

## Research Paper

# Analysis of Household Consumption Expenditure on Selected Staple Foods in Ika North East Local Government Area of Delta State, Nigeria

Mercy Ebere Ndubueze-Ogaraku<sup>1\*</sup>, Governor Ekene Oyita<sup>2</sup> and Sixtus Onwukwe Anyanwu<sup>3</sup>

<sup>1,2</sup>Department of Agricultural Economics and Extension, Faculty of Agriculture, University of Port Harcourt, East-West Road, Choba, Rivers State, Nigeria.

<sup>3</sup>Department of Agricultural Economics and Extension, Faculty of Vocational and Technical Education, Rivers State University of Education, PMB 5047, Rumuolumeni, Port Harcourt, Rivers State, Nigeria.

\*Corresponding author E-mail: [eberem2@gmail.com](mailto:eberem2@gmail.com), Tel:+2348037061372.

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This study was carried out to analyze the household consumption expenditure on selected staple foods in Ika North East Local Government Area of Delta State, Nigeria. The aim of this study was to investigate household consumption expenditure levels on selected staple foods and determine the effect of socio-economic characteristics variables on the food consumption expenditure in Ika North East Local Government Area of Delta State. The selected staple food items were rice, beans, garri, yam, plantain and meat. A simple random technique was used to select 60 household heads from the study area. Data analysis was accomplished using descriptive statistics and ordinary least squares multiple regression technique. Result indicated that 71.7% of the respondents were male household heads. While 29.3% were female household heads. The average

monthly income of the household head was ₦ 52,000. The average household expenditure of the staple foods was ₦ 16,915.78 in the study area. Regression analysis showed that marital status, household size and income household were positive and significant at 1% level while educational level was also positive but significant at 5% level. It is therefore recommended that family heads must search for a cheaper alternative protein source since beef product accounted for the highest percentage of food consumption expenditure in the study area.

**Key words:** Food, consumption, expenditure, determinants, income.

## INTRODUCTION

An understanding of household consumption behavior is important in household income and expenditure planning in Nigeria (Obayelu et al., 2009). Adeniyi et al. (2012) reported that the proportion of expenditure spent on food is inversely related to total income. Moreover, Food consumption occupies a central position among household

consumption goods. The level of household income is often a major determinant of expenditure patterns of households, and hence differences between patterns of expenditure are largely a reflection of differences in income between household groups or individual households (PROVIDE, 2003), The proportion of

household expenditure on food is usually very significant and can be used in assessing general household consumption. Frank and Bernanke, (2001) defined consumption as the spending on goods and services such as clothing, food items, entertainment, health services and acquisition of assets among others during the current period. Studies have shown that poverty in developing countries, like Nigeria, takes various forms such as low nutritional status, low level of education, decline in the spending on social services, high percentage of household income spent on food, low level of savings, low level of investments and low level of productivity, thus study on household income and expenditure is important in addressing the poverty situation in the country (Tangka et al., 2002; Njimanted, 2006; Umeh and Asogwa, 2012). Dickinson et al. (2003), noted that there is also a higher propensity of households experiencing increasing income to spend a bigger proportion of the food budget on a diversified diet thus improving the nutritional status of the household members. The consumption pattern of a household is a combination of qualities, quantities, acts and tendencies characterizing a community or a human group's use of resources for survival, comfort and enjoyment (National Bureau of Statistics (NBS), 2010). Household budget surveys across Africa consistently show basic foods to be the main consumption expenditure item in rural and many urban communities (Kyle and Swinnen, 2010; Umeh and Asogwa, 2012).

According to Asumadu-Sarkodie and Owusu (2016), evidence from Ghana on the causal nexus between child mortality rate, fertility rate, GDP, household final consumption expenditure, and production index shows that about 19% of future fluctuations in household final consumption expenditure are due to shocks in GDP, while 13% of future fluctuations in household final consumption expenditure are due to shocks in mortality rate.

They concluded that the implication is that GDP affects household final consumption expenditure more than mortality rate, fertility rate, and the food production index in the long-run.

According to the report by UNDP (2005), malnutrition is still widespread and eloquently manifested in the high levels of severe and moderate underweight among children coupled with the high rates of infant and under-five mortality and low life expectancy at birth.

Types of food consumed vary from region to region and consumption pattern normally contribute greatly to social and economic policy of the country. In Nigeria different food types are associated with different ecological regions and ethnic groups.

For instance the Fulanis are highly noted for milk, dairy and meat consumption, while the Niger Deltans in Nigeria are noted for high consumption of starchy and sea foods (Ezzati, 2003). In a developing country like Nigeria, the consumption pattern is skewed towards food, i.e. food

accounts for a higher proportion of the total expenditure, while in developed countries the opposite is the case (NBS, 2010).

Household food consumption pattern in Nigeria has been undergoing dramatic changes over the last few years (Obayelu et al., 2009). It is especially meaningful in developing countries where food expenditures account for a relatively large share of household income. Food consumption among the households in Nigeria could be said to be poor, this is evident as most households in Nigeria are not able to provide for their food consumption needs. In 2004, it was estimated that over 40% of Nigeria's population is food insecure.

In Nigeria, food consumption pattern had undergone remarkable changes over the last few years. There has been an increase in the consumption of starchy foods like cassava, yams, maize and rice and some decrease in the consumption of protein based food items such as fish and meats (Oloyede, 2005).

Total expenditure on food and non-food in Nigeria for 2009/2010 was estimated at ₦24, ₦253, ₦670, ₦127, ₦758.80 (Twenty-four trillion, two hundred and fifty-three billion, six hundred and seventy million, one hundred and twenty-seven thousand, seven hundred and fifty-eight Naira, Eighty Kobo) (NBS, 2009/2010). 64.68% of the total household expenditure in 2009/2010 was spent on food, with the balance of about 35.32% spent on non-food items.

Tubers and plantain were responsible for the largest proportion of household expenditure representing 14.6% of total household expenditure. This group was followed by rent, vegetables, other cereals and beans and peas each taking up 12.1, 9.9, 6.7, and 6.2% respectively of the total household consumption. Income is a major determinant of the type and quality of food consumed by the people; it has a great influence on consumption expenditure.

Studies of food consumption shed light on food-related nutritional policies and provide estimates of how food consumption is affected by changes in prices, income, and taxation policies (Dunnem and Edkins, 2005). Food consumption in Nigeria has been an important issue, not only because it is related to poverty and food security, because it is highly correlated with living standards and household resource.

According to them, the demand for food depends on population and the dietary habits/per capita daily calorie intake of the people under consideration. On the other hand, the food requirement of the nation is dependent on an additional factor namely; food import and export balance.

The major determinants of household food consumption expenditure were household demographic characteristics and economic factors (Seid, 2011), and these include household size, age, educational level and major occupation of the household head. The economic factors include income level of household head and price

of food items. According to Dankwa *et al.* (1992), the total effect of household size on expenditure is a combination of two effects- 'a specific effect' and an 'income effect'. The 'specific effect' results from the increase in need of various commodities when family size increases. The increase in need is usually less than proportional to the increase in size because of the economies of scale in large households. On the other hand, the increase in family size does not increase the need for every commodity in the same proportion and indeed may reduce the need for some. An increase in family size makes people relatively poorer; this is known as the 'income effect'.

Apart from income and budget limitation, other factors such as socio-economic variables could also be responsible for the household food consumption expenditure of several households. Income, prices, educational status of the individuals, occupation, age, and socio-cultural factors are the main ones (Abdulahi and Aubert, 2004; Dunnem and Edkins, 2005).

Although researches had been conducted on the pattern of food consumption in Nigeria but not much study has been carried out on the analysis of consumption expenditure on some food staples in the study area. It is then imperative to analysis consumption expenditure on staple foods among households in the study area. It is on this background that this study was designed to analyze the household consumption expenditure on some selected food staples in Ika North East Local Government Area of Delta State. The main objectives of this study were to: describe the socio-economic characteristics of the respondents in the study area, estimate average household expenditure on various staple foods per month, analyze the effect of socio-economic characteristics variables on the household food consumption expenditure and estimate average prices per kg of the selected food items in the study area.

## METHODOLOGY

### Study area

This study was carried out in Ika North East local Government Area, Delta State, Nigeria. Ika North-East Local Government Area lies between Latitude 5° 45' North of the equator and between Longitude 5° 31' and 6° 14' East of the Greenwich meridian. It is bounded in the North by Edo State and Ika South Local Government Area. However, Ika South Local Government Area marks its Southern and Western limits, while Aniocha North and Aniocha South Local Government Areas mark its Eastern margin. In terms of size, Ika North East occupies a land area of about 430 km<sup>2</sup> with a population figure of 126,560 in 1991 with 61,303 males and 65,255 females. It has a population density of 294 persons per km<sup>2</sup>. However, by the year 2006 the population has increased to 183,637

(NPC, 2006). Physical features Ika North East LGA lies in between two rivers - Orogodo and Namomah. Both Rivers flow southwards to the coast and have great potentials for the socio-economic lives of the people. The LGA is made up of 65 communities (Nigeria Postal Service (NIPOST), 2009). These communities are grouped under nine clans, namely, Owa, Ute-Ogbeje, Ute-Okpu, Umunede, Idumuesah, Igbodo, Otolokpo and Mbiri.

### Sample size and sampling techniques

Simple random sampling technique was used to select ten (10) communities from the sixty-five (65) communities in the Local Government Area and five (5) household heads were randomly selected from each community giving a total of 60 household heads as the sample size.

### Analytical techniques

The data gathered were analyzed using descriptive statistics and a multiple regression model. Data were collected on the socio-economic characteristics of the consumption households. The data include the household head, sex and age of respondents, their household size, major occupation, level of education attained, marital status as well as income of household head.

### Model specification

The implicit expenditure function for the regression analysis is given as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, e)$$

The explicit form of the equation

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e$$

Where

Y = Total Expenditure in naira (₦)

X<sub>1</sub> = household head (male or female)

X<sub>2</sub> = Age of household years

X<sub>3</sub> = Educational level in years

X<sub>4</sub> = Marital status (dummy)

X<sub>5</sub> = household size (No. of persons)

X<sub>6</sub> = Major occupation

X<sub>7</sub> = household head income in naira (₦)

e = error term

β<sub>1</sub> - β<sub>7</sub> = regression confidents of the socio-economic variables

β<sub>0</sub> = Intercept

e = Error term

**Table1.** Socio-economic characteristics of the respondents.

Variables	Frequency (n =60)	Percentage
<b>Gender</b>		
Male	19	31.7
Female	41	68.3
<b>Age (years)</b>		
21-30	27	45
31-40	17	28.33
41-50	8	13.33
51-60	6	10
61-70	1	1.7
71-80	1	1.7
<b>Household head</b>		
Male	43	71.7
Female	17	28.3
<b>Educational level</b>		
First school leaving	6	10
WASC/SSCE/GCE	6	10
OND	4	6.7
BSC/HND	39	65
Higher degree	3	5
Non Formal education	2	3.3
<b>Household size</b>		
1-5 members	34	56.7
6-10 members	26	43.3
<b>Major occupation</b>		
Farming	6	10
Civil service	11	18.3
Teaching	23	38.3
Supply business	1	1.7
Trading	16	26.7
Media partitioning	3	5
<b>Income level (₦) at ₦155.4/ dollar(\$)</b>		
Below 50,000	42	70
51,000-100,000	16	26.7
101,000-150,000	1	1.7
151,000-200,000	0	0
201,000-250,000	0	0
251,000-300,000	0	0
301,000-350,000	0	0
351,000-400,000	1	1.7
401,000 and above	0	0

Source; Field Survey, 2012.

The relationship between the dependent and each of the independent variables was examined using four functional forms:

Linear, Semi-Log and Double Log

Linear:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e$$

Semi-Log:

$$Y = \beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \beta_4 \log X_4 + \beta_5 \log X_5 + \beta_6 \log X_6 + \beta_7 \log X_7 + e$$

Double Log:

$$\log Y = \beta_0 + \beta_1 \log X_1 + \beta_2 \log X_2 + \beta_3 \log X_3 + \beta_4 \log X_4 + \beta_5 \log X_5 + \beta_6 \log X_6 + \beta_7 \log X_7 + e$$

## RESULTS AND DISCUSSION

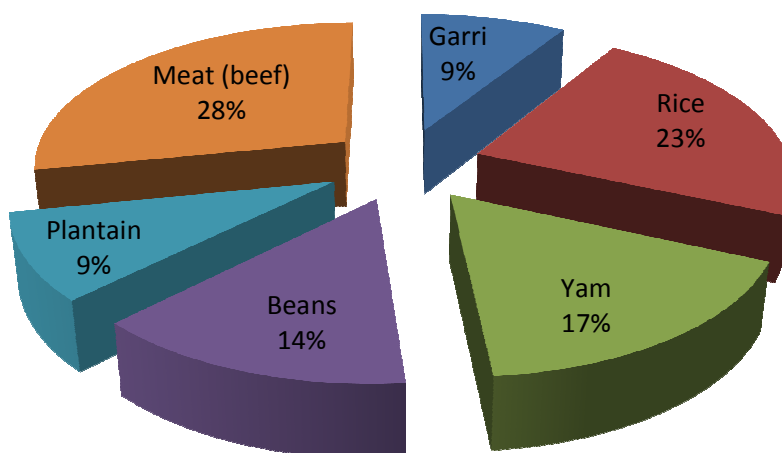
Table 1 shows that 31.7% of the respondents were males while 68.3% were females. This therefore reveals that majority of the respondents were females. It also showed that the mean age distribution of the respondents was 35 years. 45% of the respondents were within the age group 21-30 years which indicated the highest age group in the sample size, 28.33% were within the age group of 31-40 years, 13.33% in the age group of 41-50 years, 10% in the age group of 51-60 years and the age groups 61-70 years and 71-80 years was 1.7% each. This reveals that

**Table 2.** Average household expenditure on the various staple foods per month.

Staple foods	Average amount spent (₦)	Percentage
Garri	1,497.33	8.9
Rice	3,868.92	22.9
Yam	2,850.00	16.8
Beans	2,349.17	13.9
Plantain	1,583.33	9.4
Meat (beef)	4,767.03	28.1
Total	16,915.78	100

Source; Field survey 2012.

Percentage of expenditure on the various staple foods per month



**Figure 1.** Average expenditure on the various staple foods per month in the study area.

majority of the respondents were youths, this was also reflected in the mean age distribution of 35 years.

The result further shows that 71.7% of the respondents were male household heads, while 29.3% were female household heads. This indicates a higher number of male household heads compared to the female household heads. 10% of the sampled population had only first school leaving certificate; 10% had WASC/SSCE (secondary), 6.7% had OND; 65% had a BSc/HND; 5% had higher degree and 3.3% of them did not have any formal of educational. This indicates that majority of the respondents in the study area were university and polytechnic graduates followed by first school leaving certificate, WASC/SSCE/GCE and lastly OND. It also implies that there are more educated people in the sampled population which is also reflected by the low percentage (3.3%) of illiterate household heads.

The result also showed that the mean household size was 5 members, It was also found that the households with family size of 1-5 members was 56.7% while those

within the ranges of 6-10 members and 11-15 members was 43.3% and zero(0) respectively. This is a very significant factor because the greater the household size, the higher their level of consumption. 10% of the sampled population was farmers; 18.3% were civil servants; 38.3% were teachers; 1.7% was supply contractors (businessmen), 26.7% were traders and 5% were media practitioners. This showed that the highest major occupation in the sampled population was teaching followed by trading. The low number of individual having farming as their major occupation could implied that the study area may not be rural in nature. According to Bishnoi, (2004) stated that a vast majority of the rural population are engaged in farming and allied activities as the main occupation. Most surveyed households (70%) earned less than ₦50,000 (<\$312.5), 26.7% of the household heads earned ₦51,000.00 to ₦100,000.00 per month, 1% of the household heads each earned income within the range of ₦101,000.00 to ₦150,000 and ₦351,000 to ₦400,000 respectively. The result also

**Table 3.** Ranking of staple foods based on level of importance by the respondents in the study area.

Ranks	Garri		Rice		Beans		Yam		Plantain		Meat	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
First	30	50	21	35	4	6.7	3	5	1	1.7	1	1.7
Second	11	18.3	22	36.7	12	20	6	10	3	5	6	10
Third	10	16.7	12	20	20	33.3	6	10	1	1.7	12	20
Fourth	3	5	2	3.3	19	31.7	18	30	8	13.3	10	16.7
Fifth	3	5	2	3.3	3	5	17	28.3	20	33.3	14	23.3
Sixth	3	5	1	1.7	2	3.3	10	16.7	27	45	17	28.3
Total	60	100	60	100	60	100	60	100	60	100	60	100

Source; Field survey 2012.

**Table 4.** Prices per kg of the selected food items from January to July 2012 in the study area.

Months	Price/Kg Garri (₦)	Price/Kg Rice (₦)	Price/Kg Beans (₦)	Price/Kg Yam (₦)	Price/Kg Plantain (₦)	Price/Kg Meat (₦)
January	65	170	170	80	80	800
February	70	170	170	80	80	750
March	70	150	150	100	100	750
April	70	150	180	100	100	750
May	70	150	180	100	100	800
June	80	200	200	100	100	800
July	80	200	220	100	100	800

Source; Field survey 2012. Average exchange rate of naira to dollar \$ was ₦155.4 to one dollar.

**Table 5.** Result of the regression analysis.

Variables	Linear			Semi log			Double Log		
	Coefficient	t-ratio	p-value	coefficient	t-value	p-ratio	Coefficient	t-ratio	p-value
Constant	-14363.56	-1.76***	0.09	8.21	21.80**	0.00	6.40	6.44**	0.00
Age	-82.87	-0.70	0.49	-0.00	-0.45	0.65	0.06	0.24	0.81
Head	-427.25	-0.21	0.83	-0.10	-1.10	0.28	-0.18	-1.11	0.28
Education	2601.92	2.91**	0.00	0.11	2.56***	0.01	0.19	1.44	0.16
Marital status	5580.81	3.06**	0.00	0.27	3.25**	0.00	0.36	2.19***	0.03
Household size	2406.09	2.29***	0.03	0.15	3.12**	0.00	0.40	1.85***	0.07
Major occupation	54.84	0.125	0.90	-0.00	-0.31	0.76	0.04	0.33	0.74
Income	0.06	3.20**	0.00	0.25	3.13**	0.00	0.17	1.96***	0.06
R-square	0.61			0.66			0.58		
Adjusted R square	0.54			0.59			0.49		
F-ratio	7.78			9.48			6.76		
F Prob	0.00			0.00			0.00		

Source: Field survey, 2012 using SPSS, V.17: Note; \*\* = significant at 1%, \*\*\* = significant at 5%.

revealed that the average monthly income of the respondents was ₦52,000.00. This average monthly income of ₦52,000.00 of the households heads seems to be fairly good if evenly distributed among every households in the study area. Based on the 2011 National Minimum Wage Act which states that as from the commencement of this Minimum Wage Act, every employer is required to pay a wage that is not less than ₦18,000.00 per month to every employee engaged by an employer.

Table 2 shows that the estimated average household expenditure on garri, rice, yam, plantain, beans and

meat was estimated as ₦1,497.33, ₦3,868.92, ₦2,850, ₦1,583.33, ₦2,349.17 and ₦4,767.03 per month respectively (Figure 1). It is clearly shown from the study that the households in the study area spent more income on meat (beef) followed by rice, yam and beans while expenditure on garri and plantain were low. The higher percentage of household expenditure on rice, yam and meat indicated that the sampled population could be due to the price per kg of the food items in the study. Since average price per kg of garri was the least among the prices of foodstuff, this factor would have been responsible for the least expenditure on this food item

even though the quantum consumed could be large. This agrees with the finding by Ezzati, (2003) who stated that Niger Deltans are noted for high consumption of starchy, sea foods and beef products.

Table 3 shows the category of selected food according to importance in the household consumption list. Garri product was ranked the top foodstuff having the highest percentage of 50 respondents. Rice was ranked the second most important staple food with 36.7% by the respondents. Beans was ranked the third and the fourth important staple food having 33.3 and 31.7% respectively. Plantain was ranked as the highest under the fifth important food by the respondents with 33.3%. Meat had the highest percentage as the sixth important staple food with 28.3. It could be seen from the analysis that garri product was found to be the most important food item of the people in the study area. This is contrary to the findings of Obayelu et al. (2009), which found that the most consumed food staples include rice, fat and oil, yams and vegetables are the topmost food consumed in Kogi state. While in Kwara State instead of fat and oil households consume garri in large quantity. The outcome of rural-urban household food consumption pattern as indicated by the report also showed that in the rural area of Kogi state, cassava flour, yam, fats and oil as well as vegetables were the major food consumed compared to rice, beans, fats and oil in the urban areas.

The result on Table 4 shows the price per kg of selected food stuff in the study area during the period between January to July 2012. It was found that almost all the prices of selected staple food surveyed increased within the period. The price of garri per kg increased from ₦65.00 to ₦80.00, rice increased from ₦170.00 to ₦220.00, beans increased from ₦80.00 to ₦100.00, plantain increased from ₦80.00 to ₦100.00 while the price of meat reduced to ₦750.00 and then increased to ₦800.00.

It could be seen that majority of food prices were not stable. The rising prices of the foodstuff could be as a result increase in the quantity demanded of these products by consumers in the study area.

Food expenditure was the dependent variable while the explanatory variables included age of household head, marital status of household head, level of education, sex, household size, household income and household composition. The result of the analysis is presented in (Table 5). The regression result of coefficient of determination ( $R^2$ ) indicated that linear, semi log and double log functional forms were 56, 59 and 49% respectively. The semi log model was used as the lead equation because it showed the highest ( $R^2$ ) of 59%. This indicates that about 59% of the variation in the household food consumption expenditure was explained or accounted for by the independent variables included in the model. The adjusted  $R^2$ , measures the ability of the explanatory variables to explain all the variation in the dependent variable for the equation is 0.59 which shows

that the combine effect of the independent variables accounted for 59% of the variations in the household expenditure on food items. The F-ratio provides an overall test of significance of the whole function of the regression line. This test shows that F-ratio is statistically significant at 5 percent level of significance.

The result of the regression analysis as presented in Table 5 show that household income, size, education and marital status significantly and positively influenced expenditure on food at  $P \leq 0.05$ . This result shows that household will spend more on food with rising household income, household size and presence of dependents. It is implied that a unit increase in household size would lead to a rise in the food consumption expenditure. Household with large family size will likely spend more on consumer goods than households with small family sizes, *ceteris paribus*. The coefficient for education was positive meaning that a unit increase in the educational level of household head could lead to a rise in expenditure on food. This could be explained that the more educated the household is, the more likely they will ensure that members of the household have the right quality and variety of food for consumption which will increase the household food expenditure. The positive sign of the coefficient of marital status of the respondents implies that as individual get married, the family size would likely increase, that would mean buying more food thereby increasing the expenditure on food consumption. The positive sign of income level of households which is one of the major determinants of consumption implied that as the household income level increases, the expenditure on consumption will also increase all things being equal.

## CONCLUSIONS AND RECOMMENDATIONS

The study concludes that garri product was ranked the most important foodstuff consumed by most households in the study area, followed by rice, beans was ranked the third and the fourth important staple. The estimated average household expenditure on garri, rice, yam, plantain, beans and meat was ₦1,497.33, ₦3,868.92, ₦2,850, ₦1,583.33, ₦2,349.17 and ₦4,767.03 per month respectively. It is clearly shown that the households in the study area spent more income on meat (beef) followed by rice, yam and beans while expenditure on garri and plantain were low. Finally socio-economic characteristics of household heads such as marital status, household size, educational level and income of the household heads had positive and significant effect on food expenditure. Based on the results of this study the following have been recommended;

(a) Government should encourage food production in the country by giving support services to farmers in form of subsidy to increase volume of production in the study area.

(b) Since the male household heads dominated the sample population, men are advised to encourage family members to embark on production some of the stable crops to reduce expenditure on food.

(c) In order to reduce the food consumption expenditure, married individuals should adopt birth control measures to reduce family size.

(d) Since beef product accounted for the highest percentage of food consumption expenditure in the study area, therefore families are advised to source for alternative sources of protein at the same time, government should encourage the production of meat products to enable household have access to this source of protein.

## AUTHORS' DECLARATION

We declare that this study is an original research by our research team and we agree to publish it in the journal.

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