrate on calorie intake but fail to consume necessary protein among other nutrients for a healthy life.
Proteins are essential nutrients responsible for the building, maintenance, and repair of body tissue such as the skin, the internal organs, and muscle. They constitute the major components of our immune system and hormones (Multiple Myeloma Glossary, 2019). Adetunji and Adepoju (2011) stated that proteins are the major structural components of all cells of the body which function as enzymes, membrane-carriers and hormones whereby a hard-working adult needs approximately 3,500 calories and 50 grams per day

while a one-year-old child needs about 1,000 calories and 15grams per day. The World Health Organisation (2007) and Food and Agricultural Organisation (2007) recommended a safe minimum level of protein intake of 0.83 g/kg of a person's weight per day of both animal and plant based food to meet the requirements. Iyangbe and Orewa (2009) reported that daily intake of protein in Nigeria is estimated to be 45.4g as against the requirement of 53.8g of the healthy adult population as recommended by World Health Organisation (2007). Sequel to this, Hamidu *et al.* (2003) reported that most common diseases associated with severe Protein Energy Malnutrition (PEM) are respiratory infection, diarrhoea and vomiting with high morbidity, lasting effect on growth and development, learning ability and social adjustment especially in children. Similarly, Manary (2013) submitted that Protein deficiency often occur in conjunction with deficiencies of micro nutrients such as zinc. Perhaps, the reason behind low protein consumption may not be far-fetched as reported by Mahammad and Omotosho (2010) that income and high price rate have curtailed the capacity of urban dwellers, farmers and middle class to purchase all the food they need. All these have had their impacts on protein consumption pattern. Similarly, Adetunji and Adepoju (2011) upheld that protein consumption among households is influenced by income among other factors. On this note, this present study is therefore poised to unravel the determinant of protein consumption among household in Uyo Capital City - Akwa Ibom State, Nigeria.

The specific objective of the study is to: examine household socioeconomic characteristics and the influence on protein consumption in the study area.

Theoretically, there is a strong correlation between disposable income of a household and the stream of its expenditure. This is re-echoed in Ernest Engel's (1821 – 1896) assertion that there is a higher propensity of households experiencing increasing income to spend a larger proportion of the food budget on a diversified diet thus improving the nutritional status of the household members (Babalola and Isitor, 2014). From the perspective of Keynes (1936) version of consumption theory which stems from the fundament psychological proposition, the law states that the propensity to consume decrease with the increase in real income. This income consumption hypothesis was later termed 'Absolute Income Hypothesis' (Omotoso *et al*, 2014). This therefore implies that protein consumption correlates with income. Ibbih and Siyan (2018) stated that other researches either prove or disprove the ideas contained in Keynes work. Such works included other determinants of consumption, income, the level of wealth, expectations, interest rates and distribution of income. This theory collaborate with Duesenberry (1949) argument that current consumption depends not only on current income but also on the history of income streams. It can be deduce that a rise in wealth would lead to an increase in consumption thus shifting the consumption function upwards. However, two principal works were done in this area i.e permanent income hypothesis by Friedman (1952) and the life cycle hypothesis by Ardo and Modigliani (1963). The relationship between these measures of transitory income and permanent income indicators signifies that households save a significant higher fraction of transitory income components than the permanent income components. In line with this, Ostrovsky (2010) submitted that transitory earnings (income) increases at higher level than the permanent earnings depending on the time period. The life Cycle theory (LCT) maintained that income can only be measured over fairly long period of time, even throughout the life time of the recipient. It is after this time that the actual consumption can be deducted to get the permanent income. Moreover, Ernest Engel (1821 – 1896) expressed the consumption function in its simplest form thus;

$C = f(x,y,z)$

Where;

C = dependent variable

x, y, z = independent variables

Iyangbe and Orewa (2009) sort to empirically examined the socio-economic and household characteristics that influence the daily protein intake of household members in the rural and low-income urban areas of Nigeria. Primary data used were obtained from a field survey conducted in two Local Government Areas (LGAs) of Edo State, Nigeria. The Ordinary Least Squares (OLS) multiple regression result revealed a significant positive relationship between daily per capita protein intake of the low-income urban dwellers and their age, educational level, monthly income, sex, salary earning and farming. For the rural dwellers the positive relationship was between daily per capita protein intake and age, dependency ratio, monthly income and salary earning. Those with negative relationship with daily per capita protein intake were household size and education level.

Begum *et al.* (2010) determined the food consumption pattern in a rural district of Nowshera village Kaka Sahib in the year 2005. Their major objective was to investigate the influence of socio economic factors

on food consumption patterns in the rural area of Khyber Pakhtunkhwa Province of Pakistan. A random sample of 66 households was interviewed through a pre-designed. An ordinary least squares method was employed to analyze the data. The results indicated that an average household size of 8.5 persons with a literacy rate of 94 percent, spent fifty-five percent per month of the total monthly income on food consumption. The empirical results revealed that wheat flour, milk, rice, vegetables, sugar, edible fats and tea were positively correlated with household size but meat, pulses, eggs and fruit were not significantly influenced by it. Similarly, household's monthly total income showed a positive relationship with the food commodities consumed, except wheat flour, vegetables and eggs. The study concluded that majority of food commodities consumed had a positive response to household size and total monthly income.

Adetunji and Adepoju (2011) empirically assessed the protein consumption pattern of households in Orire Local Government Area of Oyo State. Systematic sampling technique was used to select two villages from five wards in the study totaling 80 households for the survey. Descriptive and inferential statistics adopted for the analysis confirmed that household heads were male, married, matured with large household size and no formal education. Larger percentage were farmers with monthly income less than ₦20,000. Protein was fairly available in the study area but not affordable especially the animal protein. ₦7,000 was spent on monthly purchase of protein meal which was consumed once daily because of the cost. Findings also showed that educational level, household size and income of the household heads affect the amount spent on the protein consumption. It was therefore recommended that rural dwellers should be encouraged to engage in planting legumes and rearing of livestocks in order to increase personal consumption and distribution to the urban centre.

Kostakis (2012) aimed at assessing the determinants of household expenditures on food in Greece. The procedure of the statistical and econometric analysis estimates the profile of consumers who are aware of their expenditures on food, employing a cross-sectional data set from Athens and Crete using stratified random sampling method, 400 questionnaires in Athens and 400 questionnaires in Crete from October 2011 to February 2012 were distributed. The results showed that independent variables of demographic and socioeconomic traits such as income, gender, age, marital status, place of residence and status of employment have an important impact on household expenditures on food.

Babalola, and Isitor (2014) identified the determinants of food expenditure among urban households in Lagos Mainland Local Government Area of Lagos State, Nigeria. Respondents (household heads) were selected using randomly. Data analysis was accomplished using descriptive statistics and regression model. Results of the study showed that 60% of the household income was expended on food which is considered high, suggesting low income and possible high cost of food in the study area. When combined with existing large members (>5) in most households (66%), existence of food insecurity and vulnerability to poverty in the study area was implied. Regression analysis showed that 65.5% of the variation in household expenditure on food in the study area was accounted for by the explanatory variables. Household income, tribe, household size and the composition of the household had a significant effect on food expenditure. The study recommended a policy option for general food price subsidy to address urban food prices which would improve spatial pricing efficiency. Aminu *et al*. (2016) investigated the determinants of food expenditure pattern among households in Oshodi-Isolo Local Government Area of Lagos State, Nigeria. Primary data was collected with the aid of one hundred and twenty well-structured questionnaire using simple random sampling techniques with households being the unit of analysis. Data were analysed using descriptive statistics and Ordinary least square (OLS) regression analysis. The results of the analysis of socio-economic characteristics showed that the mean age of the respondents was 42 years, 56.67% were male, 55.83% were married and 18.33% completed secondary school. Analysis of expenditure on food among the households in the study area was found to be between ₦10,000 and ₦15,000 on food at home, 33.33% spent between ₦5,000 and ₦10,000 on food outside the home, while 40% spent more than ₦20,000 as total monthly food expenditure. The results of the OLS analysis revealed that that age of the household head, educational level and size of monthly income were the determinants of household monthly expenditure on food.

METHODOLOGY

Study Area, Data Collection and Analytical Techniques

The study was conducted in Uyo Capital City, Uyo local Government Area of Akwa Ibom State, Nigeria. It is located on latitude 5°10′ and 5°30′N and longitude 7°54′ and 7°57′E with boundaries on the south by Nsit Atai and Nsit Ibom Local Government Areas, on the West by Abak Local Government, on the North by Ikono and Itu Local Government Areas and on the East by Uruan Local Government Area

respectively. It has an estimated population of 309,573 (NPC, 2006). By virtue of its geographical location in relation to the rest of the towns in Akwa Ibom State, Uyo assumes prominence as a commercial nerve centre of the entire Akwa Ibom State. Inhabitants of Uyo Capital City are workers in public and private institutions and firms. Others are engaged in trading, craft making, transport business, farming is also practiced. Crops cultivated include yam, maize, cassava, cocoyam and vegetables. Uyo Capital City is made up of four (4) clans namely; Etoi, Offot, Oku and Ikono (Akwa Ibom State Year book, 2014). Based on the fact that, most households consumed own proteinous foods from their farms, the survey therefore covered the central area of Uyo Capital City which comprises such clans as Offot and Oku through purposive sampling techniques. However, 210 households were selected at random due to non availability of sampling frame of households in the selected areas. Selection of compounds from which households were chosen through "random-walk" method was put to use and one household was selected in each compound for detailed study.

The survey was conducted in 2018 using a well-structured questionnaire that yielded the primary data used for the analysis through memory recall. Based on the fact that there is both homogeneity and heterogeneity among households in the study area, random sampling technique was adopted sequel to features/ characteristics in terms of high population, income class among others. Major roads as Wellington Bassey, Oron, Nwaghiba, Abak, Aka, Ikot Ekpene and Atiku/IBB were selected to cut across the selected clans making a total of seven (7) with 30 structured questionnaire assigned to each road having alternate streets being selected at random.

Analytical Techniques

Descriptive statistics such as frequency distribution table and inferential such Ordinary Least Square (OLS) analytical tools were adopted for the analysis. The model is as specified below;

Implicit form;

$$PC = f(X_1, X_2, X_3)$$

Explicit form;

$$PC = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu_i$$

Where;

PC = Total household monthly expenditure on protein consumption (₦)

X_1 = Total household monthly disposable income (₦)

X_2 = Household size (number of persons)

X_3 = Years of formal education of household head (number of years spent in school)

μ = Error term

RESULTS

Socioeconomic characteristics of respondents in the study area

The distribution of the respondents according to gender is shown in Table 1. The table reveals a greater proportion of households (69.52%) in the study area were males while 30.48% were females. The Table shows that 33.81% of the household heads were within the age range of 41 to 45 years, while 37.14% were above 45 years. The Table also shows that 67.14% of household heads in the study area were married, 20% of them were widowed. Also, 7.14% and 5.72% of them were divorced and single respectively. The Table also reveals that 41.90%, 32.87% and 25.23% were engaged in wage paid jobs, wage paid/ self-employed and self-employed respectively. Based on household sizes, the table reveals that household sizes of between 1 to 5 persons had 45.72%. 39.52% and 14.76% of them had 6 to 11 and above while the mean household size was 6 persons respectively. This findings indicated that majority of households had moderate family sizes. The Table further revealed that 74.76% of household heads had tertiary education while 16.67% and 8.57% had secondary and primary education respectively. The mean year in educational level was 15. Table 1 further shows the monthly income level of respondents in the study area. It shows that 2.86% of respondents earned income that was less than ₦20, 000. 17.62% of them earned income that was between ₦20, 000 – ₦40, 999 while 22.38% of the household heads earned between ₦41, 000 – ₦80, 999 respectively. 18.10% of them earned income that was between ₦81, 000 – ₦100, 999 while 12.38%, of households earned between ₦101, 000 – ₦120, 999. 8.57%, 7.14%, 4.76%, 3.81% and 2.38% had income group of ₦121,000 – ₦140, 999, ₦141, 000 – ₦180, 999, ₦181, 000 – N200, 999, ₦ 201,000 - ₦220, 999 and that greater than ₦221, 000 respectively.

Table 1: Socioeconomic characteristics of respondents in the study area

Variables	Frequency	Percentages (%)	Mean
Sex:			
Male	146	69.52	
Female	64	30.48	
Age (years):			
< 30	11	5.24	
31 – 35	19	9.05	
36 – 40	31	14.76	47.12
41 – 45	71	33.81	
>45	78	37.14	
Marital Status:			
Single	12	5.72	
Married	141	67.14	
Widow/Widower	42	20.00	
Divorce	15	7.14	
Occupation:			
Self employed	53	25.23	
Wage earner	88	41.90	
Self employed/wage earner	69	32.87	
Household Size:			
1 – 5	96	45.72	
6- 11	83	39.52	6
>11	31	14.76	
Educational level:			
Primary level	18	8.57	
Secondary level	35	16.67	15
Tertiary level	157	74.76	
Income level (₦) per Month:			
<20,000	6	2.86	
20,000-40,999	37	17.62	
41,000-80,999	47	22.38	
81,000-100,999	38	18.10	
101,000-120,999	26	12.38	₦115,327
121,000-140,999	18	8.57	
141,000-180,999	15	7.14	
181,000-200,999	10	4.76	
201,000-220,999	8	3.81	
>221,000	5	2.38	

Source: Field Survey, 2018

Household monthly expenditure on protein consumption (₦)

The amount spent on protein consumption by households per month is presented in Table 2. The table shows that 21.91% expend between ₦10,100 - ₦12,000 on protein consumption per month. 19.52%, 17.62%, 12.38% spent ₦8,100 – ₦10,000, ₦6,100 – ₦8,000, ₦4,100 – ₦6,000 on household protein consumption per month respectively. Also, those households that allocated less than ₦2000 had 2.38% while 5.71% and 9.05% allocated between ₦2,000.00 – ₦4,000 and above ₦14,000 respectively. This study is in consonant with Babalola and Isitor (2014) who posited that as income increases, the rate of consumption of diversified diet on food consumption also increases. Findings form field survey revealed that though all the households in the study area are aware of the importance of protein consumption, the quantity consumed is far below World Health Organization/Food and Agricultural Organization recommendations due to low income and high cost especially animal protein. Also smaller household sizes consumed more protein than larger counterpart.

Table 2: Household monthly expenditure on protein consumption (₦)

Amount	Frequency	Percentage
<2,000	5	2.38
2,000 – 4,000	12	5.71
4,100 – 6,000	26	12.38
6,100 - 8,000	37	17.62
8,100 – 10,000	41	19.52
10,100 –12,000	46	21.91
12,100 – 14,000	24	11.43
>14,000	19	9.05
	210	100

Source: Field Survey, 2018.

Regression analysis results for protein consumption among households in the study area

Table 3 shows the regression result for protein consumption function in the study area. The lead equation for protein expenditure function is the double log function given by;

$LnPC = 8.461 + 2.887LnX_1 + 0.56LnX_2 + .089LnX_3$
$(6.711)^{***} \quad (3.335)^{***} \quad (5.559)^{***}$

$R^2 = .654$

$F = 82.611^{***}$

*** Significant at 1 percent

Values in parenthesis are the calculated t-values.

The choice of the lead equation was solely based on the size of F – statistical values, R^2, t-values, standard error and the signs of the coefficients which is in-line with Gujarati and Porter (2009).The result reveals that the explanatory variables explained 65 percent of the total variability in the household expenditure on protein consumption. The F- statistical value for the equation shows that the model specified is accepted at 1 percent level of significant. The result further reveals that the dependent variables have a positive relationship with household disposable income, household size and educational level of household head at 1 percent level of significant. That is to say disposable income among other variables is directly related to protein consumption. The findings of this study are in agreement with the result of Iyangbe and Orewa (2009); Adetunji and Adepoju (2011); Aminu, Adebanjo and Mohammed (2016). They confirmed that household income, size and the level of education of household heads influence household consumption of protein in their area of study.

Table 3: Regression analysis results for protein consumption among households in the study area

Variables	Linear	Semi-log	Double-log	Exponential
Constant	-1487.483 (-3.669)***	-12231.042 (-14.662)***	8.461 (29.461)***	6.679 (41.568)***
Household Income	.0281 (5.982)***	12211.011 (13.112)***	2.887 (6.711)***	2.023 (1.063)***
Household Size	1687.899 (7.928)***	4011.430 (3.536)***	0.56 (3.335)***	.048 (6.343)**
Educational level of Household Head	1343.873 (5.119)***	2115.750 (.569)**	.089 (5.559)***	.104 (4.891)***
R^2	.687	.726	.654	.466
S.E F. Statistics	7012.6603 82.228***	6653.4913 134.779***	.4470 82.611***	.2994 43.331***

Source: Field survey, 2018. ** Significant at 5% level, *** significant at 1% level

DISCUSSION

Socioeconomic characteristics of respondents in the study area

The study shows socioeconomic characteristics of respondents in the study area. Based on age, the study revealed the mean age of 47 years. This mean age shows that household heads in the study area still falls within youthful and active age bracket which could possibly afford them the possibility of both paid and self employed jobs engagement as upheld by (Umoh, 1994). In terms of marital status, a higher percentage of household heads of 67.14% were married while the remaining percentage falls within widowed, divorced and single status respectively. Going by the indices of occupation, higher proportion of 41.90% engaged in wage paid jobs while wage paid/ self employed had 32.87%. It can be submitted that the study area is dominated by persons engaged in white cola jobs in public/civil services as well as private institutions. The modal household sizes of between 1 to 5 persons were the dominant households while the mean household size was 6 persons respectively in the study area. This findings indicated that majority of households had moderate family sizes. The implication is that due to the present economic situations and deepening hydra-headed poverty levels, household heads have no choice than to adopt family planning measures to reduce their number of children. Household heads with tertiary level of education dominated the study area with 74.76%. The mean year in educational level was 15years. This is in conformity that majority have had tertiary education which could in-turn better their lots in terms of higher paid jobs, income and improved protein consumption for their households. As regards to the monthly income distribution of respondents prevalent in the study area, the distribution showed a mean income of ₦115,327 per month while the modal income was 22.38% (₦41,000 – ₦80,999) per month. This implies that, majority of respondents earned below the mean income which could possibly affect the level of protein consumption in the study area.

Household monthly expenditure on protein consumption (₦)

Despite the fact that proteins are the major structural components of all cells of the body which function as enzymes, membrane-carriers and hormones (Adetunji and Adepoju, 2011), field report shows that most households spent less on this food class. Babalola and Isitor (2014) upheld that as income increases, the rate of consumption of diversified diet on food consumption also increases. This study affirmed that, the major constraints to protein consumption anchored on respondents' disposable income in the study area. However, only 9.05% of households have been able to spend ₦14,000 and above on protein consumption per month in the study area.

Determinants of protein consumption among households in the study area

Household's expenditure on protein consumption is a function of some factors such as household disposable income, household size and educational level of household head (Adetunji and Adepoju, 2011). The regression coefficients of household income, household size and educational level of household heads showed a positive signs. That is to say, both the dependent and independent variables correlate positively. The implication here is that, a rise in household disposable income, household size and a higher level of education attainment of household heads will consequently bring about a rise in household protein consumption in the study area. This reaffirmed that household protein consumption expenditure in the study area is a function of household disposable income, household size and educational level of household head. Umoh (1994); Iyangbe and Orewa (2009); Adetunji and Adepoju (2011), Obot (2014) submitted that as household disposable income, household size and educational level of household head increases, the amount spent on protein consumption also increases which is in consonance with this report .

CONCLUSION AND RECOMMENDATIONS

Household disposable income, household size and educational level of household heads were found to be the primary determinant of household protein consumption in the study area. This also shows that with large income, the tendency of household consuming good quality proteinous food items and other basic necessities in life is there. Also smaller household sizes consumed more protein than larger counterpart which means that the smaller the household size, the better the rate of good quality protein consumption and also the higher the concentration on household resources. The study therefore recommended that households should be encouraged to embark on small backyard livestock husbandry to augment their protein consumption while some can be sold to generate income for the household. Also government should come out with a policy to address the issue of high cost of protein foodstuffs.

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