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# **Consumption of Meat and Meat Related Products in Urban Households in Uyo, Nigeria.**

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**ABSTRACT** - This study focused on the consumption of meat and meat related products fish and eggs in Nigeria with Uyo Capital City of Akwa Ibom State as case study. Cross-sectional data were collected from ninety (90) households for analysis. The results show that meat consumption and income per household increase with the level of education, so also are per caput meat expenditure and income. Regression analysis shows household disposable income as being the major determinant of meat and meat related products consumption. All independent variables-income, household size and level of education of the householder explain 52% of the variation in meat and meat related products consumption in the study area.

**Key words:** Consumption; household; disposable income; meat and meat related products.

## **INTRODUCTION**

Meat and fish are sources of high quality protein accepted worldwide. The contribution of fish to the protein intake of Nigerians is estimated at 4.8% of total contribution from all ingested foods while calorie, calcium, iron and vitamins contributions are 0.9, 3.4, 1.4 and 0.2% respectively (Olayide, et al. 1972).

A survey of rural Southern Nigeria (Olayide, 1976) reveal that of all proteins consumed, 60% was fish, 21% was domesticated animals while 19% was game meat. However, most developing countries including Nigeria have a food problem. A part of this problem is protein deficiency in the average diet.

Several factors have been identified to influence food and indeed meat consumption. The most important of these are economic. For instance, Burton et al (1992) report that the observed variation in meat and fish consumption in Britain since 1960 are due to such economic factors as prices,

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expenditures and those factors which cause shift in consumer preferences. Mounting empirical evidence from several researches (Behrman, 1988; Behrman, et al 1988; Bonis and Hadda, 1988) suggest that income elasticity of household food energy intake in developing countries is lower than has been thought. According to Strauss and Thomas, (1989); Ravallion, (1990); Bhargava, (1991) whereas 10 years ago, an income elasticity of energy intake for the poor of about 1.0 would have probably been seriously questioned, elasticities less than 0.5 would be considered more in keeping with recent estimates. Ravallion's (1992) application of the stochastic dominance tests to undernutrition response to incomes and prices indicates that regional distributions of food energy intake are influenced by average income levels, intraregional inequalities and local prices of staple food grains. A recent study of household preferences and determinants of consumption expenditure on meat, fish and eggs in Warri, Nigeria (Aromoralan, 1999) also confirm the importance of monthly income of household, monthly income of household head, monthly expenditure on food and household size in household meat and related products consumption. Earlier studies in Nigeria have also been very revealing in this direction. For example, Mann and Nwankwo (1965) conclude from their assessment of rural food consumption pattern in Eastern Nigeria that rural families consume a lot of starchy foods and too little animal proteins, fats and oils, fruits and vegetables. This trend was attributed to the low levels of income of rural dwellers. In addition to income, findings by Stewart and Ogle, (1962), Adeyokunnu (1980) show that household size and educational level of household head influence consumption. Similar studies (Durojaiye, 1985; Falusi, 1988; Umoh, 1994) have also found these variables to affect food consumption in rural as well urban households in Nigeria.

There have been a lot of changes in the Nigerian macroeconomic policy landscape in the past couple of years. Starting from the second republic (1979-1983), the looming economic crisis arising from a glut in world oil (petroleum) market necessitated the adoption of 'austerity measures' to adjust to the distortions which the crisis had on the economy. The deepening economic and financial problems in the country saw to the adoption of a IMF/World Bank-promoted structural adjustment programme (SAP) in the first quarter of 1986. The SAP brought with it a lot of changes in macroeconomic and sector specific policies such as flexible exchange rate, trade liberalization, etc. There was also the 'fine tuning', in 1992, of the SAP policies in what was referred to as 'guided deregulation'. Changes in the policies are expected to impact on the economy as a whole and individuals specifically. Federal Office Statistics (1992) report shows that there has

been a substantial rise in the consumer price index due largely to sharp increases in food, drinks and non-food items. Independent non-official assessments (Akapkpan, 1994; Ekong, 1994) reveal that the SAP policy of rapidly depreciating the naira, for instance, has further weakened the economy by helping to intensify an already high rate of inflation. With the dwindling values of real personal income in the country, the possibility exists that consumption pattern of the people are adversely affected. This may even be more severe with the consumption of proteineous foods like meat, fish and eggs which are known to be costlier than other foodstuffs. Given this scenario, the present study was, therefore, designed to:

- (i) assess the pattern of meat consumption among various income, household size and education groups and;
- (ii) identify the determinants of meat and meat related products (fish and eggs) consumption.

## **METHODOLOGY**

Multistage stratified random sampling technique was adopted in collecting data for the study. Uyo-the study area, is a commercial nerve centre as well administrative headquarters of Akwa Ibom State, Nigeria. Prior to the creation of Akwa Ibom State in 1987 with Uyo as the seat of government, it was only a prominent commercial town serving the need of mainly the then "mainland" of erstwhile Southeastern and then Cross River States and as a gateway to other important towns such as Abak, Etinan, Eket, Oron, Ikot Ekpene and Calabar; due to its nodal location. The town was inhabited by farmers, traders and a few civil servants who worked in public schools and a few government offices and companies located in the city. However, there has been a change in the socio-economic composition of the population of Uyo with its assumption of the status of a state capital. It is now a metropolis with high, medium and low income earners among the public/civil servants, business men/women, company workers and artisans/petty traders from varied ethnic and social backgrounds. Based on the researcher's knowledge of the area, the study area was stratified into high, medium and low density areas corresponding to low, middle and high income earner area respectively. Itu Road, Ewet, Itam Junction were taken to represent the low income area; Abak Road, Aka Road, Oron Road, Utang and Gibbs/ Ekpo Obot streets were taken to represent the middle income area while Ewet/Itiam/Eniong Housing Estate (State Housing Estate), Federal Housing (Abak Road or Shagari Housing Estate), Brooks Street (Dominic Utuk Avenue) and Atakpo Street were chosen as the high income area.

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The first sampling unit was the street which was chosen alternately within each stratum. The second sampling unit was the household which was selected by simple random sampling procedure. Questionnaires were employed in collecting the data. Questions were designed to cover household size, educational level of household head and expenditure on meat and meat related products consumed by households. The study was conducted between August and September, 1995. Questionnaire were administered on 100 respondents but responses from 90 were finally found fit for analysis.

In analysing the data, households were grouped into low, middle and high income classes based on the mean household income in the area. The classification of households into educational groups followed the traditional; grouping of persons with up to secondary education or no education as low cadre personnel, National Certification of Education (NCE) and Ordinary National Diploma (OND) as middle manpower and the University graduates and equivalents as high cadre personnel.

Regression models were used to identify the influence of the various factors affecting meat and meat related products consumption in the study area. Following Koutsoyianis (1977), the general form of the equation is:

$$Cexmp = f(Hmdi, Hhs, Lehhh)$$

Where

- Cexmp = Total household monthly consumption expenditure on meat and meat related products; (fish and eggs);
- Hmdi = Total household monthly disposable income; (income after tax);
- Hhs = Household size and; (number of persons living together under one decision-maker);
- Lehhh = Level of education of household head (measured in years of schooling completed)

Four functional forms were tried for exploratory purposes. These included the linear, semi-logarithmic, double logarithmic and exponential functions. The exponential function was chosen as the lead equation based on the following criteria: The statistical accuracy of the fitting, theoretical justification, absence of multicollinearity, the coefficient of multiple determination ( $R^2$ ), the t-ratios and the reasonableness of the estimated coefficients with respect to the signs and magnitudes of the coefficients of the variables. It is given by:

$$Cexmp = b_0 Hmdi^{b_1} Hhs^{b_2} Lehh^{b_3} + e$$

The transformed version of the function is:

$$\text{LnCexmp} = b_0 + b_1\text{Hmdi} + b_2\text{Hhs} + b_3\text{Lehh} + e_i$$

Where  $b_0$  is the intercept and  $b_1 - b_3$  are the coefficients of the variables and  $e_i$  is the stochastic error term to be estimated.

To measure the influence of income on consumption, income elasticity was calculated. Also computed was the marginal propensity to consume (MPC). Given that the exponential function was the lead equation, the income elasticity was computed using the formula:

$$\frac{\partial \text{Cexmp}}{\partial \text{Hmdi}} = b_1 \frac{1}{\text{Hmdi}} = \frac{b_1}{\text{Hmdi}} \text{ and,}$$

$$\text{the MPC} = \frac{b_1 \text{Cexmp}_1}{\text{Hmdi}_1}$$

## RESULTS AND DISCUSSION

### 1. Household Size and Meat Consumption.

Table 1 shows household size distribution and meat related products consumption. Over 50 percent of the households have size in the range of 1-5 persons with an average household size of about 3 persons. The average household size in the study area is about 6. This result is line with earlier findings (Amadi, 1990) which revealed household size of this range for urban areas in Rivers State, Nigeria. The present situation can be attributed to campaigns by the Federal Government for small and manageable family size through birth control. The hardship which the crisis in the Nigerian economy since the 1980s have on households may also have forced couples to limit the number of children they have to a manageable number. It is now common to hear couples discussing on the number of children they have conclude that "family has planned itself". This means that without being told, the economic reality of the time has compelled them to restrict the number of children they have to just a few that they can cater for.

The result also indicates that meat expenditure per household increases with household size. However, expenditure declines at household size greater than 15. This shows that the larger the household size, the more the meat demanded and consumed. Per caput meat expenditure is found to be inversely related to household size. This implies that even though expenditure on meat increases with household size to a level, the quantity actually consumed by each individual decreases with size.

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**Table 1: Household size and meat consumption**

Household Size	Percentage of Total Households	Average Households Size	Meat Consumption Expenditure Households	Per Caput Meat Consumption Household ₦	Average Income Per Household Size ₦	Average Per Caput Income ₦
1 - 5	52.22	3.51	295.18	84.08	2593.00	738.60
6 - 10	41.11	7.62	503.58	52.37	5829.10	764.80
11 - 15	5.56	11.80	517.00	43.81	5380.00	455.90
over 15	1.11	16.00	285.00	17.81	1200.00	75.00
<b>All Group</b>	<b>100</b>	<b>5.80</b>	<b>397.25</b>	<b>69.04</b>	<b>3182.70</b>	<b>548.70</b>

Source: Field Survey

Average income per household and caput income were found to be ₦3182.70 and ₦548.70, respectively. Income increased up to household size range of over 6-10 and then declined with household size range of over 15. Earlier work (Goreux, 1960) attributed this trend to greater economic efficiency in household management in large households. However, this can also be seen as a reflection of the level of poverty of households with large size. The fact that both income per household and per caput are low could be evident that only a very small proportion of members of these households earn income while the rest are dependants.

## 2. Educational level of Household Head and meat consumption

Table 2 presents educational level of household heads and meat consumption in Uyo metropolis. About 50 percent of the household heads have up to secondary education, 17.8 percent have the National Certificate of Education and other higher certificates while 33.3 percent have university degrees, higher diploma and their equivalents.

Meat consumption and income per household increase with the level of education, so also are per caput meat expenditure and per caput income. This is in line with Davies' (1982) who asserted that there is a significant difference in the consumption pattern between individuals with minimum of primary school.

A priori expectation that those with higher education should earn more income is met. This positive relationship is expectedly reflected in per caput meat expenditure, income per household and per caput income, respectively. Only households whose heads have higher certificates and degrees record meat expenditure, per household income and per caput income higher than average in the study area. This is instructive as it reflects the fact that higher education would make for the consumption of more proteineous food. This could be so because educated individuals are well informed on

**Table 2: Household Head's Educational Level and Meat Consumption**

Household Size	Percentage of Total Households	Average Households Size	Meat Consumption Expenditure Households	Per Caput Meat Consumption Household ₦	Average Income Per Households Size ₦	Average Per Caput Income ₦
Up to Secondary	48.90	6.60	266.01	42.10	2715.28	411.41
*NCE etc.	17.80	6.30	466.56	82.94	3493.33	554.49
University & Polytechnic	33.90	6.30	552.00	82.40	4287.60	677.00
All Group	100	5.80	397.25	69.04	3182.70	548.70

Source: Field Survey

matters of nutrition. Thus, they spend their income on nutritious foods like meat. Protein-rich foods are precursors of good health which may translate to higher national productivity.

### 3. Household Income and Meat Consumption:

In table 3, the distribution of households by income group and meat consumption is presented. The result shows that more than half the sample are in the low income group, about one-third of the sample are in the middle income group and only about one-tenth are in the high income group. Low income households spend 12.98 percent of their income on meat, middle income group spend 13.45 percent while high income households expend 10.4 percent of their income on meat. If shared among individual household member, 12.93, 13.17 and 0.76 percent of the income accruing to the low, middle and high income households respectively, would be spent by each

**Table 3: Households Income Group and Meat Consumption**

Income Group	Percentage of Total Households	Average Households Size	Meat Consumption Expenditure Households	Per Caput Meat Consumption Household ₦	Average Income Per Households Size ₦	Average Per Caput Income ₦
Low (Less than N3000)	55.60	5.10	207.04	40.44	1595.00	312.74
Meddle (N3000 - N6000)	32.20	6.10	552.73	88.67	4108.40	673.10
Higher Greater than N6000)	12.20	8.10	879.80	7.90	8459.10	1045.50
All Group	100.00	5.80	397.25	69.04	3182.70	548.70

Source: Field Survey



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member on meat. An observable pattern of the result is that the larger the household size, the higher the income; very small percentage of the households are in the high income bracket. However, this class (the high income class) bears the burden of catering for a large number of dependent relatives thus, tending to have large households. This trend manifests in the very small average monthly per caput meat expenditure of only ₦7.90.

### **REGRESSION RESULT**

Of all the functional forms tried, the exponential function gave the highest  $R^2$ , F-values with appropriate signs and magnitude of the coefficients and thus was chosen as the lead equation. It is given by:

$$\text{LnCexmp} = .87224 + .8417744\text{Hmdi} + .112149\text{Hhs} + .15483\text{Lehh}$$

(8.291)\*\*\*                      (1.166)                      (1.696)

$R^2$  = 0.52  
F-value = 68.74\*\*\*  
\*\*\* = significant at 1% confidence level.

Values in parentheses are calculated t-values.

The result of the regression analysis reveal that all the variables explain 52 percent of the total variability in household expenditure (consumption) on meat and meat related products, The F-test shows that the model is acceptable at 1 percent confidence level. The primary determinant of meat and related products is household disposable income which is significant at 1 percent. Household size and household head's educational level are positive but not significant at both 1 and 5 percent levels, implying that they do not significantly influence meat consumption although there is a positive relationship. This result is partially in agreement with the findings of Adeyokunnu and Ingersent (1976), Aromolaran (1999) that income is a major determinant of expenditure on meat. However, as is the case in this study, their study showed that educational status of household head was not a major determinant of consumer expenditure on animal products. Income elasticity and the marginal propensity to consume (MPC) were computed to measure the direction of household expenditure's (consumption's) responsiveness to changes in income. Income elasticity of 5.86 and MPC of 0.73 were obtained. Income elasticity of this magnitude suggests that meat is a luxury and it is demand elastic. Household will spend more than five times the increase in their income on meat. MPC of 0.73 implies that 73 percent of an increase in household income will be allocated to the consumption of meat. This is more than half of the household income, Such a level of expenditure on a

single item is rather too high and would mean households doing without other basic needs of life. One way of checking this skewed household expenditure is to increase production of livestock, poultry and fish. Alternatively, households can supplement protein from animal sources with those of plant sources as they are known to be cheaper. This would require consuming more of such products as soyamilk and beans (cowpea).

## **POLICY IMPLICATIONS AND CONCLUSION**

In this article, household disposable income has been found to be a major determinant of meat, fish and egg consumption. Per caput meat expenditure and income were also found to increase in the same direction as income. All these have policy implications for the Nigerian economy. The findings would at once suggest increase in salaries and wages of workers in both public and private sectors in Nigeria so as to increase meat and meat related products consumption. However, before such recommendation could be made, the issues of the real income or the purchasing power of the income must be addressed. Therefore, while workers salaries need be increased as a necessary condition for the consumption of these products, a sufficient condition is increase production of meat, fish and eggs. Abundance of these products would reduce their prices and subsequently the percentage of income expended on them by households. In this way, households can consume these products on a sustainable basis.

The efficacy of protein from animal sources as a precursor of good health and subsequently, national productivity cannot be overemphasized. Thus, policies that will ensure availability of meat, fish and eggs for consumption deserve urgent attention by Nigerian administration.

Regression analysis reveal that household size, income and educational level of householder account for 52 percent of the change in the consumption of meat and meat related products. That the included independent variables are responsible for only about half of the change in consumption of these products points to the fact that there are other equally important factors which could account for the remaining half. Consumption literature identify other traditional, psychological, not-easy-to quantify factors as religion, customs, taste and preferences as equally important in household's consumption or non-consumption of a given commodity. Religious restraint, for instance, is responsible for Muslims not consuming pork, and Hindus not consuming beef.

The price of the product also influences its consumption. For example, Aromolaran and Igharo (1988) report from a study of pattern of household consumption of animal products in Western Nigeria that consumers did not

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“consume frequently” those products, which they “preferred”. The major reason given was the high price of one product compared with another. Of course, the availability of a product in a given environment is also an important factor that can affect the consumption of a product in question. This is to say, if fish, for instance, is not available in say Uyo (our study area), it definitely will not be consumed there, consequently, those factors which influence fish consumption elsewhere will not influence fish consumption in Uyo. All these dovetail into making meat, fish and eggs available and also making the means (money) for obtaining them available to the households. In specific terms, the means for livestock production-feed, drugs; and fish production-nets, canoe/outboard engines and feed and fingerlings for fish farming, should be made available. These require efforts on the part of government, individuals and non-governmental organizations.

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