

Determinants of Protein Consumption among Households in ILA Local Government Area of Osun State, Nigeria

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Abstract: This study examined the pattern of protein consumption in Ila Local Government Area of Osun State, Nigeria. A multistage sampling technique was used to select the respondents for this study. The data were collected from 114 household members using a well structured questionnaire. The data were analysed using descriptive statistics and Logit regression model and used to analyse the determinants of protein consumption in the study area. The findings revealed that, majority (36%) were aged 30years and below, majority (56.26%) were male. Most of the respondents were married 59.65% and most of them had ≤ 5 numbers in their household (57.02%). Many of the respondents had tertiary education (51.75%) and many of them spent 11-15 years in school(44.7%). Majority were Christians 50% and majority had other sources of income for their households (53.51%). Most of the households spent above N 30000 on food item monthly and most spent below N 20000 on non food item monthly. Most of the households spent N 5100-10000 on protein monthly and most of the respondents claimed that protein is available and fairly affordable in the study area. Majority of the respondents were aware of the importance of protein to the body system and majority did not consume protein because of the cost of purchase. Many of the respondents had no secondary occupation and most of them were civil servants. Most spent above N 20000 on animal protein and between N5100-10000 on plant protein. The study further revealed that age, sex, income level and affordability of protein were the significant factors that determine the level of protein consumption in the study area.

Key words: Animal protein • Plant protein • Protein consumption • Logit regression model

INTRODUCTION

Food is a basic human need and a major source of nutrient for main existence [1]. Evaluation of the nutritional status of individuals and population group is a tool of vital importance in public health and feasible indicators of standard of living. High rates of malnutrition may be attributed to poor environmental sanitation, overcrowding, lack of preventive and curative health services and other socio economic, educational and cultural factors though feeding practices have been recognised as one potential important determinant of infant malnutrition. [2]. Nutrient can be defined as the substance contain in food, which the body needs to function properly. The three functions of nutrients in food is to provide energy, ensure growth and to protect the body. The lack of adequate nutrients in the right proportion leads to malnutrition [3].

Essential food is the mixture of chemicals which could be separated into different component having different function in the body [4]. Food is of high importance in matter of human well being and economic productivity [5]. Eating good food is vital for a healthy and active life. Many people in virtually all countries do not eat well because of poverty and lack of nutritional education [5]. The major constitute of food are carbohydrates, protein, fats and oil, mineral salt, vitamins and water. Food can also be classified either as proper food (i.e carbohydrates, protein, fats and oil) for energy supply or as accessory food (i.e water, inorganic salt, vitamins) which are essential for life but do not supply energy [4]. Despite the fact that the world food production has doubled during the past three decades the number of malnourished people are soaring above 900million around the world. Malnourishment exists when household calorie intake goes below the minimum dietary

requirement which may be regarded as an indication of food security. In considering the sustainability of the wealth of a nation, the food intake must be secure [6] i.e. contain nutritional diet. According to Iyangbe and Orewa [7], lack of explicit and comprehensive food policy and low priority given to food self-sufficiency goal has led to several problems affecting the availability of food. Malnutrition in children causes low height forage while in adult and elderly ones, conditions such as gingivitis, angular stomatitis, loss of strength, low productivity, low morale, lethargy and retardation are common these classes of people [8]

Aromolaran [9] confirmed that Nigeria is still struggling to meet up with the minimum food and nutrient requirement. The evidence of poor nutrition is reflected particularly among low income group. It has also been estimated that 7300 children die of malnutrition annually in Nigeria, before they reach the age of four years; while 73000 to 84000 infant born every year suffer from malnutrition. The preschool children are not left out of the ill wind of malnutrition blowing in Nigeria [10]. Protein are the major structural component of all cells of the body and amino acids are the building blocks of protein. As far as human body is concerned there are two different types of amino acids; Essential and Non essential. Nonessential amino acids are the amino acids that the body can create out of other chemicals found in the body. Essential amino acids cannot be created and therefore, the only way to get them is through food. Protein contain approximately 22 amino acids, eight of which are essential because the body cannot produce them therefore they must be obtain from our food [8].

Among the component of food, the importance of protein in the body build up growth and repair of animal worn out tissue cannot be over emphasized. Protein food can be classified into two namely the animal protein and the plant protein. The animal source however have an edge over the plant source in that they all contain the 20 amino acids require for body tissue synthesis while no one plant protein source contain all the 20 amino acids [11]. Protein can also be classified into simple protein, conjugated protein or deprived protein. Simple protein on hydrolysis yield only amino acid or their derivatives e.g. albumins, globulins, albuminoids, histones and protamins. Conjugated protein consist of simple protein conjugated with no protein radicals e.g. nucleoprotein (protein plus a carbohydrate group), phosphoprotein (protein plus a phosphorus containing group), haemoglobin (protein plus hamatin) and lecithoprotein (protein plus lecithin). Deprived protein on the other hand

are breakdown product of naturally occurring protein e.g. meta proteins, conjugated proteins, peptone and peptides. [9] Protein is part of the three principal sources of energy in the human diet [5]. Animal protein (meat and dairy) are rich source of protein. The quality and quantity of protein with other sources of food is important when analysing nutritional adequacy [12].

Problem Statement: Evidence around in the literature indicates that Nigerians are inadequately fed. This, it is believed to be due mainly to the high cost of animal protein needed for growth and development [13]. So the starting point towards raising the level of nutrition must be the knowledge of what people eat and the factors affecting their demand for specific food item. Also, in the views of Joseph and Ajayi [14], the recommended minimum nutrient requirements to be consumed per day per capital include 2191k/cal and 65-86g crude protein out of which at least 35g or at least (40%) must be animal protein. On the basis of the analysis of the recommended daily calorie distribution by the National Academics of Sciences, [15] and Honfoga and Van den Boom [16], 10 to 35% calorie supply should be from protein including animal products and pulses

The recent records of the increasing cases of nutritional deficiency symptoms and relatively reduce resistance to disease in the body which protenuous food could check is the aftermath effect of inadequacy in the provision of minimum food requirement for the family by the household head income. The young children on the other hand are attracted to sweets lollypop and other type of non value junks food this displacing the traditional food from the farm which is rich in nutrients content [7]. The food crises in the developing countries are therefore not only in the supply and distribution of food to consume. Unlike nutrition related studies in the livestock industry, very few studies appear to have been done in the general area of human dietary combination and optimization. Many nutrition related articles especially in Africa report result of studies of nutrient composition of food without indicating the optimal level desirable for human consumption, despite awareness about daily recommended levels required of the different nutrient [17]. The need therefore arose to study the pattern of protein consumption in order to provide answer to the factor affecting protein intake. The specific objectives of the study are to examine the socio economic characteristics of the respondents as well as analyse the determinants of protein intake in the study area.

Theoretical Framework: Forum for Agricultural Research in Africa (FARA), [18] stated that the distribution of income is one of the most enduring issues in the political economics, on one extreme are those who agreed that all income should be the same or as near as possible and that a principal function of government should be redistribute income from the halves to the have not's. On the other extreme are those who argued that any income distributed by government is bad. Iyangbe and Orewa, [7] also said that income earner can be grouped into three classes; the high income class, the middle class and the low income class. It can be seen that the middle class is vanishing which can be attributed to the slow income growth in the country, in popular culture the middle class usually appears as the urban families with children. The low income class contained mainly farm families and other rural families. Most of who were not eligible for the social security benefits. He also stated that income level is one of the factors which determine the nutritional intake of the populace.

Abdulahi and Aubert, [19] suggested that income is important in determining the level of household access of food, the choice and a right quality food mix that can guarantee adequate nutrient intake, health and productive life are also substantially influenced by socio-demographic variables like age, gender and many others. Adequate income level is important in ensuring that people gain access to food. Adetunji and Adepoju [8], said that the level of poverty in Nigeria is on the increase due to low level of income, high cost of food products particularly protein food as well as its inadequate production of protein food by farmers and lack of capital to establish on a large scale.

FAO [20] revealed that food security exist when all people at all times have physical, social and economic access to sufficient safe and nutritious food that meets their dietary need and food preferences for an active and healthy life. Household food security is the application of this concept to the family level with individual within household as the focus of concern. It is the ability of countries, regions or households to meet target level of food consumption on yearly basis. Olarinde and Kuponiyi [1] concluded that food security is when people at all times have both physical and economic access to sufficient and nutritious food to meet their dietary needs for a productive and healthy life. In short the main goal of food security is for individuals to be able to obtain adequate food needed at all times to be able to utilize food to meet the body needs. However it has been establish that the quality and quantity consumed by household affect their health and economic well being.

FAO [21] stated that to have food security and be adequately nourished, an individual needs an understanding of what constitute an appropriate diet for good healthy conditions as well as resources skills and motivations to make good food choices. Also Muhammad et al [22] said to reduce hunger, it is essential that a larger share of new development finding be allocated to agriculture and rural development than the past decades. Olatidoye et al [2] contributed that availability of food and access to food are two essential determinants of food security. Iyangbe and Orewa [7], the access to enough food for a healthy life (i.e. food security) can be threatened when consumption expenditure is greater than the monthly realised. Food utilization means ensuring a good nutritional outcome which can be termed nutrition security. Olatidoye et al [2] added that number of factors such as income, educational level, households sizes are known to affect household food security. Mohammad et al [22], confirmed that food security is an important matter of concern for both the developed and the developing countries. However, the situation in developing countries is terrible. In below table 906million undernourished people live in developing country out of the total of 925million undernourished people of the world

According to Olabamiro et al [23], food strategies must not merely be directed at ensuring food security but must also achieve the consumption of adequate qualities of safe foods for healthy life Ajibola, [24] revealed that food is a basic necessity of life. Its importance at the household level is indicated by the fact that it is a basic means of sustenance. The adequacy of which in quantity and quality is a key requirement for a healthy and productive life. Aromolaran [25], defined food consumption pattern as the peoples food eating habits showing what constitute the basket of an individual or group of people (e.g. households) in a particular location. Jacinto [26], said that despite the differences in preference, consumer seem to follow general phase in the evolution of their consumption behaviour. This is described in a well established law in economics called the Engel curve, which reflect that as household income rises, the proportion of income spent on food declines, suggesting relatively low income elasticity for food.

According to FAO, [27] the structure of Nigeria food consumption has been undergoing dramatic change for some years now. There was a decrease in the dietary energy consumption for the period of 1990-1992, 1995-1997 and 2001-2003 that was input at 2540, 2750 and 2700 (kcal per caput per day) respectively. Also there is decrease in dietary protein consumption (gm per caput per day) for the period 1995-1997and 2001-2003. The per caput

protein was 62 between 1995-1997 but dropped to 61 between 2001-2003. A close look at the pattern of food nutrient supply in Nigeria showed that food calorie (energy) consumption by an average Nigerian rose from 2091.50cal/caput/day in 1980 to 2418.40cal/cap/day (15.6%) in 1990 and 2725cal/cap/day (30.3%) in year 2002 and an aggregate protein consumption also rose from 48.5g/cap/day in 1980 to 52.2g/cap/day (15.9%) in 1990 and 61.1g/cap/day (26%) in 2002 [28]

Protein Consumption Pattern: Proteinous food can broadly be classified into two; source food and plant protein source food. Olasunkanmi [29] stated that the mean household expenditure on animal protein source is greater than that on plant protein source food implying that most of the household consume more of animal protein source food than plant protein source food. This is in consonance with the recommendation of [30] that preference should be given to animal protein. Ajayi [8] made us to understand that researchers have further shown that meat protein shortage continues to increase everyday in Nigeria, despite various effort to improve its productivity in the field of cattle production and the price of beef has become unaffordable for an average consumer. He also said the awareness of the need of adequate protein in human diet has greatly increased in developing regions in the world Adetunji and Adepoju [31], said that in Nigeria, dietary protein sources are more of plant based with varying level of amino acids than animals. For instance, FAO recommendation for daily protein consumption is put at 60g per person out of which 35g is expected to be from plant source. However, it was reported that per average per capita protein in Nigeria was 51.7g from which only 8.6g come from plant source whereas in developed country, the average per capita protein intake was over 70g with more than 55g from animal source. They also said that the differences in personal taste, educational level, religion, custom and belief may affect the consumption of protein. Since most of the rural dwellers engage in one agricultural activity or the other and these make the availability of other classes of food to be very high. The prices of food particularly those of the protein source affects its consumption since majority of the consumer are known income group, they tend to appeal for the inexpensive food commodities which in most cases are the starchy food with low nutritional value, in essence they opt for quantity rather than quality.

Robert et al [32] reported that the recommended amount of protein for tissue development, growth and performance differs in age and sex, for instance the adult

males require more protein than their female counterpart in the same group due to the fact that the males use more energy for work while pregnant and lactating females need the highest quantities of protein due to the physiological state of their body. They also said that a hard working adult farmer needs approximately 3500calories and 50g of protein per day, a one year old child needs about 1000calories and 15g of protein per day. Yet these quantities of essential nutrients are missing in the diet of many rural Africans, which are based on staples of grain such as maize without nutritional supplements

MATERIALS AND METHODS

This research was carried out in Ila Local Government Area of Osun state, Nigeria. Ila Local Government Area is one of the thirty Local Government Areas that are present in Osun state. According to the 2006 population census, Ila Local Government Area has an urban population of 62,049. It is a densely populated area and it is situated on the latitude 8°01' N and 4°54' E. It has a total land area of 303km² (117sq ml). The headquarter is at Ila Orangun. The ethnic group is Yoruba, though there are other ethnic group from various part of Nigeria living in the area. The mean annual rainfall is 1250.50mm, while the peak of maximum temperature varies between 20.90°C and 33.80°C and the lowest minimum temperature varies between 21.0°C and 25.0°C. The Villages in Ila local government include: Kajola, Edemusi, Ogbagbara, Alagbede, Obaloti, Ayegun, Magbon, Obaloja, Alanwo, Obasikin, Olero, Idi Awewe and Idi ebuku

The source of data used in this study was primarily sourced. The data were collected through interview schedule with the aid of a well structured questionnaire. Multistage sampling technique was used in which in stage one, Ila Local Government Area was picked out of the local government Areas present in Osun state. In the second stage, eight villages were randomly selected out of the thirteen villages that were in Ila Local Government Area of Osun state which includes; Edemusi, Kajola, Ogbagbara, Ayegun, Obaloja, Magbon Alanwo and Obasikin. Finally in the third stage desirable numbers of households were randomly chosen from each of the villages: twenty one households were selected from Edemusi, fifteen from Kajola, ten from Ogbagbara, nineteen from Ayegun, eight from Obaloja, fifteen from Magbon, thirteen from Alanwo and fifteen from Obasikin. In all a total number of one hundred and sixteen respondents were selected for the study.

The data were analysed using descriptive statistics and logit regression model. The descriptive statistics involved

the use of tabular presentation, frequency distribution and percentages for the socio economic analysis while Logit regression model was used to analyse the determinants of protein consumption in the study area. A binary response function (those that took protein more than other food source and those that did not take protein more than other food source) was specified and estimated by the logistic procedure. The binary logistic specification is suited to model where the endogenous variable is dichotomous, which in this case are the household that took protein more than other food source and those who did not take protein more than other food source [8]. In this study, protein intake was measured using a bid of zero and one; where one represents those that took protein more than other food source and zero represents those who did not take protein more than other food source. The logistic regression then provides a model of observing the probability of a household taking more protein and less protein. The logistic model is specified explicitly as

$$Y = B_0 + B_1X_1 + B_2X_2 + \dots + B_{12}X_{12}$$

Where

Y = protein intake status (1- if they consumed protein than other food source; 0- if they did not consume protein than other food source)

- X₁ = Age (Years)
- X₂ = Sex (Female = 1, 0 otherwise)
- X₃ = Occupation (Civil Servant = 1, 0 otherwise)
- X₄ = Income (Naira)
- X₅ = Religion (Christianity = 1, 0 otherwise)
- X₆ = Marital status (Married = 1, 0 otherwise)
- X₇ = Educational level (Formal education = 1, 0 otherwise)
- X₈ = Household size (Number)
- X₉ = Additional source of income (1 if Yes, 0 if otherwise)
- X₁₀ = Affordability of protein (Affordable = 1, 0 otherwise)
- X₁₁ = Awareness of the importance of protein (Yes = 1, 0 otherwise)

RESULTS AND DISCUSSION

Socio Economic Characteristics of the Respondents:

Table 1 showed that majority 36% of the respondents were aged 30 years and below and their mean age was 39 years. This directly affects protein intake as people

tends to reduce the quality of protein consumed as they grow older e.g. consumption of meat and egg. This is in line with the findings of Adetunji and Adepoju [8] in their study titled “Evaluation of households’ protein consumption pattern in Orire Local Government Area of Oyo State.” Which showed that 12% of the respondents were less than 50 years of age while those above 50 years accounted for over 47%. Table 1 showed that majority 55.26% of the respondents were male. This affects the consumption of protein because male needs more protein calorie than female for body building. This is in line with Olasunkanmi [29] in his work titled “Consumption analysis of proteinous food in Remo division of Ogun State” showing that majority were male. Table 1 showed that majority 59.65% of the respondents were married, the findings showed that the tendency to consume more protein in the area is high. This is in line with the study of Olaniyi [33] in his work titled “Attitudinal disposition of urban dwellers towards participation in urban Agriculture in Oyo State Nigeria; implication for sustainable food production.

Table 1 showed that majority 57.02% of the respondents had 5 members and below in their households and their mean household size is 5. This is in line with the findings of Olasunkanmi [29] in his work titled “Consumption analysis of proteinous food in Remo division of Ogun State.” where majority of the households had 1-4 members which accounted for 75.80%.”. Table 1 showed that majority 99.12% of the respondents had formal education, it means that majority of the respondents were literate. This corroborated the findings of Iyangbe and Orewa [7] in their work titled “Assessment of calorie- protein consumption pattern among rural and low income urban households in Nigeria.” In which majority 77.8% were literate. Table 1 showed that majority 44.7% of the respondents spent 11-15 years in school and the mean number of years spent in school was 13 years. This corroborated with the work of Olaniyi [33] in his study titled “Attitudinal disposition of urban dwellers towards participation in urban Agriculture in Oyo State Nigeria; implication for sustainable food production where majority 59.5% spent 13 years and above.

Table 1 showed that majority 50.00% practised Christianity in the study area. Respondents religion may affects the level of protein taken as some religion restricts their worshippers from eaten some animal which are sources of protein e.g. all Islamic worshippers are restricted from eating pork etc. all these restriction can affects level of protein intake by households. This corroborated the work of Obayelu et al [34] titled “Analysis of Rural and Urban Households’ Food

Table 1: Distribution of the respondents according to their Socio economic characteristics in the study area

Age	Frequency	Percentage (%)	Cumulative %
≤30	41	36	36
31-40	32	28.1	64.1
41-50	20	17.5	81.6
51-60	11	9.6	91.2
61-70	6	5.3	96.5
>70	4	3.5	100
Mean	39		
Sex			
Male	63	55.26	55.26
Female	51	44.74	100
Total	114	100	
Marital Status			
Married	68	59.65	59.65
Single	31	27.19	86.84
Divorcee	5	4.39	91.23
Widow/widower	5	4.39	95.62
Separated	5	4.39	100
Total	114	100	
Household Size			
≤5	65	57.02	57.02
10-Jun	43	37.72	94.74
15-Nov	6	5.26	100
>15	0	0	100
Mean	5		
Total	114	100	
Years spent on education			
≤ 10	22	19.3	19.3
15-Nov	51	44.7	64
16-20	39	34.2	98.2
>20	2	1.8	100
Mean	13		
Total	114	100	
Religion			
Islam	43	37.72	37.12
Christianity	57	50	87.72
Traditional	10	8.77	96.49
No religion	4	3.51	100
Total	114	100	

Consumption Differentials in the North Central Nigeria:

A Micro Econometric Approach” Where most of them were Christian which accounted for 63.8%. Table 1 showed that majority 53.51% had other sources of income apart from their primary sources for their households’ member. This implies that only few depend on their income while majority had other means of income generation for their household members. This is in line with Frank (2005) in his work titled “Distribution of income, “The impact of intra household balance of power on expenditure pattern” which showed that majority 63.7% had other sources of income for their households.

Table 1 showed that 71.93% of the respondents claimed that protein food is much available in the study area, which implies that protein food is much available in the study area though it might be affordable or not depending on the income of the respondents this corroborated the findings of Iyangbe and Orewa, [7] in their work titled “Assessment of the Calorie Protein Consumption Pattern Among Rural and Low Urban Households in Nigeria” Because most (54.2%) of their own respondents claimed that protein is fairly available. Table 1 showed that about 46.49% of the respondents indicated that protein food were affordable in the study area, 48.25% indicated that protein food is fairly affordable while the remaining 5.26% claimed that protein food is not affordable. This corroborated with the findings of Olankanmi [29] in his work titled “Consumption Analysis of Protein Food in Remo Division, Ogun State, Nigeria.” Because 8.2% said it was not affordable, 39.5% said it was fairly affordable and 52.3% said it was affordable. Table 1 showed that Most of the respondents 85.96% of the respondents were aware of the importance of protein to the body. Due to this large spread of awareness, it will trigger/ increase the consumption of protein food in the study area. This corroborated with the findings of Adetunji and Adepoju [8] in their work titled “Evaluation of households protein consumption pattern in Orire Local Government Area of Oyo State.” Where 90% were aware of the importance. Table 1 showed that majority 59.7 did not consumed protein food due to the cost of purchase. This corroborated the findings of Ajayi and Chukwu, [10] in their work titled “Soybean Utilization among Households in Nsliia Local Government Area of Enugu State: Implication for Women in Agriculture. Extension Programme,” Where majority 65.5% did not consume because of the cost of purchase,

Distribution of the Respondents According to Their Occupational and Income Group in the Study Area:

Table 2 showed that majority 58.77% of the respondents had no secondary occupation. This result contradicted the findings of Olatidoye et al [2] in their work titled “Household food security, nutrition and health status of preschool children from low income households in Oyo State Nigeria.” Where 80% were farmers, 11.9% were artisan. 4.8% were civil servant and 3.3% engaged in other occupation. Table 2 showed that 10.53% of the respondents engaged in farming as their primary occupation, 18.42% engaged in trading, 28.95% engaged in civil service, 15.79% were artisan while 26.32% had no primary occupation. This contradicted the findings of

Table 2: Distribution of the respondents according to their occupational and income group in the study area

Secondary occupation	Frequency	Percentage (%)	Cumulative %
Farming	19	16.67	16.67
Trading	17	14.91	31.58
Civil servant	2	1.75	33.33
Artisan	9	7.89	41.22
No secondary education	67	58.77	100
Total	114	100	
Primary Occupation			
Farming	12	10.53	10.53
Trading	21	18.42	28.95
Civil servant	33	28.95	57.9
Artisan	18	15.79	73.69
No primary education	30	26.32	100
Total	114	100	
Average monthly income			
≤12812	13	11.4	11.4
12825-50433	29	25.44	36.84
50450-155937	54	47.37	84.21
≥155950	18	15.79	100
Mean	51701.75		
Total	114	100	

Table 3: Frequency distribution of respondents' expenditure on animal, plant protein and type of protein consumed monthly

Expenditure on animal protein (#)	Frequency	Percentage (%)	Cumulative %
≤5000	8	7.02	7.02
5100-10000	15	13.16	20.18
10100-15000	27	23.68	43.86
15100-20000	18	15.79	59.65
>20000	46	40.35	100
Mean	22467.8	100	
Total	114		
Expenditure on plant protein food (#)			
≤5000	22	19.3	19.3
5100-10000	63	55.26	74.56
10100-15000	13	11.4	85.96
15100-20000	12	10.53	96.49
>20000	4	3.51	100
Mean	13467.2	100	
Total	114		
Type of protein			
Animal	52	45.61	45.61
Plant	63	55.26	100
Total	114	100	

Omonona and Agoi [35] in their work titled “An Analysis of Food Security Situation among Nigerian Urban Households.” Where 51.4% were farmers, 22.5% were artisan, 22.1% were civil servant and 4.1% engaged in other occupation. Table 2 showed that 11.4% of the respondents earned N 12812 and below per month, 25.44% earned between N (12825-50433) per month, 47.37% i.e. majority of the respondents earned N (50450-155937) per

month while the remaining 15.79% earned N 155950 and above per month. This contradicted the findings of Ajayi, [30] in “Economic Of Fish Farming In Remo And Ijebu Division of Ogun State, Nigeria”. Where 6.4% earned less than N 5000, 14.2% earned between N (5000-9999), 32.3% spent N (10000-14999) and 47.1% earned above N 15000 monthly in the study area.

Type of Protein Food Consumed in the Study Area and Amount Spent on Them:

Table 3 showed that 7.02% spent N 5000 and below on animal protein food monthly, 13.16% spent between N (5100-1000) monthly, 23.68% spent N (10100-15000) monthly, 15.79 spent N (15100-20000) monthly and the remaining 40.35% spent above N 20000 monthly. The mean expenditure in the below table contradicted that of Muhammad et al [22] in his work titled “Food Security and Its Determinants at the Crossroads in Punjab Pakistan”. The mean expenditure was N 12526.9. Table 3 showed that 19.30% spent v5000 and below on plant protein food monthly, 55.26% spent between N (5100-1000) monthly, 11.40% spent N (10100-15000) monthly, 10.53 spent N (15100-20000) monthly and the remaining 3.51% spent above N 20000 monthly. The mean expenditure in the below table contradicted that of Abdulahi and Aubert, [19] in “Non parametric and Parametric Analysis of Calorie Consumption in Tanzania State.” The mean expenditure of N 1087.55. The table further showed that 45.61% of the respondents consumed more of animal protein than plant protein while the remaining 55.26% of the respondents consumed more of plant protein than animal protein. This contradicted with the findings of Adetunji and Adepoju 2011 in “evaluation of households’ protein consumption pattern in Orire Local Government Area of Oyo State.” Where 12% consumed animal protein, 24% consumed plant protein and 60% consume both

The Determinants of Protein Intake among the Respondents Using Logit Regression Model in the Study Area:

Table 4 showed that age of the respondents X_1 had positive coefficient which implies that it had direct effect on the pattern of protein intake which showed that as the age increases, the higher the probability of protein consumption. It was significant at 5% which showed that it is an important factor that determines the level of protein intake. Sex of the respondents X_2 had positive coefficient which implies that it had direct effect on the pattern of protein intake which showed that as the gender of the respondents changes from female to male respondents the consumption of protein intake increases.

Table 4: Logit regression model of determinant of protein consumption.

Variables	Coefficients	Standard error	T ratio	Significant level
Constant	-7.237	2.766	-2.617	0.008
X ₁ Age	0.627	0.314	1.993	0.046**
X ₂ Sex	1.065	0.617	1.727	0.084*
X ₃ Occupation	0.181	0.295	0.061	0.951
X ₄ Income level	0.398	0.110	3.614	0.000***
X ₅ Religion	0.117	0.330	0.355	0.722
X ₆ Marital status	-0.574	0.365	-1.575	0.215
X ₇ Education level	0.133	0.278	0.477	0.534
X ₈ Household size	0.251	0.258	0.970	0.332
X ₉ Additional source of income	0.126	0.146	0.860	0.890
X ₁₀ Affordability	1.682	0.749	2.244	0.024**
X ₁ Awareness of the importance	-0.239	0.448	-0.534	0.593

Source: Field Survey, 2012

*** 1% significant level, ** 5% significant level, *10% significant level

The sex determines the amount of protein consumption. It was significant at 10% which showed that it is an important factor that determines the level of protein intake in the study area. Income level of the respondents X₄ had positive coefficient which implies that it had direct effect on the pattern of protein intake which showed that as the income of the respondents increases the greater the probability of protein consumption in the study area. It was significant at 1% level which showed that it is an important factor that determined the level of protein intake Affordability of protein to the respondents X₁₀ had positive coefficient which implies that it had direct effect on the pattern of protein intake this showed that the greater the affordability of protein in the study area, the greater the probability of protein consumption. It was significant at 5% which showed that it is an important factor that determined the level of protein intake

CONCLUSION

The study showed that majority were age 30years and below years and majority were male. Most of the respondents were married and had =5 numbers of households. Many of the respondents had tertiary education which made them literate and many of them spent 11-15 years in education. Majority were Christians and majority had other sources of income apart from their primary source. A larger percentage had an upper medium income level and larger percentage consumed protein daily. Most of the households spent above N 30000 on food item monthly and most spent below N 20000 on non food item monthly. Most of the households spent N

5100-10000 on protein monthly and most of the respondents claimed that protein is available and fairly affordable in the study area. Majority of the respondents were aware of the importance of protein to the body system and majority did not consume protein because of the cost of purchase. The study also showed that there exist a significant relationship between protein consumption pattern and factors that determined their consumption like age, sex, income and the affordability of protein to the respondents. Finally judging from the fact that most of the respondents found protein food to be fairly affordable, most of them still strife to include it in their daily diet because they were aware of the importance of it to their body. Hence Government and Other Non Governmental Organization Particularly Health Organizations should ensure that their campaign on food nutrition work well.

In order to increase the rate of protein consumption in the study area and reduce the inequitable of income distribution the following recommendations might be worthy of consideration

- Based on the findings which showed that majority did not consume protein because of the cost of purchase, there is need for pricing policy in order to bring down prices of protein food to make it affordable for those who claimed it to be fairly and non affordable in the study area.
- Based on the findings which showed that age had a direct effect on the pattern of protein intake i.e. as the age increases the greater the probability of more protein consumption, there should be education seminar for the respondents to reduce the protein intake as they grow old and to let them know the implication of consuming more protein as they grow old.
- Based on the findings which showed that income had a direct effect on the pattern of protein intake, respondents are therefore advised to diversify their means of generating income in order to increase their income.

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