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Beef Consumption Pattern among Rural Households in Igbo-Eze North Local Government Area of Enugu State, Nigeria

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Abstract

The study examined the consumption pattern of beef among rural households in Igbo-Eze North Local Government Area of Enugu State, Nigeria. The specific objectives of the study were to describe the socio-economic characteristics of the respondents, assess the frequency of consumption of beef among rural households in the study area, determine their monthly expenditure on beef and the constraints encountered by the respondents in the consumption of beef in the study area. One hundred and fifty rural households were randomly selected from a population of 259,431 of the four autonomous communities (Umuozzi, Umuitodo, Essodo, and Ezzodo) that make up the Local Government Area by the use of stratified random sampling technique. Data for the study were collected using a questionnaire. The collected data were analyzed using descriptive statistics. The result obtained showed that the mean age of the respondents was 43.9 years. The majority (62.7%) of the respondents were females with a mean household size of seven persons. Most of the respondents consumed boiled beef usually during festivities/ceremonies. The mean monthly expenditure on beef was ₦2,663. Constraints encountered by beef consumers include the low financial status of respondents, the high cost of beef in the market and the inadequate supply of the commodity. It was recommended among others that more abattoirs and cold rooms should be constructed in the Local Government Area. Extension and health workers should be well trained and equipped to rightfully inform the rural dwellers on the health benefits of beef consumption and ensure good production of safe beef for consumption.

Keywords: Beef, Protein, Consumption Pattern, Rural household.

Introduction

Responsible protein consumption is being emphasized globally. This is pertinent as over 900 million people are either hungry or malnourished, out of which 800 million are from developing

countries of the world. Abdullahi and Aubert (2004) observed that malnutrition and undernutrition are still problems of great magnitude in many developing countries. According to Ume and Okoronkwo (2013), the body needs an adequate intake of protein as it helps to reduce widespread undernutrition and malnutrition among the ages.

The Food and Agricultural Organization, [FAO] (2003) reported that out of 70grams of protein per meal required daily per person, 35grams which is supposed to come from the animal source, only about 7grams of animal protein is consumed representing only 20 per cent of animal protein requirement. Thus, the implication here is that the demand for animal protein in Nigeria and other developing countries of the world is far from being met. In any economy, the development of both the production and consumption sector is important.

The role of proteins in the human diet is very critical. Protein as a diet helps to replace the daily loss of body proteins and provides certain hormones of a protein nature. It also provides amino acids for the growth of the fetus during pregnancy and the production of milk protein during lactation (Swaminatha, 2002). The protein requirement of the body can be sourced from plant and animal sources. Protein sourced from animals according to Dalgado (2003) and Oloyele (2005) is superior to plant-sourced protein in the sense that the proportion of essential amino acids is more balanced for tissues within the body and hence, helps to sustain life especially if consumed by diabetic patients. Ighoro (2002) and Ekwe (2019) assert that among other sources of animal protein such as crayfish, milk, fish, chicken, beef, turkey, mutton, chevon, and bush meat, fish and beef are the highest sources of animal protein commonly consumed by man.

Beef is a culinary name for meat from bovines, especially cattle, heifers, buffalo, or bulls. It is a very important meat consumed in Nigeria contributing to more than 32% of all meat consumed in the country (Udoh and Akintola, 2003). Still stressing the economic and nutritive value of beef, Udoh et al (2003) and Igwe (2022) assert that beef is second to fish as a basic source of animal protein mostly consumed in Nigeria as it contributes 70.93% of total meat consumed while goat meat (chevon), pig meat (pork) and sheep meat (mutton) contribute 13.58%, 9.22%, and 6.22% respectively. In defence of the above Oritse (2021) and Karigidi (2021) observed that out of beef and fish which are the highest sources of animal protein, that fish remains the cheapest form of protein for the average Nigerian.

Beef cattle play a very important role in Nigerian agriculture, contributing about 12% of the nation's Gross Domestic Product (GDP) (Abdu and Dantatta, 2016). According to Umar et al. (2007), Nigerian cattle production amounts to over 14 million, and millions of Nigerians make their livelihood from beef enterprises as producers, marketers, transporters, processors, feed millers, and veterinarians. The consumption of beef is motivated and enhanced by its nutritive value, palatability and availability.

The supply of beef cattle varies from place to place causing a variation in its

distribution and overall demand and consumption (Mbanasor, 2000). The reduction in the demand and consumption of beef is an expression of the price of the cattle, its availability, consumers' preference, cultural factors, religious belief, and consumption patterns. There exist several research works on consumers' consumption patterns and intentions toward beef such as Seo et al, (2014), Sherwani et al, (2018), Arenas et al, (2020), Janssen, (2018) and Zhang et al (2018), explaining household purchase and consumption purchase intentions. The result provided insight into how consumers allocate their resources to consumable goods, and how the consumers place value on beef based on their preference for beef over other sources of animal protein. However, the majority of these studies focused on developed countries. Akerele et al. (2015) and Udoh and Akintola (2003), that analyzed beef demand in Lagos urban city in Nigeria, found that the beef consumption level in Nigeria over the years is still low based on FAO recommendations. Much is not known about the consumption pattern of beef in rural areas of Nigeria.

It is a fact that the human body needs an adequate intake of protein to reduce widespread undernutrition and malnutrition among ages (Ume & Okoronkwo, 2013). This is because the inadequate intake of these nutrients hinders healthy growth and affects the individual ability for productive activities. It is therefore necessary that the consumption pattern of beef, which is an essential source of protein, be studied. Just as the protein per capita intake in Nigeria has been low, there is an observable incidence of infant mortality, mental weakness, poor growth and development among children of rural households in Enugu State. This is because of low protein intake due to much consumption of starchy foods such as fufu, garri, yam and maize without adequate nutritional supplements and nutrients (Udoh & Akintola, 2003). A study like this will provide valuable insights to individuals, families, policymakers as well as those working in the beef industry of consumers' consumption behaviour and the factors affecting their consumption of beef so that they can more efficiently develop policy and marketing strategies. The results of changing consumption patterns are important for policymakers because they are concerned with food and nutrition security in a period of significant economic change that is meant to improve the overall well-being of the people.

Consumer preferences and consumption patterns are the main determinants of the demand for meat. It is a fact that fish and beef are the highest sources of animal protein commonly consumed by man. Observation and personal interviews have shown that the consumption and purchase intention of the people in the study area towards beef is low compared to that of fish, even though there are beef marketers just as there are fish marketers in the study area. This agrees with the findings of Akerele et al (2015) that rural households in the Yewa local government area of Ogun state, Nigeria prefer fish to beef as their main source of protein. Not much has been done empirically about the consumption pattern of beef among

rural/farming households in the study area as all knowledge about the subject matter has been on mere assumption. There is therefore the need to fill the gap in empirical evidence of beef consumption patterns in the study area among rural households in the study area. This hence, makes the study worth doing considering the following objectives:

i. Describe the socio-economic characteristics of the respondents;
ii. assess the frequency of consumption of beef among rural households in the study area;
iii. Determine the monthly expenditure of beef by the rural households in the study area and
iv. Identify the constraints to the consumption of beef in the study area.

Methodology

***Study design*:** The study adopted a descriptive survey research design. According to Anyahoha (2009), descriptive survey research design uses questionnaires, interviews and observations to determine the opinions, attitudes, preferences and perceptions of people. The survey research design was considered appropriate as it elicits information from the respondents concerning their consumption pattern of beef.

***Area of the study*:** The study was carried out in Igbo-Eze North Local Government Area of Enugu State, Nigeria. The Local Government Area is comprised of four major autonomous town communities namely: Umuozzi, Umuitoddo, Essodo and Ezzodo, made up of 36 autonomous villages. The Local Government has an area of 293 km^2 (113 sqm) and a population of 259,431 people as of the 2006 census, the majority of whom are mainly farmers (NPC, 2006). The area lies roughly between latitude 6^{o}59`N and longitude 7$^o$27`E. Kogi and Benue States border the Local Government. Crops grown include roots and tuber crops (yam, cassava, and cocoyam), cereal (maize), and tree crops (oil palm, kola and pear). The study population comprises all rural households in the Local Government Area.

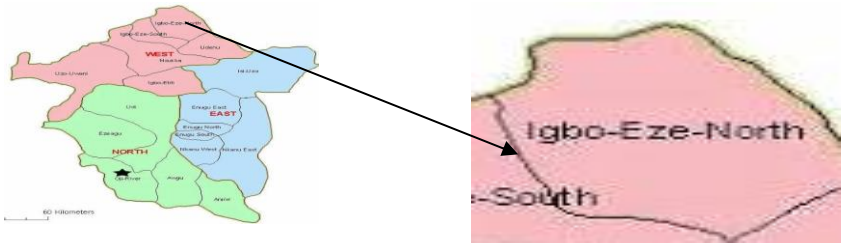

Fig 1: Map of Enugu State showing the study area

***Population for the study*:** The study population comprised all rural households in Igbo- Eze North Local Government Area. The area has a population of 259,431 people as of the 2006 census, the majority of whom are mainly farmers (NPC, 2006).

***Sample size selection*:** A stratified random sample technique was adopted in the conduct of the research. In the first stage, the

four major autonomous communities (Umuozzi, Umuitodo, Essodo and Ezzodo) comprising 36 autonomous villages that make up the local government area were selected. In the second stage, 25 autonomous village communities were randomly selected from the 36 sampled communities. This is to produce a fair representation of the entire local government area. In the third stage, six households were randomly sampled from each of the twenty-five earlier sampled village communities, thus, giving 150 households used for the study. Male and female household heads who identified as beef consumers were purposively selected for the study.

***Instrument for data collection*:** The instrument for data collection was a questionnaire used to solicit primary information from the respondents. This instrument was divided into four sections namely A, B, C and D. Section A consisted of items on the background information of the respondents. Section B comprised items eliciting information on the frequency of consumption of beef among rural households. This was determined by using a 7-point Hedonic measurement scale weighted as follows: Daily (7), 5 – 6 days/week (6), 3 – 4 days/week (5), 1 – 2 days/week (4), once in a week (3), during festivities (2) and not at all (1). Section C determined the monthly expenditure of the respondents on beef in the study area, while section D elicited information on the constraints to beef consumption in the study area. This was done by using a 3-point Likert rating scale of Very High Extent (3), High Extent (2) and Very Low Extent (1).

***Validation and reliability of the instrument*:** Three experts from the Department of Agricultural Education, Federal College of Education, Eha-Amufu, Enugu state, validated the instrument. The Cronbach-Alpha reliability method was used to determine the internal consistency of the items. The reliability coefficient of the instrument was 0.87. Therefore, the instrument was reliable and suitable for the study.

***Method of data collection*:** One hundred and fifty copies of the questionnaire were administered to the respondents by the researchers with the aid of five research assistants. The assistants were recruited from the communities selected for the study to help in interpreting the questionnaire items in the local dialect. All 150 (100%) copies of the questionnaires were retrieved and used for data analysis.

Data and statistical analysis: Descriptive statistics such as frequency, percentages and means were used to analyze data. The scored responses on the frequency of beef consumption were multiplied by each Hedonic weight and divided by the response pooled together. The status of frequency of consumption was established in a 3-category frame by dividing the maximum response value (7) by the 3 categories to obtain a class mark of 2.33 which produced the categories as follows: 0.00 – 2.33 as scarcely consumed, 2.34 – 4.67 as occasionally consumed and 4.67 – 7.00 as frequently consumed as employed by Madukwe et al. (2000) and Ekwe (2019). Also, to obtain the constraints to beef consumption, the scored responses of the Likert rating scale were multiplied by each Likert weight and divided by the response pooled together. This gave a benchmark of 2.0 used as the cut-off point. This implies that any problem with a mean score of 2.0 and above was a major problem and should be accepted and any score below 2.0 was not considered a major problem and hence rejected.

Results

Socio-Economic Characteristics of the Respondents

Table 1: Presents the distribution of respondents based on their socio-economic

characteristics. The table shows that there was more female patronage (purchase) of beef than males as the sample consists of 37.3 % males and 62.77 % females with a mean age of 43.9 years. Most (83.3%) of the respondents were married, and 78% of the respondents were full-time farmers. The mean household sizes of the respondents were seven persons/house. A greater proportion (48.7% and 30%) of the respondents had primary and secondary education respectively. The mean annually estimated income of the respondents gave a mean yearly income of ₦97,150.

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

Socio-economic Variable	*f*	%
Age		
20 – 39	73	48.7
40 – 59	50	33.3
60 and above	27	18
Mean	**43.9**	
Sex		
Male	56	37.3
Female	94	62.7
Household size		
1 – 3	19	12.7
4 – 6	44	29.3
7 and above	87	58
Mean	**6.78**	
Occupation		
Full-time farmer	78	52
Civil Servant	28	18.7
Artisan	19	12.6
Trading	25	16.7
Education		
Primary	51	48.7
Secondary	45	30
Tertiary	11	7.3
No education	21	14
Occupational experience		
Less than 10 years	52	34.7
10 – 39 years	87	58.0
40 and above	11	7.3
Mean	**17.34**	
Estimated annual income (₦)	**f**	%
Less than 50,000	36	24
51,000 – 100,000	55	36.7
Above 100, 000	59	39.3
Mean	**₦97, 150**	
Marital status		
Married	125	83
Single/divorced	5	3.3
Widow	20	13.4

Frequency of consumption of beef among rural households in the study area.

The frequency of the consumption of beef among rural households in the study area is presented in table 2. The result shows that among the consumption form of beef in the study area, beef is consumed mostly in the forms of boiled (x=4.12), fried (x=3.89) and roasted (x=2.70).

Table 2: Distribution of respondents according to the frequency of consumption of beef in the study area

	Frequency of Consumption								
Beef Forms	**Everyday (7)**	**5-6 days/weeks (6)**	**3-4 days /weeks (5)**	**1-2 days/weeks (4)**	**Once in 2 weeks (3)**	**During festivities/ceremonies only (2)**	**Never (1)**	**Mean Max = 7**	**Remarks**
Fried	6	16	24	28	60	17	0	3.89	Occasionally consumed
Roasted	0	18	9	6	32	78	7	2.70	Scarcely consumed
Boiled	18	29	21	16	18	48	0	4.12	Occasionally consumed

Key: 1-2.33 (scarcely consumed); 2.34-4.66 (occasionally consumed) and 4.67-7 (frequently consumed)

Monthly expenditure on beef in the study area

The distribution of the respondents according to their monthly expenditure on beef consumption in the study area is presented in table 3. The result shows that most (52%) of the respondents spend less than ₦1500 monthly on the consumption of beef. The table further shows that 19.3%, 13.3%, 8.7%, 4.7% and 2% of the respondents spend between ₦1,500 – 2,999, ₦3,000 - 4,499, 4,500 – 5,999, ₦6,000 – 7499 and ₦7,500 and above respectively on beef consumption monthly. The mean monthly expenditure on beef by the respondents is ₦2,663.00.

Table 3: Distribution of Respondents According to Their Monthly Expenditure on Beef in The Study Area.

Monthly Expenditure Ranges (₦)	Frequency	Percentage	Rank
≤1500	78	52	1st
1500 – 2999	29	19.3	2nd
3000 – 4499	20	13.3	3rd
4500 – 5999	13	8.7	4th
6000 – 7499	7	4.7	5th
7500 – Above	3	2	6th
Total	150	100	
Mean	**₦2,663**		

Constraints to Beef Consumption in The Study Area

Major constraints to the consumption of beef in the study area were presented in table 4 by the use of a 3-point Likert rating. The respondents all agreed that the constraints identified were serious with mean scores of cost price per kg (2.54), proximity to source (2.29), lack of Abattoir (2.14), and lack of storage facility (2.31), financial status (2.39) and inadequate supply (2.34). It is only health condition and age were rejected with mean scores of 1.77 and 1.72 respectively.

Table 4: Constraints to Beef Consumption

Constraints	Very High Extent	High Extent	Very Low Extent	Total	Mean Score	Remark
Cost price per kg	98	36	16	382	2.54	Accepted
Proximity to the source	73	47	30	343	2.29	Accepted
Lack of abattoir	60	57	39	321	2.14	Accepted
Lack of storage facilities	61	74	15	346	2.31	Accepted
Health condition	42	31	77	265	1.77	Rejected
Financial status	81	47	22	359	2.39	Accepted
Inadequate supply	76	51	21	351	2.34	Accepted
Age	37	34	79	258	1.72	Rejected

Discussion

The finding of this study showed that there was more female patronage (purchase) of beef than males. This implies that women are usually more committed to kitchen and cookery activities in the family than men are. This agrees with the findings of Babayemi et al. (2017), who asserted that culturally, the wife has to go to the market, buy meat and prepare delicacies for the family while; the husband financially empowers the wife. The result further showed that the respondents were mostly middle-aged adults; hence, they are mostly in their productive years, which will enhance their economic activities and family food security. This finding agrees with Ekwe (2019) who asserted that most of the respondents are still at the productive age of 48 years and are still able to provide

family food security. The finding further showed that most of the respondents were married. This buttresses Ozor et al. (2015) assertion that marriage is vital in rural areas as it derives the support of their wives and children in agricultural production. The majority of the respondents indicated being full-time farmers. This gives credence to the finding of Akin-Olagunju and Omonona (2014) who reported that agriculture represents the main income source in the rural economy. The respondents had moderate household sizes. This indicates a useful source of labour for economic activities. Educationally, the study showed that most of the respondents had a maximum of secondary education, which indicates a good level of literacy among the respondents, which could enhance their consumption of beef. The respondents' level of income was low; implying that their low level of income might affect their rate of beef consumption in particular and protein consumption in general. This result conforms with the view of Ekwe (2019) that a low income might affect the level of consumption of protein among rural farm households in Awgu, Enugu State, Nigeria.

The finding shows that beef generally was consumed occasionally among the rural households in the study area. This occasional consumption could be because of the cost of beef, its availability or the people's preference for fish as observed from the personal enquiry. This agrees with the findings of Akerele et al. (2015) who reported that the majority of the respondents in the Yewa South local government area of Ogun State, Nigeria prefer fish to beef as their source of protein. The form of beef mostly consumed by the respondents in this study was the boiled form followed by the fried form, and scarcely in roasted form. This may be because boiling and frying beef are easier and more convenient to carry out in the family kitchen, compared to roasting which requires special equipment that may not be easily available for family use.

The study further shows that the monthly expenditure on beef consumption in the study area was low. This result implies that on average, the respondents in the study area did not spend much on the consumption of beef. This could be because of the market price of beef, the respondents' monthly income and the availability of fish as the closest substitute for beef. This agrees with the reports of Akerele et al. (2015) and Ekwe (2019), that rural households in Yewa Local Government Area of Ogun State and Awgu Agricultural Zone of Enugu State, Nigeria prefer fish as their main source of protein to beef. In support of these authors such as Oritse (2021), Karigidi (2021) and Igwe (2022) asserted that fish is currently the cheapest form of animal protein and that consuming fish in the right proportion is more beneficial to health compared to red meat and that about 40% of Nigerian protein intake is from fish.

The study also identified that the constraints to the consumption of beef in the study area included, the cost price of beef, proximity to the source, lack of an abattoir, lack of storage facility, financial status and inadequate supply of beef. However, the health condition and the age of the respondents were not barriers to the consumption of beef. This implies that the age of the respondents does not matter and the health condition of the respondents in the study area was not bad which can make them not eat beef. The cost price of beef being expensive agrees with the report of Olumide and Carlos (2017) in their work "Household demand for meat in Nigeria" that the price of beef was higher than that of chicken and mutton. In the same vein, the finding agrees with that of Akerele et al (2015) that the low availability of beef, distance to the source and lack of abattoir are the major constraints

to beef consumption in Yewa South Local Government Area of Ogun State, Nigeria.

Conclusion and Recommendation

Beef was consumed occasionally among rural households in the study area, mostly in boiled and fried form. Roasted beef was scarcely consumed among the respondents. There was more female patronage of beef than males probably because the women are more involved in kitchen and cookery activities in the family than the men are. The respondents in the study area did not spend much money on purchasing beef due to its high cost, scarce availability and people's preference for fish in the study area.

The study, therefore, recommends that:

i. Extension and health workers should be well equipped to rightfully inform rural households of the importance and health benefits of beef consumption, as it is one of the main sources of animal protein.
ii. Government should provide enabling environment that will encourage people to venture into cattle rearing and production by modernizing the current tiresome and archaic pastoral (nomadic) system of cattle production.
iii. Construction of new and rehabilitation of old abattoirs and cold rooms should be carried out. This will help ensure the production and preservation of safe beef for consumption.
iv. Recruitment and frequent training and retraining of beef inspectors/veterinarians and health workers should be carried out. This will help ensure the good production of safe beef for consumption.
v. Entrepreneurs of cattle production should look beyond profit making and on consumer satisfaction. This will make them play their part in building a strong and healthy society.

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