NUTRITIONAL POVERTY ANALYSIS OF HOUSEHOLDS IN EKITI STATE

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DEDICATION

This work is dedicated to the glory of God.

CERTIFICATION

We certify that Mrs. Ogunsemi, Catherine Feyisayo of the Department of Agricultural Economics and Extension, Federal University of Technology, Akure carried out this study.

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ABSTRACT

This study analyzes the nutritional profile (calorie/animal protein) of three categories of household in Ekiti state. Data were collected through administration of questionnaires using the extension agents of the Agricultural Development Programme (ADP) of the state. The data were subjected to descriptive analysis, nutrient (calorie/animal protein) estimation and nutritional deficiency index assessment. The poverty line used for the analysis is the FAO/WHO Recommended Dietary Allocation for calorie intake per average male in 1985, which is 2150.6 Kcal.

It investigated and compared income status, degrees of nutritional poverty and coping strategies adopted for the different categories of households.

The results revealed that a total of 44.54% of all the three categories of household in the study area (13.73, 24.14 and 6.67 percents of civil servant, farmer and artisan households respectively) could satisfy the FAO/WHO recommended dietary allocation of calories intake. Besides, male-headed households have poorer households nutritionally than female-headed households but severity is greater among the female-headed households for all the three categories of household. Also, household size is directly proportional to incidence of poverty for all households. However, the educational level of the household head is inversely proportional to incidence of poverty for all the categories of households. The ages of household heads of civil servant and artisan households are directly proportional to the incidence of poverty but the reverse is the case with the farmer households where the age of the household head is inversely proportional to incidence of poverty. Coping strategies mostly used by all the household categories when there was shortage of food was "eating less-preferred food".

Based on the findings of the study, it was concluded that majority of the households in the study area were nutritionally poor but nutritional poverty was highest among the artisan households. The civil servant households in the rural area were the richest. Recommendations suggested to address the problem of nutrition include nutritional- programmes, backyard-farming, favourable economic policies that are masses focused and agriculture programmes free from politics.

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CHAPTER ONE

INTRODUCTION

1.1 Preamble

Poverty is defined as the absence of means to maintain and enjoy basic needs of life. The situation leads to deprivation and lack of access to food, social services and productive assets as well as makes it difficult for an individual to participate in the decisions that affect his/her life (Okunmadewa, 1997,1998). Apparently, no single indicator can measure adequately all dimensions of hardships which people in poverty face such as lack of purchasing power, exposure to risk, and insufficient access to social and economic services and limited opportunities for income generation. The most comprehensive assessment of poverty has relied on quantitative and qualitative measures.

Generally, the magnitude and dimensions of poverty in a country depends on two related factors. First is the average level of income; second is the degree of inequality in the distribution of that income. World Bank (1996) reveals that the extent of inequality in the distribution of income is very important in reducing poverty. The more inequality the distribution of a given level of income per capital, the greater the incidence of poverty. On the other hand, the lower the average income level the greater the incidence of poverty. Preliminary evidence of disparity in the welfare of three occupational categories of households will be presented in this study to serve as a cursor to a detailed analytical investigation of the correlates and the determinant of poverty in the study area. The categories are civil servants' households, farmers' households and artisans' households.

1.2 Problem Statement

Nigeria is a country with a population of about 110 million people (more than 15 percent of the total population of Africa) with a land area of 923,768 km sq, half of which is arable (Okunmadewa, 1997). Nigeria is richly endowed with abundant natural, human and material resources but has not been able to harness these sufficiently enough to

meet the food need of the poor in the nation. Nutritional poverty in Nigeria is manifested by the fact that calories and protein supplied or consumed by the household members fall short of requirements as confirmed by many studies (FAO 1973; Aromolaran 1987; Akintunde 1995; CBN/NISER 1992; Igharo 1995). FAO 1992 estimated that total per capita per day protein in Nigeria is 45.4g as against 53.8g recommended. Aromolaran (1987) estimated the calorie intake of low-income household in Ibadan to be 61% of the FAO minimum requirement. International conference on Nutrition, ICN (1992) reported that low income rural and semi-rural adult dwellers in Nigeria consume less than 60% of their energy needs and less than 40% of their protein needs. For average Nigerian, the daily calorie per capita was estimated to be 2130.9 kcal on the average between1989 and 1995 (CBN, 1996) as against the overall average of 2550 kcal recommended minimum requirement for an average Nigerian which is the equivalence of daily calorie intake per male adult as recommended by FAO 1985.

Poverty in Nigeria has been widespread (World Bank, 2000). In 1985, 43 percent of the population was living below the poverty line. This means 36 million people had no more than 395 Naira a year in 1985 prices and could not consume more than 2100 kcal. Although this assertion was made over three decades ago the truth may still hold today despite the recent increases in minimum wage level in the nation.To put in place an effective intervention programme for poverty reduction, it is necessary to go beyond the general information that poverty is more pervasive in agriculture and allied activities. Given the discussion above, the following questions could be asked. What is the nature of poverty in Nigeria? Which households are poor? In what ways are they poor? Where do they live? What can be done to reduce poverty? (World Bank, 1999). This study therefore becomes necessary to answer these questions.

1.3 Justification of the Study

The most persistent challenge in Nigeria today is poverty alleviation. The government, civil societies and international organizations are at the forefront of the battle against poverty. On the part of Nigerian Government, increasing budgetary allocations and strengthening of poverty alleviation programmes are strategies in use. This study

therefore derives its justification in the fact that if the poverty profile of the three different households are explicitly stated, it will convince the managers of the economy the severity of poverty and the most effective method of eradication to be adopted in order to make the citizens better off.

1.4 Objectives of the Study

1. To examine the respondents based on the occupational differences of their household heads.
2. To analyse the socio-economic characteristics of the different households.
3. To investigate and compare the income status of the different categories of the households
4. To assess the degree of nutritional poverty among the different categories of households in the study area with emphasis on calorie intake.
5. To assess the degree of nutritional poverty along gender line in the different household categories.
6. To investigate the coping strategies adopted by different household categories.

1.5 Hypotheses of the Study

The following hypotheses were tested in the study:

1. The mean individual daily calorie/protein intake level of household members is not significantly different irrespective of the occupational differences of the household heads and from minimum recommended standard of FAO.
2. Household socio-economic characteristics like household income, household size, location of the household, farming by household, age of the head, and gender of the household head and members e.t.c. do not significantly determine the level of individual calorie/animal protein intake by household members.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptualization of Poverty and household

Poverty is defined as the absence of means to maintain and enjoy basic needs of life. The situation leads to deprivation and lack of access to food, social services and productive assets as well as makes it difficult for an individual to participate in the decisions that affect his/her life (Okunmadewa, 1998,1999 and 2000). Apparently, no single indicator can measure adequately all dimensions of hardships which people in poverty face such as lack of purchasing power, exposure to risk, and insufficient access to social and economic services and limited opportunities for income generation.

The definition of the unit of analysis in any research requires careful prior description of the subject analyzed. The concept of household varies widely across cultures. It ranges from the Western nuclear household to the African extended family system. The key element in defining the household is identifying the decision- making unit, which sets the strategy concerning the generation of income and the use of this income for consumption and reproduction. Household unit thus, in general "associated with the group that share the same abode " (Sadoulet and de Janvry, 1995).

In this study, the household unit is taken as " a group of people who share from the same abode, eats from the same food basket and under single decision-making process". The single decision-making process considered is characterized by either a situation where a single household member decides on behalf of the others. A patriarch or matriarch or one where there are enough consensuses among members to treat internal matters as minor considerations. In this consensual household, resources are assumed pooled into a unique strategy and consumption is shared, although by no means necessarily equal between household members just as noted by Bentley and Pelto (1991). In household analysis, the household unit has been modeled into two main ways. These are the unitary and the collective model. Most economists view the

household as a collection of individuals who behave as if they agree on how best to combine their time, goods purchased in the market and goods produced at home. The approach originates from standard demand analysis.

This model is referred to as preference model, the altruism model or the benevolent dictator model, and by Alderman, Chiappori, Haddad, Hoddinoth and Kanhur (1995) as unitary model because the model allows for the analysis of the impact of changes in policy and other relevant variables on individual's behaviour with relative case and it can address diverse issues. Besides, it has the ability to explain differences in individual welfare within a household. Unitary model of the household has proved to be a powerful and pliable tool for household studies (Alderman et al, 1995) though not without weaknesses. For instance, the model fails to incorporate the process by which resources are distributed within the household. This study adopts the unitary model basically because of its applicability in this study and its relative ease of application.

2.2 Different approaches to poverty measurement

Literatures are littered with different approaches to poverty measurement in different communities. Among the list of the different methods are the income/expenditure method and the food energy intake (FEI) methods. The former uses a particular level in defining the poverty line. The limitation of this method is that the method is not a sufficient indicator of the level of welfare to define poverty line. More importantly, it is how that amount is spent in determining the level of welfare and ability to undertake economic activity. Recognition of this fact has led to adoption of consumption-based approaches to defining the poverty line i.e. the later, food energy intake. It is a method that applies the food energy intake (FEI) variant of the consumption-based method in poverty analysis. This approach relies on actual food consumption expenditure and calorie content of the goods consumed. However, the FEI method has been shown to possess some limitations. Notably, Ravallion and Bidani (1994) and Ravallion and Sen (1996), as cited by Aigbohkhan, 2000 demonstrated that the method suffers the inconsistency problems. Specifically, they found that the FEI method result in a much higher poverty line in urban areas and higher level of poverty in urban areas, contrary to

the general observations that poverty is more pronounced in the rural areas, where both real income and real consumption are noted to be lower. These limitations led to the Cost of Basic Needs method (CBN).

The cost of basic needs method considers poverty as a lack of command over basic consumption needs and the poverty line as the cost of those needs. The modified CBN (1992) method suggested by Ravallion and Bidani (1994) according to citation of Aigbhkhan, 2000 relies on the FEI method. The composition reflected local food consumed by the respondents. Then the bundle was costed at local prices to get the food poverty line component of the CBN poverty line. In this study, the CBN method was used in poverty analysis of respondents in the study area.

The poverty situation in Nigeria has been measured in quantitative terms with data from FOS derived from a series of consumer expenditure surveys over a period of sixteen (16) years, 1980-1996. The study by FOS established poverty lines based on a money metric approach i.e. total income (or expenditure) that is sufficient to guarantee basic subsistence (food and non-food). The result of the studies showed that the incidence of poverty increased from 27.2% in 1980 to 46.3% in 1985, declined to 42.7% in 1992 and moved up to 65.5% in 1996. In absolute terms, it means that the population of Nigerian living below established poverty lines was 17.7 million, 34.7 million and 67.1 million in 1985, 1992 and 1996 respectively. Statistics also confirmed that both urban and rural poverty were on the increase, however the rate of increase in the latter was higher. On the average, while 59% of urban households are poor between 1980-1996, the corresponding value for rural was 70%. Hence poverty is more pervasive in the rural areas. Another interesting dimension of the Nigerian poverty situation is that the core poor was in agriculture and agriculture allied activities have the highest poverty level for all the years except 1996 (FOS, 1999). It is therefore not correct to say that poverty in Nigeria is related to agriculture and the rural areas.

2.3 Findings by Researchers

A research was carried out by Li Shi, 2001 on changes in poverty profile in China in the period of 1978- 1995, using two micro-data sets from household income surveys of 1988 and 1995. The author examined poverty distribution among various localities and population sub-groups. The results showed that poverty has been and still a location-specific phenomenon, especially in rural areas, and that little difference of the incidence of poverty exits between males and females in both rural and urban areas and that poverty incident presents a life-cycle pattern among age groups. It was also established through the research the fact that poverty is transitional between age groups. Besides, the fact that growth of household income and the speed of poverty reduction in rural areas and that poverty have become more closely related with unemployment.

According to Keith, (1987), what distinguishes the poor from others is that they do not have sufficient purchasing power or effective demand to enable them to acquire enough to eat. More generally, the heart of the problem is the relationship of group of people to food, not food itself. One is 'entitled' to food through the application of one's own labour, through trade, production, through the return on one's assets or through transfer of gift. Unfortunately, the bundle of 'entitlement' of many people is not large enough to permit adequate nutrition. Aigbokhan (2000) worked on poverty, growth and inequality in Nigeria. The result showed the evidence of a worsening inequality and poverty that male-headed households seem to have fare worse, and that poverty is more pronounced in rural areas and in the northern zones of the nation. He also found that the poor policy state during the period was found to have contributed to increased poverty.

A research was carried out in Venezuela between 1999 and 2000 by International Food policy Research Institute. The result showed that there was widespread poverty despite oil income. Besides, this body observed that Pacific Island immigrants, Maori and other poor in New Zealand's largest city, Auckland have been identified as one of the country's vulnerable groups. They rely mainly on the national welfare system for their

basic livelihood although many supplement this with income from the black market or other illegal sources. Many of them live in crowded conditions, with two or more extended families often occupying a single home. With little money available for food, they tend to consume unbalanced diets that are high in calories but lacking other essential nutrients. So their nutritional status is generally poor, even when the quantities of food consumed are adequate. Also, the survey by International Food Policy Research Institute, (1999) found hunger in 800,000 United States households.

The Federal office of Statistics and National Commission carried out researches based on poverty and welfare in Nigeria from 1985 to 1992. Through this research, the profile of poverty in Nigeria within the period of investigation was clearly presented. The result of the research showed that poverty has been widespread in the nation with 43% of the entire population living below poverty line. Furthermore, the investigation showed that poverty is highest in the rural areas. The number of rural poor was found to be roughly twice that of the urban poor. The depth of poverty was also observed to be more than double in the rural areas. Also, the average per capita expenditure of a poor rural household was one-fifth of the non-poor in 1992. The investigation showed that the depth of rural poverty fell between1985 to 1992, from 19% to 16% while that of the urban areas increased from 9% to 12%. The depth and the severity of extreme poverty were observed to increase more than seven fold in urban area compared with a two-fold increase in rural areas (World Bank, 2000).

Studies by World Bank, 2000 indicated that poor educational qualification, farming occupation, and many members with few jobs characterized poor households. In 1980, when the economy of Nigeria was still relatively buoyant, it was estimated that about 17% of the population were faced with food insecurity (African Development Bank, 1995). Today, with about one and a half decade of chronic economic decline, this figure would have doubled on a very modest estimate. Food insecurity has become a major issue in most African countries and particularly Nigeria since the mid 1980s. Aromaolaran (1987) found that the per capita daily animal protein intake in Ibadan area was as low as 14% of the standard requirement of 35grams mainly because of poor

incomes. The poor are still numerous, and hunger and malnutrition are still serious and widespread (International Food Policy Research Institute, 1999).

Closely related to food security is poverty. According to Wally (1989) and Dittoh et al (1994), rural and urban women and children are among those worst affected by the distressful world poverty situation. Women poverty therefore becomes a serious obstacle to food security. This statement is given serious acknowledgement by Synder (1990) and ADB (1995). Both studies concluded that increased income opportunities for rural women will not only boost their food production capacities but will also increase the amount of earning directed at meeting family food needs.

Studies have shown that there has been major shift in nature of poverty in rural Asia between 1960 and the mid 1970s. There has been a reduction in poverty in Thailand and Punjab compared to 1960. However, levels of poverty remains high there especially in Punjab, the margin of reduction was not great (Keith, 1987). According to Keith (1987), parts of Latin America and Middle East, in Egypt for instance, the number of rural poor increased by nearly two million between 1958 and 1978, and the proportion of the rural population below poverty line increased over the period from 22.5% to 25%. He said that this result was associated with and partially caused by rise in the incidence of scarcity of land from 40% of agricultural households in 1961 to 45% in 1972. The result of analysis on Morocco showed that real household consumption of the poorest 20% of the population fell sharply in 1960 in both rural and urban areas.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 The Study Area

The study area for this work is Ekiti state, Nigeria. Ekiti state was created in 1996 with Ado-Ekiti as the state capital. Ekiti state is situated entirely within the tropics, located between Latitudes 4° 45′ to 5° 45′ east of the Greenwich meridian and Latitudes 7° 15′ to 8° 5′ north of the equator. It lies south of Kwara and Kogi states as well as east of Osun state; it is bounded in the east by Edo state and in the south by Ondo state.

Ekiti state is made of 16 Local government areas. The population of the state by 1991 census was 1,647,822 while the estimation at creation on October 1996 was put at 1.75 million. The state is mainly upland zone, rising above 250m above the sea level. It enjoys tropical climate with two distinct seasons. The state is endowed with rocks and water resources.The people of the state are culturally homogenous and speak a dialect of Yoruba language called Ekiti. The people are generally hardworking, upright, studious and very articulate. Ekiti men are predominantly farmers but their women engage in trading.

3.2 Method of Data Collection

3.2.1 Sampling Procedure

A multistage method was employed in sampling procedure. This included the purposive selection of 12 L.G.A out of the 16 L.G.A. of the state. This was followed by purposive selection of one town from each of the 12 Local Government Areas and finally followed by random sampling of 95 households from the selected towns.

Both primary data and secondary data were used for the analysis. The instrument of data collection was questionnaire. The primary data were sourced through personal interviews with the assistance of extension agents of the Agricultural Development

Programme (A.D.P.) of the state under study. The secondary data were collected from publications on issues such as conversion figures for different food items.

3.2.2 Distribution of respondents

A total of 101 copies of questionnaire were administered. Only 95 of them were used for analysis in the study. The remaining 6 copies questionnaire could not be used due to inadequate information supplied. The household respondents distribution is shown in Table 3.1.

Table 3.1 Distribution Pattern of Household Respondents in the study area

Location	Town	Number of household sampled	Actual number of household used in analysis
Urban area	Ado	18	12
	Ikere	31	31
	Ijero	3	3
	Ikole	4	4
Sub Total		56	50
Rural area	Itawure	1	1
	Igbara odo	9	9
	Ajaye	5	5
	Ido Osi	12	12
	Ayede	7	7
	Awo	5	5
	Otun	5	5
	Ilupeju	1	1
Sub total		45	45
Grand total		**101**	**95**

Source: Survey data October,2004.

3.2.2.1 Occupational Categorization of Households

The total households were further categorized base on the occupation of the household heads for better understanding of the study. Table 3.2 below shows the categorization. The table shows that civil servant and artisan households are more located in urban areas.

Table 3.2 Occupational Categorization of Households

Household	Civil Servants		Farmers		Artisan		Aggregates	
Location	Freq	%	Freq	%	Freq	%	Freq	%
Urban	28	54.90	9	31.03	11	73.33	48	50.53
Rural	23	45.10	20	68.97	4	26.67	47	49.47
Total	51	100.00	29	100.00	15	100.00	95	100.00

Source: Survey data October, 2004.

3.2.3 Data collection

48-hour recall method was used to collect the data for daily food intake of individual members in the households. Each household member was asked the food he/she consumed yesterday and the day before with their quantity. The average was later calculated to represent daily food intake of individual household member. Data on demographic/ socio economic characteristics of the household and the members like household size, sex, age, occupation, educational level, religion, income, and marital status e.t.c. of the household members were also collected. Data on coping strategies employed during period of food scarcity were also collected.

3.3 Method of data analysis

The data collected were subjected to such analysis as descriptive analysis, nutrient (calorie) estimation and nutritional deficiency index assessment.

3.3.1 Descriptive statistical analysis

This includes the use of frequencies and percentages tables, means and modes in the description of the socio-economic characteristics of the households with their income distribution.

3.3.2 Nutrient (calorie) intake Estimation

Food intake records collected were the cooked food except in few cases where the food needed not to be cooked before consumption (e.g. fruits, gari). The estimation

of individual calorie (kcal)/animal protein (g) intake on daily basis was carried out using the formula below:

$$C_i = A_i B_j$$

Where

C_i = daily calorie (k cal) intake level of the individual i in the study area.

A_i = the weight in grams of the average daily intake of food commodity j by individual i.

B_j = the standardized food energy or protein content of food commodity as the case may be.

This was derived using the Conversion Table shown in Appendix B.

Also, the nutrient (calorie) intake status was estimated for each household per capita daily calorie/protein. This was done by averaging the weighted sum of the individual nutrient intake by the number of the members of the household using the mean equivalent of the RDA (Recommended Dietary Allocation). This was chosen because highest proportion of the household members are children. The major sources of calories were tubers, cereals, and legumes.

3.3.3 Assessment of the degree of Nutritional Poverty

Poverty Line: The nutritional poverty line used in this study was the Recommended Dietary Allocation (RDA) by the FAO/WHO/UNU. The mean per male equivalent of the RDA was used as earlier stated because majority of the respondents are children and their consumption were far below the male per adult equivalent used by many authors. The nutritional poverty level of each household was based on the difference between the actual intake of the household of a particular nutrient and the RDA of such nutrient. If the household falls below the RDA, it is said to be nutritionally poor. (See Appendix C).

Three nutritional poverty measures were adopted to examine the degree of poverty among the sampled household (Aromolaran, 2000a and 2000b). They include:

(i) The incidence of nutritional poverty (P_0): This measures the percentages of individuals with a household whose calorie level is below the minimum required.

(ii) The depth of nutritional poverty (P_1): This gives the mean shortfall of calorie intake below the nutritional poverty line.

(iii) The severity of nutritional poverty (P_2): This measures the poorest of the poor. To achieve this, the study adopted the modification of the FGT poverty index developed by Foster, Greer and Thorbecke (1984) and used by Appletion (1996) and Ayinde (1999) to estimate the FGT nutritional poverty index as modified and used by Aromolaran (2000a and 2000b). The modified index is given by the general formula:

$$P\alpha = 1/N\Sigma Q\ [(P_L - C_i)/ P_L]^{\alpha} \quad \text{.....(2)}$$

$$i=1$$

Where

$P\alpha$ = Nutritional poverty index which is a measure of nutritional poverty when $\alpha = 0$; the depth of nutritional poverty when $\alpha = 1$; and the severity of nutritional poverty when $\alpha = 2$.

Q = number of individuals within a household /a community whose calorie intake fall below the minimum required level.

N = number of individuals in the household or households in the community.

P_L = nutritional poverty line i.e the minimum recommended level of calorie intake for the individual. The FAO/WHO/UNU recommended level of mean calorie intake for male individual was used as the nutritional poverty line in this study.

C_i = the calorie intake level of the individual household member.

When $\alpha = 0$, the formula becomes

$$P_0 = Q/N \quad \text{.....(3)}$$

3.3.4 Multiple Regression Analysis

Daily intake of calorie and protein were estimated (for individual household member) with the aid of multiple regression analysis using the Ordinary Least Squared (O. L. S.) technique. Implicitly, the estimated models are:

Daily Calorie intake function

$$C_1 = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, e) \text{ ------(4)}$$

Daily animal protein function

$$C_2 = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, e) \text{ ------(5)}$$

Where

C_1 = Daily calorie intake of individual household member (Kcal)

C_2= Daily animal protein of individual household member (g)

X_1 = Household size

X_2= Household head age

X_3 = Educational level of household head

X_4= Dependency ratio

X_5 = Household total month income (naira)

X_6 = Age of individual member (years)

X_7 = Educational level of individual household member

X_8= Household member sex dummy (1 =male, 0 = female)

X_9= Farming dummy (0 = no farming/does not own farmland, 1 = farming/owns farmland)

X_{10} = Occupational dummy (1 = there is occupation, 0 = there is no occupation)

e = error term.

Apriori Expectation

1. Household size (X_1): This variable is defined to include all the people living under the same roof and eating from the same pot. Evidence from previous works suggests that increase in household size has the tendency of reducing the proportion of food that is allocated to individual member in the household. However, if the increase in the household size transmits into the increase in

number of adult earning income, then, a positive influence might be expected between the variable and calorie/animal protein intake level.

2. Household head age (X_2) and age of the household member (X_6): Previous work suggests that as the age increases, the calorie/animal protein intake level increases. However, at a certain level the intake level starts to decline due to decline requirements itself. Thus, owing to F.A.O. standard nutrient requirement as it relates to age, the apriori expectation for the variable vis-avis calorie/animal protein intake could be positive or negative.

3. Education level of household head (X_3) and household member (X_7): This refers to the total sum of the years for the highest educational level attained by the household head or member as the case may be. Increase in the level of education is expected to increase nutritional ethic of the family apart from increasing earning power. Results from previous findings show that the variable has positive influence upon the calorie/animal protein intake level of the household in general.

4. Dependency ratio (X_4): This is the ratio of those that are not gainfully employed (not earning income) to those that are gainfully employed (earning income) within the household. A logical reason tells us that as the ratio increases, negative influence on the calorie/protein intake is expected to increase.

5. Household total monthly income (X_5): Income is a major determinant of food consumption/consumption expenditure. A change in income thus affects the consumption pattern of food. Empirical evidence from previous work indicates a positive relationship between the variable and nutrient intake. However, the direction (sign) of the change is subject to type of nutrient (calorie/protein) and quality of the food as well as the price. Thus the sign can either be negative or positive, depending on the diet concerned. As income increases, carbohydrate intake reduces (negative sign) while protein increases (positive sign).

6. Household member sex dummy (X_8): The FAO recommended level of nutrients intakes indicates that the male requires more calorie/protein than

female. Therefore, the more the number of males in the household the more the calorie/animal protein intake. The coefficient of this variable is thus expected to be positive sign. (Carrow, and James, 1993).

7. Farmland cultivation dummy (X_9): Ownership and access to farmland being cultivated result into availability of more food (calorie/protein) intake, bearing in mind that most farmers at this level are subsistence/peasant farmers whose goal is to satisfy home consumption from the farm produce. Thus, household cultivation of one type of crop or the other is expected to have advantage in calorie/protein intake over those who do not. Thus positive influence is expected.

8. Occupational dummy (X_{10}): A steady/regular source of income like salary/wage earning is expected to attract a well-planned food budget in the household. Thus the variable coefficient is expected to be positive in sign.

Six functional forms namely linear, semi-log, double-log, exponential, reciprocal and reciprocal of exponential were tried (estimated) for each of the models for the different occupational categories of the households. The one having the best fit was selected for each estimated models based on (apriori expectation, statistical (t-value) and econometric (coefficient of multiple determination, R^2) criteria.

Below are the implicitly stated functional forms of the consumption functions:

$C_i = b_0 + E(b_i X_i) + e$. .....(6) linear function

$C_i = \ln b_0 + E(b_i \ln X_i) + e$.....(7) semi-log function

$\ln C_i = \ln b_0 + E(b_i \ln X_i) + e$.....(8) double-log function

$\ln C_i = b_0 + E(b_i X_i) + e$.....(9) exponential function

$1/\ln C_i = b_0 + E(b_i X_i) + e$.....(10) reciprocal of exponential

$1/C_i = b_0 + E(b_i X_i) + e$.....(11) reciprocal function

3.3.5 Coping Strategies

These are mechanism of combating food insecurity during scarcity. Rank scores, which indicate the number of people using the strategy were carried out. The coping strategies include:

a. Eating less preferred food
b. Reducing/rationing consumption
c. Borrowing food or money to buy food
d. Altering household consumption
e. Increased reliance on wild food
f. Short-term labour migration
g. Selling labour power
h. Skipping meals for whole day
i. Backyard crop farming
j. Backyard livestock farming
k. Mortgaging and sales of domestic assets
l. Engaging in additional small scale business
m. Short-term alteration in crop and livestock production pattern
n. Others.

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CHAPTER FOUR

RESULT PRESENTATION AND DISCUSSION

4.1 Demographic Characteristics of Households.

Table 4.1 summarizes the household and household head characteristics of the studied population. Majority (96.08 percent of civil servant households, 93.10 percent of farmer households and 73.33 percent of artisan households) of the household heads were male. Female healed households were not common in the study area. A high percentage of the household heads in the study area (70.58 percent of civil servant households, 27.58 percent of farmer households and 46.66 percent of artisan households) were less than 50 years old while about 23 percent of the household heads were within 50-59 years all falling into the active age group. This implies that given adequate opportunities and resources, the household heads have the potential to meet the food/nutritional requirement of their households. Most of the farmer households and artisan households heads (65.51 percent and 40.00 respectively) were either primary school holders. The illiterates without formal education constituted 24.14 percent of the farmer households and 26.67 percent of the artisan households respectively. Given this scenario, food security in the two households and mostly among the artisans are more likely to be poorer; nutritional value judgment/appreciation is expected to be positively corrected with level of education.

Table 4. 1: Distribution of household by household head characteristics in Ekiti state.

Demographic Characteristics	Civil servant household head		Farmer household head		Artisan household head		Aggregates	
Sex	Freq	%	Freq	%	Freq	%	Freq	%
Male	49	96.08	27	93.10	11	73.33	87	91.58
Female	2	3.92	2	6.9	4	26.67	8	8.42
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Age (yrs.)								
Less 30	1	1.96	0	0.00	0	0.00	1	1.05
30-39	16	31.37	1	3.45	2	13.33	19	20.00
40-49	19	37.25	7	24.13	5	33.33	31	32.63
50-59	11	21.57	5	17.24	6	40.00	22	23.16
60-69	4	7.85	14	48.28	1	6.67	19	20.00
70 & above	0	0.00	2	6.90	1	6.67	3	3.16
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Educational level								
No formal education.	0	0.00	7	24.14	4	26.67	11	11.58
Primary schl.	3	5.88	19	65.51	6	40.00	28	29.47
Modern/Sec.	5	9.80	1	3.45	4	26.67	10	10.53
ND/NCE/Nursing	6	11.76	0	0.00	1	6.66	7	7.37
B.Sc/HND	37	72.56	2	6.90	0	0.00	39	41.05
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Household size								
1	3	5.88	0	0.00	0	0.00	3	3.16
2	4	7.85	0	0.00	1	6.67	5	5.26
3	5	9.80	0	0.00	2	13.33	7	7.37
4	4	7.85	7	24.14	2	13.33	13	13.68
5	19	37.25	13	44.82	4	26.67	36	37.89
6	14	27.45	7	24.14	4	26.67	25	26.32
7	1	1.96	0	0.00	2	13.33	3	3.16
8	1	1.96	2	6.90	0	0.00	3	3.16
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Type of household								
One person	3	5.88	0	0.00	0	0.00	3	3.16
Married with no child	5	9.80	0	0.00	0	0.00	5	5.26
Married with child	40	78.44	29	100.00	14	93.33	83	87.37
Widow(er) with child	3	5.88	0	0.00	0	0.00	3	3.16
Divorced with child	0	00.00	0	0.00	1	6.67	1	1.05
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Location								
Rural	23	45.1	18	62.07	4	26.67	45	47.37
Urban	28	54.90	11	37.93	11	73.33	50	52.95
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**

Source: Computed from field survey data, October, 2004.

4.2 Living Status of the Households in Ekiti State

The nature of the dwelling place of a household is an indication of living standard and could therefore have implications for the level and quality of food intake. Table 4.2 to 4.5 summarize the living status of the households, which includes general information on dwelling place, major sources of drinking/cooking water, electrical supply and fuel used by the households.

4.2.1 General Information on Dwelling Place of Household in Ekiti State

The general description (housing unit type, number of living rooms occupied, floor-material, and tenure system) of the dwelling place of the respondents is given in table 4.2. As shown in the table, majority of civil servant households live in flats (50.98), 51.17 and 53.33 percents of farmers and artisan household members live in single rooms respectively. Also, about 34 percent of the total respondent households are owner- occupiers.

Table 4.2: Distribution of household respondents by some general information on Dwelling place of different categories of household in the study area.

Information on dwelling place	Civil servant household		Farmer household		Artisan household		Aggregates	
	Freq	%	Freq	%	Freq	%	Freq	%
Housing type								
Single rooms	18	35.30	16	55.17	8	53.33	42	44.21
Flats	26	50.98	6	20.69	5	33.33	37	38.95
Duplex	1	1.96	1	3.45	0	0.00	2	2.11
Whole building	6	11.76	6	20.69	2	13.34	14	14.73
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Number of living rooms								
One	2	3.92	1	3.45	3	20.00	6	6.32
Two	7	13.73	6	20.69	3	20.00	16	16.84
Three	24	47.06	5	17.24	5	33.33	34	35.79
Four	5	9.80	3	10.34	1	6.67	9	9.47
Five	4	7.84	1	3.45	1	6.67	6	6.32
Six & above	9	17.65	13	44.83	2	13.33	24	25.26
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Material of dwelling floor								
Wood/tile	0	0.00	1	3.45	0	0.00	1	1.05
Planks/concrete	49	96.08	26	89.65	15	100.00	90	94.74
Dirt without concrete	1	1.96	2	6.90	0	0.00	3	3.16
Others	1	1.96	0	0.00	0	0.00	1	1.05
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Tenure								
Normal rent	28	50.00	9	31.04	9	60.00	46	48.42
Free	2	3.92	6	20.69	1	6.67	9	9.48
Subscidized/Norminal rent	4	7.84	4	13.79	0	0.00	8	8.42
Owner occupier	17	33.33	10	34.48	5	33.33	32	33.68
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Housing cost (Naira)/mth								
100-299	1	1.96	1	3.45	2	13.33	4	4.21
300-499	8	15.69	3	10.35	1	6.67	12	12.63
500-699	5	9.80	2	6.90	1	6.67	8	8.42
700-1000	5	9.80	2	6.90	3	20.00	10	10.53
Over 1000	12	23.53	3	10.35	2	13.33	17	17.89
No payment	20	39.22	18	62.05	6	40.00	44	46.32
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**

Source: Computed from field survey data, October 2004

4.2.2 Major Sources of Drinking and Cooking Water

Availability of water for domestic activities as well as consumption of clean, uncontaminated and unpolluted water contributes greatly and positively to healthiness of individual household and entire community. Table 4.3 shows the major sources of water used for cooking and drinking and their distances to the household's dwelling place in the study area. Majority of the households in the study area (62.75, 62.07 and 86.67 percents of civil servant, farmer and artisan households respectively) use well as source of water for drinking and cooking. However, 23.53, 17.24 and 13.33 percents of the three categories of households respectively used pipe-borne water as source of water for drinking and cooking. But the result shows that the commonest source of water for domestic uses in the study area was well as at the time of data collection.

Distance-wise, 54.90, 44.83 and 53.33 percents of the civil servant, farmer and artisan households respectively sourced their drinking and cooking water in their dwelling places and 41.18, 51.72 and46.67 percents of the three family categories respectively sourced their drinking and cooking water from distance within 500m. However, farmer households (6.90percent) has the highest percentage of their households sourcing water from the stream/pond/river water.

About 3.45 percent of farmer households get their water from a distance about 1km or more. This situation makes the farmer households of the study area more prone to water - infected diseases relative to other household categories.

Table 4.3: Distribution of households by major sources of water and distance to dwelling place in the study area.

Information	Civil servant household		Farmer household		Artisan Household		Aggregates	
	Freq	%	Freq	%	Freq	%	Freq	%
Water source								
Pipe borne water	12	23.53	5	17.24	2	13.33	19	20.00
Borehole/Hand pump	5	9.80	4	13.79	0	0.00	9	9.47
Tanker/Truck/Vendor	0	0.00	0	0.00	0	0.00	0	0.00
Well/Spring	32	62.75	18	62.07	13	86.67	63	66.32
Stream/Pond/River/Rain	2	3.92	2	6.90	0	0.00	4	4.21
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Distance of water source to dwelling place								
Indwelling	28	54.90	13	44.83	8	53.33	49	51.58
Within 500m	21	41.18	15	51.72	7	46.67	43	45.26
500m – 1 km	1	1.96	0	0.00	0	0.00	1	1.05
1 km or more	1	1.96	1	3.45	0	0.00	2	2.11
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**

Source: Computed from field survey data, October 2004.

4.2.3 Distribution of households by Electricity supplies and Fuel type used in cooking in the study area

Table 4.4 shows that the major source of electricity in Nigeria has been through direct supply by National Electric Power Authority (NEPA) and use of generating sets.

Virtually all the three categories of households in the study area (98.04, 93.10 and 100 percent of civil servant, farmer and artisan households respectively) depend on NEPA for electricity. On the other hand, 1.96, 6.90 and 0.00 percents of the civil servant, farmer and artisan households used no electricity as at the time of data collection.

In terms of fuel type used in cooking, 7.84, 72.55 and 19.61 percents of the households of civil servant used gas, kerosene and wood respectively as source of fuel.
The reverse is the case for farmer and artisan households. 24.14 percent of the farmer household use kerosene for cooking and as much as 75.86 percent of their households

use wood for cooking. For artisan households, 40% used kerosene and 53 % used wood for cooking.

This finding has serious implications for the sustenance of the environment. In addition, the fuel – sourcing situation by the farmer households is likely to affect the sufficiency of food consumed by the individuals that make up the households. This is because a lot of energy is needed for gathering and using wood to cook compare to gas, electricity or kerosene.

Table 4.4: Distribution of household by Electricity supplies and Fuel type used in cooking in the study area.

Information	Civil servant household		Farmer household		Artisan Household		Aggregates	
	Freq	%	Freq	%	Freq	%	Freq	%
Electricity source								
None	1	1.96	2	6.90	0	0.00	3	3.16
NEPA only	40	79.43	27	93.10	9	60.00	76	81.10
NEPA and Private generator	10	19.61	0	0.00	6	40.00	16	16.84
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Fuel type								
Gas	4	7.84	0	0.00	1	6.67	5	5.26
Kerosene	37	72.55	7	24.14	6	40.00	50	52.63
Wood	10	19.61	22	75.86	8	53.33	40	42.11
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**

Source: Computed from field survey data, October, 2004.

4.2.4 Distribution of Households by Sanitary Condition

Clean environment is a healthy environment they say. Poor housing is often connected with poor sanitary condition that exposes people to infections. A highly infectious environment will increase the requirements for food intake quantity and quality. These are shown on table 4.5.

In terms of toilet facility, the commonest among the civil servant households was water closet (47.06 %) sited within the dwelling place (66.67%). However, among

the farmer and artisan households, the situation was different. As much as 41.38 and 46.67 percents of farmer and artisan households respectively, used bush/dunghill for toilet and this was sited within 500 metres (62.07 and 66.67 percents respectively for the two categories of households) to their abode.

In terms of waste disposal, majority of the respondents, 43.14 percent of civil servant households, 55.17 percent of farmer households and 33.33 percent of artisan households disposed their refuse within their compound. Besides, 47.06, 34.48 and 53.34 percents of the households respectively dispose their refuse in unauthorized refuse heaps. This means that the refuse disposal in the study area is generally poor and will increase the exposure of the respondents to various types of infection.

Table 4.5: Distribution of households according to sanitary conditions in the study area.

Sanitary condition	Civil servant household		Farmer household		Artisan Household		Aggregates	
	Freq	%	Freq	%	Freq	%	Freq	%
Refuse disposals method								
Household bin collected by private agency	5	9.80	2	6.90	2	13.33	9	9.47
Govt. bin or shed	0	0.00	1	3.45	0	0.00	1	1.05
Disposal within compound	22	43.14	16	55.17	5	33.33	43	45.26
Unauthorized refuse heap	24	47.06	10	34.48	8	53.34	42	44.22
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Toilet facilities								
Covered pit	16	31.37	4	13.79	5	33.33	25	26.32
Uncovered pit	1	1.96	6	20.69	0	0.00	7	7.37
Water closet	24	47.06	2	6.90	3	20.00	29	30.53
Toilet on water	2	3.92	5	17.24	0	0.00	7	7.37
Bush or dunghill	8	15.69	12	41.38	7	46.67	27	28.41
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**
Toilet distance								
Indwelling	34	66.67	11	37.93	5	33.33	50	52.63
Within 500m	15	29.41	18	62.07	10	66.67	43	45.26
500m – 1km	2	3.92	0	0.00	0	0.00	2	2.11
Above 1km	0	0.00	0	0.00	0	0.00	0	0.00
Total	**51**	**100.00**	**29**	**100.00**	**15**	**100.00**	**95**	**100.00**

Source: Computed from field survey data, October, 2004.

4.3 Distribution of Households based on Monthly Income

Table 4.6 shows that the average monthly income levels of majority of the three categories of households fall above 35,000 Naira. However, the average income level

of a typical civil servant household in the study area was 40,274.73 naira, that of a farmer's household was 28,340.88 naira while that of the artisan's house was 27252.78 naira respectively. This shows that artisan households were the poorest considering their levels of income. It is also certain that civil servant's income is steady and regular. This is not so in the case of farmer households and that of artisan. Farmer's income is weather dependent and that of artisan is relative to rate of patronage.

Table 4.6: Distribution of Households based on the Monthly income.

Monthly income (Naira)	Civil servant household		Farmer household		Artisan Household		Aggregates	
	Freq	%	Freq	%	Freq	%	Freq	%
< 2501	0	0.00	0	0.00	1	6.67	1	1.05
2501- 5000	0	0.00	3	10.34	1	6.67	4	4.21
5001-7500	0	0.00	0	0.00	0	0.00	0	0.00
7501-10000	3	5.89	3	10.34	0	0.00	6	6.32
10001-15000	6	11.76	5	17.24	3	20.00	14	14.74
15001-25000	6	11.76	8	27.59	3	20.00	17	17.89
25001-35000	8	15.69	1	3.45	3	20.00	12	12.63
Above 35000	28	54.90	9	31.04	4	26.66	41	43.16
Total Income	2054011.00		821885.5		408791.70		3284688.20	
Average Income	40274.73		28340.88		27252.78		34575.67	

Source: Computed from field survey data, October, 2004.

4.4 Food Consumption Pattern among the Households in Ekiti state

Food consumption pattern shows the proportion of each food item in the total food intake. However, a gram of yam consumed cannot be equated to a grain of rice except both be converted to grain-equivalent before the proportion of each (and other food items) can be estimated from the total food intake. On the other hand, the calorific or protein content in each food item consumed can be used in estimating the proportion from total food intake that is accrued to each food item. Thus for convenience, the calorie contents (or calorie intake level) was used in this study to describe the food consumption pattern.

4.4.1: Distribution of household members used in food consumption analysis.

As shown in Table 4.7, a total of four hundred and fifty seven (457) out of 459 respondents in the 95 households samples was used. The age category of less than one year old (which was 2in number) was excluded from the analysis. The reason was that these were still breast-fed and adequate quantification of the Breast-milk intake could not be done.

Table 4.7: Age distribution of households based on the food intake of the respondents

Age	Civil servant household		Farmer household		Artisan Household		Aggregates	
	Freq	%	Freq	%	Freq	%	Freq	%
1-5	23	9.79	3	2.02	5	2.01	31	6.78
6-10	42	17.87	15	10.07	9	10.07	66	14.44
11-18	49	20.85	21	14.09	18	14.09	88	19.26
19-59	116	49.36	90	60.40	39	60.41	245	53.61
60 & above	5	2.13	20	13.42	2	13.42	27	53.61
Total	**235**	**100.00**	**149**	**100.00**		**100.00**	**457**	**100.00**

Source: Computed from field survey data, October, 2004.

4.5 Nutrient Intake Status in Ekiti State

Nutrient intake status refers to the level or amount of nutrient consumed as estimated from the quantity of food intake.

This was estimated per day for every individual within the household considering all the food types and quantities consumed in one day. Also, the nutrient (calorie) intake status was estimated for each household member using a conversion table (see appendix B), averaging the weighted sum of the individual's nutrients (calorie intake). The result of this was used in denoting the poverty level of each household nutritionally when compared with the World Health Organization (WHO) recommended standard of an average male for calorie intake, which is 2150.6 Kcal.

This is chosen because majority of each household members are more of children. (See appendix C).

4.5.1 Nutritional Profile in the Study Area

Nutritional poverty profile among the three categories of households in the study area was considered in four perspectives:

1. Location of the household.
2. Sex of the household head.
3. Age of the household head.
4. Educational level of the household head.
5. Family size.

The tool for determining the nutritional profile/poverty is the modified FGT poverty index developed by Foster Greer and Thoebecke 1984 as stated in the methodology.

$$P\alpha = 1/N\Sigma Q\ [(P_L - C_i)/ P_L]^{\alpha}$$

$$i=1$$

When $\alpha = 0$, it is poverty incidence, When α is 1, it is poverty depth and when α is 2, it is poverty severity.

4.5.1.1 Nutritional poverty profile among households in Ekiti state based on location.

Table 4.8 shows that in urban area of the study area, majority of the households (96.43, 63.64 and 81.82 percents of individuals in civil servant, farmer and artisan households respectively) could not consume up to the minimum calorie level required that is, the poverty line. In the rural areas, 73.91,77.78 and 100 percents of the respective households lived below poverty line nutritionally.

To attain to poverty line, the nutritionally poor in civil servant household in the urban area will consume 21.42% of the RDA/ P_L or 460.66 Kcal while the nutritionally poor of the civil servant household located in the rural area will consume 13.84% of the RDA(P_L) or 297.64 Kcal. In case of farmer households, the nutritionally poor of the household located in the urban area will consume17.49% of the RDA or 376.14 Kcal

while that of the rural area will consume 389.47 Kcal of calorie. In case of artisan households, the nutritionally poor located in the urban area will consume additional24.46% of RDA or 526 Kcal and that of the rural area will consume 24.04% of RDA to get to poverty line. The percentage of the poorest of the poor in the three households were 4.76, 4.81 and 7.31 percents of civil servant, farmer and artisan households in urban area and 2.59, 4.22 and 5.78 percents of the respective households in rural area respectively. As high as 96.43 percent of civil servant households were poor despite highest income level and literacy because majority of them decided to go into projects like house construction and purchase of vehicles.

Table 4.8: Nutritional poverty profile among households in Ekiti state based on location as at the time of data collection

Location/household type	Incidence	Depth	Severity	Head count	Total nutritional deficiency (kcal)
Ur0ban area					
Civil servants	0.9643	0.2142	0.0476	28	460.66
Farmers	0.6364	0.1749	0.0481	11	376.14
Artisans	0.8182	0.2446	0.0731	11	526.04
Rural area					
Civil servants	0.7391	0.1384	0.0259	23	297.64
Farmers	0.7778	0.1811	0.0422	18	389.47
Artisans	1.0000	0.2404	0.0578	4	517.00

Source: Computed from field survey data, October, 2004.

Table 4.8 shows that urban dwellers were nutritionally poorer than rural dwellers. This must be as a result of their access to farms and cheaper farm products. Interestingly, civil servant households in the rural areas were the richest while the poorest households were the artisans. This showed that the enlightenment of the civil servant households has helped them to know their rights nutritionally.

4.5.1.2 Nutritional poverty profile among households in Ekiti state based on the sex of the household head

Based on the results shown on table 4.9, 12.24, 70.37 and 90.91 percent of individuals in male-headed households of civil servant, farmer and artisan respectively lived below poverty line in the study area. To attain to poverty line or the RDA, the nutritionally poor

in the respective households require 20.27, 17.79 and 25.50% of the RDA respectively. These are equivalent to 435.93 Kcal, 382.59Kcal and 548.49 Kcal. In female headed household of the study area, 50.00, 50.00 and 75.00 percents of the individuals in the respective households lived below poverty line. To attain to poverty line, the nutritionally poor in the respective civil servant, farmer and artisan household would consume additional 401.95 Kcal, 337.64 Kcal and 456.79 Kcal of calorie respectively.

Table 4.9: Nutritional poverty profile among households in Ekiti state based on the sex of the household head.

Household/Sex of the household head	Incidence	Depth	Severity	Head count	Total nutritional deficiency(Kcal)
Civil servants					
Male	0.1224	0.2027	0.0065	49	435.93
Female	0.5000	0.1869	0.0698	2	401.95
Farmers					
Male	0.7037	0.1779	0.0450	27	382.59
Female	0.5000	0.1570	0.0493	2	337.64
Artisans					
Male	0.9091	0.2550	0.0071	11	548.40
Female	0.7500	0.2124	0.0602	4	456.79

Source: -Computed from field survey, October, 2004.

Table 4.9 shows that male-headed households in the study area are more nutritionally poor compared to the female-headed households except in the civil servant households where the female headed households is more nutritionally poor. In terms of depth of poverty, Female headed households in the different household category requires less percentage of RDA (18.69,15.70 and21.24 percents respectively in civil servant, farmer and artisan households) to get the poverty line of the minimum RDA that is 2150.6 kcal mean per male equivalent. However, severity of poverty is more in female-headed families in all the category of households.

4.5.1.3 Nutritional poverty among households in Ekiti state based on the age of the household head.

Table 4.10 shows that incidence of poverty is directly proportional to age of the family head in the civil servant households. In terms of the poverty depth it is the same but the severity of poverty in this household is inversely proportional to the age of the household head. In the case of farmer households incidence of poverty is inversely proportional to the age of their family heads. This can be due to the increase in their experience in farming operation. In terms of depth and severity, both are directly proportional to the age of the head. Considering artisan households, the incidence, depth and severity are directly proportional to the age of the household heads. There is highest poverty among the artisan households.

Table 4.10: Nutritional poverty profile of households in Ekiti state based on the age of household head

Household/Age of the head	Incidence	Depth	Severity	Head count	Total Nutritional Deficiency (Kcal)
Civil servants					
Less 30 years	1.0000	0.1581	0.0250	1	339.99
30 – 39 years	0.6875	0.1723	0.0432	16	370.53
40 –49 years	0.9474	0.2513	0.0668	19	540.42
50 –59 years	0.9091	0.2645	0.0885	11	568.81
60 –69 years	1.0000	0.0745	0.0056	4	160.21
70years and above	Nil	Nil	Nil	Nil	Nil
Farmers					
Less 30 years	Nil	Nil	Nil	Nil	Nil
30 – 39 years	1.0000	0.0472	0.0022	1	101.50
40 –49 years	0.8571	0.3076	0.1104	7	661.49
50 –59 years	0.8000	0.1590	0.0316	5	341.93
60 –69 years	0.5714	0.1160	0.0235	14	249.46
70years and above	0.5000	0.2476	0.1226	2	532.46
Artisans					
Less 30 years	Nil	Nil	Nil	Nil	Nil
30 – 39 years	1.0000	0.2050	0.0420	1	440.85
40 –49 years	1.0000	0.2630	0.0692	5	565.67
50 –59 years	0.7143	0.2002	0.0561	7	**430.53**
60 –69 years	Nil	Nil	Nil	Nil	Nil
70years and above	1.0000	0.3256	0.1060	2	700.20

Source : Computed from field survey data October, 2004.

4.5.1.4: Nutritional poverty profile among households in Ekiti State based on the educational level of the household head.

Interestingly, as shown in Table 4.11, education has significant relation when considered in the context of the differences in the occupation of the household heads. The trend is that incidence of poverty is inversely proportional to educational levels of both civil servant and farmer household heads. Although, nutritional poverty is rampant in the study area, the depth of poverty or the percentage of the RDA to get to the poverty line is inversely proportional to the educational level of the household head in the three categories of household.

Table 4.11: Nutritional Profile of Ekiti state based on Educational status of the family head

Household/Educational status	Incidence	Depth	Severity	Head count	Total nutritional deficiencykcal)
Civil servants					
Primary	1.0000	0.2782	0.0774	3	598.27
Secondary/Modern	0.6000	0.2270	0.0859	5	488.16
ND/NCE/Nursing	0.8333	0.2583	0.2152	6	555.47
HND/B. Sc	0.8919	0.1199	0.1061	37	257.84
Farmers					
No formal education	0.7143	0.1624	0.0368	7	349.24
Primary	0.6842	0.1856	0.0256	19	399.13
Secondary/Modern	1.0000	0.2680	0.0718	1	576.33
ND/NCE/Nursing	Nil	Nil	Nil	Nil	Nil
HND/B. Sc	0.5000	0.0927	0.0032	2	199.35
Artisans					
No formal education	0.5000	0.1165	0.0271	4	250.53
Primary	1.0000	0.3200	0.1024	6	688.16
Secondary/Modern	1.0000	0.2562	0.0656	4	550.96
ND/NCE/Nursing	1.0000	0.2428	0.0590	1	522.14
HND/B. Sc	Nil	Nil	Nil	Nil	Nil

Source: Field survey October, 2004.

4.5.1.5: Nutritional poverty profile among households in Ekiti State based on the family size.

The result shows that incidence of nutritional poverty is directly proportional to the family size in all the categories of households. However, the severity is greatest among the artisan households.

4.6 CONSUMPTION FUNCTION ESTIMATION

Two different consumption functions (models) were estimated for the study area. One for the daily calorie intake of the household members and the other one for the daily animal protein intake of the household members. Both estimations were carried out for all the three categories of household.

In all, six functions (models) were estimated with six (Linear, Semi-log, Double-log, Reciprocal Exponential and Reciprocal of Exponential) different equation forms (as mentioned in chapter 3) for each model in order to choose the equation that has the best fit for further analysis. The results are presented in Tables 4.12 – 4.17

To choose the functional form having the best fit of fitness in the data analysis for the six functions, parameters such as multiple R^2, F-Value and the number of significant independent variables at 5% α-level were considered. The functional form that has the highest values for all the mentioned parameters was considered having the best fit of goodness. However, exponential and reciprocal of exponential functional forms did not show up F Value.

4.6.1 Calorie Intake Function Estimation for Civil servant Households

Six different functional forms (linear, semi-log, double-log, reciprocal, exponential and reciprocal of exponential) were estimated for the calorie intake model of civil servant households in the study area. The result of this estimation presented on table 4.12 shows that, of all of them all of them, the double log function has the best fit of goodness because most of the variables (6 in no.) are significant at 5% α – level, the

highest R^2 and F value which are 51 and 25.61 respectively. The preferred form is given by:

$$\ln C_1 = \underset{(13.22)}{8.40^*} + \underset{(2.98)}{0.27^*} \ln X_1 - \underset{(-2.45)}{0.35^*} \ln X_2 + \underset{(2.52)}{0.18X_3} + \underset{(2.15)}{0.11^*X_4} - \underset{(1.89)}{0.9} \ln X_5 + \underset{(14.19)}{0.35^*} \ln$$

$$X_6 - \underset{(-1.55)}{0.09X_8} - \underset{(-0.89)}{0.40X_9} - \underset{-2.16)}{0.15^*X_{10}}$$

Standard (error =0.30

$R^2 = 0.51$, adjusted $R^2 = 0.49$, F =25.61 *Significant at 5% α – level, ( ) = t ratio

The equation is significant at 5% α – level with the best R^2 of 0.51. This implies that all the variables put together affect the daily calorie intake of civil servant household members significantly with 51% variation in the variation in the daily calorie intake happening as a result of changes due to the variables. Six of ten explanatory variables had their coefficients significant at 5% α – level. Household size (X_1) household head age (X_2) household head educational level (X_3) dependency ratio (X_4) household total Income (X_5) and occupational type of the head are significant. Based on the signs of the coefficients of the explanatory variables, the following directions of relationship with daily calorie intake of civil servants were established:

(i) The positive sign of b_1 indicates that the size of the family is directly proportional to the quantity of calorie intake.

Table 4.12: DAILY CALORIE CONSUMPTION FUNCTION ESTMATION FOR INDIVIDUAL CIVIL SERVANT HOUSEHOLD MEMBER

Functional Forms	b_0	B_1	B_2	b_3	b_4	b_5	b_7	b_9	b_8	b_{10}	Sum Of Square	Multiple R	R^2	Adjusted R^2	Standard Error	F Value	% bias of predicted to the observed	Correlation between the predicted and the observed
Linear	2198.79*	77.64*	-10.98*	31.05	214.43*	-0.001	23.75	-83.76	-358.98	-182.64	38528285	0.62	0.39	0.36	519.71	15.84	2.58	0.62
Semi-log	7.76*	0.05*	-0.005	0.04	0.11	-5.03E07	0.01*	-0.04	-0.33	-0.13	15.59*	0.61	0.38	0.35	0.34	15.10	4.32	0.59
Double-log**	8.40	0.27*	-0.35*	0.18*	0.11*	-0.09	0.35*	-0.09	-0.40	-0.15*	20.95	0.71	0.51	0.49	0.30	25.61	3.61	0.67
Reciprocal	0.001	0.0001	-0.004	0.0002	7.06E06	-0.47	0.003*	-0.0001	-0.003	0.0001	$1.69EE_5$	0.65	0.43	0.40	0.003	18.61	10.11	0.63
Exponential	2.45	0.02	-0.03	0.01	0.01	-0.01	0.03	-0.01	0.1	0.1	-	0.70	0.49	-	-	-	3.55	0.66
Reciprocal of exponential	0.51	5.87E-05	-0.002	8.45E-05	3.3E-06	-0.25	0.001	-4.8E-05	0.51	2.3E-05	-	0.65	0.43	-	-	-	10.14	0.63

*Significant at 5% α- Level

** Model with best goodness of fit.

4.6.2. Animal protein intake function for civil servant household

Table 4.13 shows the result of six different functional forms for animal protein intake of civil servant households. The functional form that has the best fit of good is the linear function having the highest R^2 of 0.39 and F value of 15.80. it is the most significant at 5% α – level having the highest number of significant variables (5 in number).

The specific form is

$$C_2 = \underset{(0.90)}{6.72} + \underset{(0.95)}{0.41X_1} - \underset{(-2.03)}{0.14^*X_2} - \underset{(-1.64)}{0.09X_3} + \underset{(2.08)}{2.33^*X_4} + \underset{(4.90)}{0.001^*X_5} + \underset{(9.30)}{3.51^*X_7} -$$

$$\underset{(-1.37)}{1.15X_8} + \underset{(0.12)}{0.77X_9} + \underset{(2.49)}{2.47^*X10}$$

$R^2 = 0.39$, F value = 15.80, Standard error = 6.25, ( ) = t ratio

*Significant at 5% α – level

Five of the ten variables are significant at 5% α – level. The age of the head (X_2), the dependency ratio (X_4), the Income level (X_5), the educational level of the individual member (X_7) and the type of job of the head (X_{10}). Based on the signs of the coefficients of the explanatory variables, the following facts were established:

i) The dependency ratio is directly proportional to the quantity of animal protein consumed.

ii) The positive sign of coefficient b_5 shows that income level of the household is directly proportional to the quantity of animal protein consumed.

iii) The educational level of individual is directly proportional to the level of animal protein consumed as indicated by the positive sign of coefficient b_7.

iv) The positive sign of b_{10} shows that civil servant households consume more animal protein about 2.49 above any other category of household in the study area.

Table 4.13 DAILY ANIMAL PROTEIN INTAKE CONSUMPTION FUNCTION ESTMATION FOR INDIVIDUAL CIVIL SERVANT HOUSEHOLD MEMBER

Functional Forms	b_0	b_1	b_2	b_3	b_4	b_5	b_6	b_8	b_9	b_{10}	Sum of Square	Multi - ple R	R^2	Adju st-ed R^2	Standa- rd Error	F Value	% bias of predicted to the observed	Correlation between the predicted and the observed
Linear**	6.72	0.41	-0.14*	-0.09	2.33*	0.0001*	3.51*	-1.15	0.77	2.47*	5552.5	0.62	0.39	0.36	6.25	15.80	0.07	0.62
Semi-log	2.01	0.02	-0.02	-0.03	0.17*	6.8E-06*	0.25*	-0.06	0.004	0.10	26.62	0.59	0.35	0.33	0 .46	13.73	8.79	0.62
Double-log	1.72	0.14	-3.02	0.13	0.20*	0.13	0.50*	-0.12	-0.13	-0.21	25.17	0.59	0.33	0.31	0.47	12.61	9.23	0.59
Reciprocal	0.04	-0.05	1.72	0.10*	0.01*	334.05*	0.01	-0.01	-0.03	0.002	0.137	0.43	0.19	0.15	0.05	5.76	19.94	0.43
Exponential	-2.26	0.15	0.66	0.12	0.21	0.21	0.52	-0.11	0.1	0.1	-	0.58	0.34	-	-	-	9.57	0.20
Reciprocal of exponential	0.81	-0.02	0.66	0.04	0.05	101.79	0.003	-0.002	0.01	0.002	-	0.42	0.17	-	-	-	20.21	0.33

*Significant at 5% α- Level

** Model with best goodness of fit

4.6.3 Daily Calorie consumption Estimation for Individual Farmer Households Member

Six different functional forms (linear, semi-log, double-log, reciprocal, exponential and reciprocal of exponential) were estimated for the calorie intake model of the farmers in the study area. The double-log function has the best fit of goodness as indicated by the highest F value 9.58 and R_2 0.38 and has the greatest number of significant variables. Hence it was considered to have the best fit for the per capita calorie intake function for the farmer households in the study area. This is shown on table 4.14.

The specific form is given by:

$$\ln C_1 = \underset{(65535)}{3.88} - \underset{(-0.16)}{0.03 \ln X_1} - \underset{(-0.87)}{0.8 \ln X_2} - \underset{(-0.33)}{0.03 \ln X_3} + \underset{(0.50)}{0.04 \ln X_4} + \underset{(1.12)}{0.07 \ln X_5} +$$

$$\underset{(7.59)}{0.35^* \ln X_7} - \underset{(-2.51)}{0.17^* X_8} + \underset{(65535)}{3.37^* X_9} + \underset{(65535)}{4.02^* X_{10}}$$

$R^2 = 0.38$, adjusted $R^2 = 0.34$, F value = 9.58, Standard error = 0.36, ( ) = t ratio

Based on signs of the coefficients of variables,

i) The positive sign of b_7 means that the educational level of individual member of a farmer's household is directly proportional (function of) to this level of calorie intake in the household.

ii) In the case of the dummy variables X_8 the six of the household member, X_9 farming/farmland and occupational type, the coefficient of b_8 carries negative sign while the coefficients of b_9 and b_{10} carry positive signs. This shows that female members of farmers households in the study area consume more calorie than their male counterpart and that their access to farm is directly proportional to their calorie intake and their calorie intake is far above the level of calorie intake of civil servants and artisans' households.

Table 4.14 DAILY CALORIE CONSUMPTION ESTIMATION FOR INDIVIDUAL FARMERS HOUSEHOLD MEMBER

Functional Form	b_0	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	b_{10}	Sum of Square	Multiple R	R^2	Adjusted R^2	Standard Error	F Value	% bias of predicted to the observed	Correlation between the predicted and the observed
Linear	-588274.7	-72.12	0.50	-55.22	38.04	0.004	18.01*	-45.71*	14724.2	20416	22778823	0.57	0.33	0.29	578.58	7.56	0.28	0.57
Semi-log	-552.51	-0.02	-0.0003	-0.56	0.03	3.87	1.01*	-0.03*	186.47	186.75	8.84	0.55	0.30	0.26	0.38	6.54	4.65	0.54
Double-log**	3.88	-0.03	-0.18	-0.03	0.04	0.07	0.35*	-0.17*	3.37*	4.02*	11.21	0.62	0.38	0.34	0.36	9.58	4.29	0.61
Reciprocal	-2.51	-0.0006	0.003	1.9E-05	8.34E-6	0.67	0.004*	-0.0002	1.68E+11	1.68E+11	7.19E-06	0.31	0.10	0.04	0.0007	1.69	15.01	0.61
Exponential	-26.1	0.02	-0.05	0.01	0.02	0.004	0.05	-0.02	40.47	0.1	-	0.62	0.39	-	-	-	6.44	0.27
Reciprocal of exponential	-0.47	0.0003	-0.02	8.21E-05	-684X-06	1.38	0.002	-0.0002	3.0	-0.5	-	0.33	0.11	-	-	-	10.46	0.55

*Significant at 5% α- Level.

** Model with best goodness of fit

4.6.4 Daily Animal Protein Consumption Estimation for Individual Farmers Household Member

Of all the six-functional forms analyzed, the reciprocal functional form that has the best fit of goodness for this particular analysis as shown on table 4.15. Although double-log has the same number of significant variables at 5% α – level, the reciprocal functional form has the highest R^2 and F-value which are 0.38 and 9.34 respectively.

The specific form is given by

$$1/C_2 = \underset{(2.57)}{0.24} - \underset{(1.29)}{0.27X_1} \underset{(-0.11)}{-0.22X_2} - \underset{(-1.76)}{0.04X_3} \underset{(0.57)}{+0.01X_4} + \underset{(4.30)}{753.67^*X_5} + \underset{(3.08)}{0.06^*X_7}$$

$$\underset{(-1.02)}{0.03X_8} \underset{(-1.78\ E\text{-}07)}{-\ 0.17X_9} \underset{(2.46\text{-}08)}{-\ 0.01X_{10}}$$

R^2 = 0.38, F-value = 9.34, Standard error = 0.08.
*Significant at 5% α – level. ( ) = t - ratio

The value of R^2 (0.38) shows that there will be variation of about 38% in the level of animal protein intake of farmers household due to change in any of the independent variables.

i) Positive sign of b_5 shows that the level of income in farmers' household is directly proportional to the quantity of animal protein consumption.

ii) The positive sign of b_7 shows that the level of educational member of farmers' household is directly proportional to the level of animal protein consumption.

Table 4.15 DAILY ANIMAL PROTEIN CONSUMPTION ESTIMATION FOR INDIVIDUAL FARMERS HOUSEHOLD MEMBER

Functional Forms	b_0	b_1	B_2	b_3	b_4	b_5	b_6	b_8	b_9	b_{10}	Sum of Square	Multi-ple R	R^2	Adjusted R^2	Standard Error	F Value	% bias of predicted to the observed	Correlation between the predicted and the observed
Linear	20.05	-0.77	-0.09	1.43*	0.80	2.45E-05	-0.08	-1.33	-3.60	-5.55	1532.67	0.58	0.32	0.27	4.85	7.23	0.09	0.56
Semi-log	-0.25	-0.09	0.02*	0.14	0.12	1.9E06	-0.02	-0.12	239	-3.17	19.41	0.53	0.28	0.23	0.60	5.93	11.81	0.55
Double-log	-1.97	-0.46	0.86*	0.03	0.15	0.23*	-0.01	-0.14	-1.23	6.01E-13	21.14	0.55	0.30	0.25	0.59	6.69	11.81	0.55
Reciprocal **	0.24	-0.27	-0.22	-0.04	0.01	753.67*	0.05*	-0.03	-0.17	-0.01	0.52	0.61	0.38	0.34	0.08	9.34	12.18	0.49
Exponential	3.03	-0.01	0.009	-0.001	0.003	0.02	-0.001	-0.006	-0.03	0.1	-	0.58	0.33	-	-	-	9.81	0.55
Reciprocal of exponential	-393.34	-0.90	9.85	-0.13	0.09	69.94	0.25	-0.1	391.59	196.24	-	0.57	0.33	-	-	-	22.04	0.04

*Significant at 5% α- Level.

** Model with best goodness of fit

4.6.5 Daily Calorie intake function estimation for individual Artisans household members

Table 4.16 shows the result of regression of six functional forms for calorie intake of artisans' households in the study area.

The result showed that linear functional force has the best fit of goodness based on the fact that it has very high R^2 (0.52) and F-value (7.23) and greatest number of significant variables at 5% α – level.

The specific form is given by:

$$C_1 = \underset{(2.95)}{1300.87} - \underset{(-1.83)}{80.20X_1} - \underset{(-2.67)}{15.57^*X_2} + \underset{(1.72)}{150.11X_3} + \underset{(2.11)}{636.46^*X_4} + \underset{(0.80)}{0.003X_5} +$$

$$\underset{(7.18)}{22.47^*X_6} + \underset{(-0.42)}{40.41X_8} + \underset{(0.23)}{18.57X_9} + \underset{(3.24)}{469.61^*X_{10}}$$

$R^2 = 0.52$, F-value = 7.23 * significant at 5% α – level, Standard error = 3.89

The functional form is very significant. The R2 (0.52) shows the variation in calorie intake explained by the model.

i) Negative sign of b_2 denotes that the age of the artisan household had is inversely proportional to the level of calorie intake in the household.

ii) The positive sign of b_4 shows that dependency ratio is directly proportional to the calorie intake in the household.

iii) The age of individual household member is directly proportional to the quantity of calorie intake as indicated by positive sign of b_6.

iv) The positive signs carried by all the dummy variables b_8 to b_{10} showed that male members of artisans household consumer more calorie compared to their female counterpart and the assess to background farm (X_9) is directly proportional to the level of calorie artisans is directly proportional of category of household.

Table 4.16 DAILY CALORIE CONSUMPTION FUNCTION ESTMATION FOR INDIVIDUAL ARTISANS HOUSEHOLD MEMBERS

Functional Forms	b_0	b_1	b_2	b_3	b_4	b_5	b_7	b_8	b_9	b_{10}	Sum of Square	Multi-ple R	R^2	Adjusted R^2	Standard Error	F Value	% bias of predicted to the observed	Correlation between the predicted and the observed
Linear **	1300.87*	-80.20	-15.57*	150.11	636.46*	0.003	22.47*	40.41	13.57	469.61*	10541111	0.72	0.52	0.45	3.89.27	7.23	0.3	0.72
Semi-log	7.10*	-0.06*	-0.007	0.07	0.26	9.23E-07	0.01*	0.05	0.02	0.25*	4.52	0.69	0.47	0.41	0.28	6.55	2.85	0.68
Double-log	8.09	-0.24	-0.33	0.10	0.01	-0.03	0.34	0.02	0.09	-0.40	4.81	0.71	0.51	0.44	0.27	7.40	2.82	0.71
Reciprocal	0.001*	-0.001	-0.004	3.42E05	1.56E05	0.85	0.002*	0.0002	0.0003	-0.0001	2.29E06	0.62	0.38	0.29	0.0002	4.39	7.34	0.58
Exponential	3.2	-0.01	0.006	0.01	0.01	-0.01	0.02	0.004	0.01	0.1	-	0.81	0.66	-	-	-	3.45	0.41
Reciprocal of exponential	0.80	-0.0004	-0.002	4.09E-05	-2.24E-5	0.10	-0.001	9.45E-05	0.0001	-2.28E-05	-	0.61	0.36	-	-	-	20.21	0.33

*Significant at 5% α- Level.

** Model with best goodness of fit

4.6.6 Daily Animal Protein Intake Consumption Function Estimation for Individual Artisans' Household Member

Table 4.17 shows the result of the six functional forms for animal protein intake of artisan households in the study area. The functional form that has the best fit of goodness is double-log function. The reason is that it has highest R^2 (0.34) and very high F-value (3.67) and exhibits highest number of significant independent variables at 5% α – level.

For functional form is given by:

$$\ln C_2 = \underset{(1.07)}{0.75} - \underset{(-2.14)}{0.15^*\ln X_1} + \underset{(1.02)}{0.01}\ln X_2 + \underset{(0.30)}{0.04}\ln X_3 + \underset{(1.60)}{0.79}\ln X_4 + \underset{(3.09)}{1.55E-05^*}\ln X_5 + \underset{(2.42)}{0.22^*}\ln X_7 + \underset{(0.68)}{0.10}\ln X_8 - \underset{(-0.38)}{0.03}\ln X_9 + \underset{(2.32)}{0.54^*}\ln X10$$

R^2 = 0.34, F- value 3.67, Standard error = 0.62.
* - Significant at 5% α – level; ( ) = t - value

i) The negative sign of b_1 shows that the household size is inversely proportional to the level of animal protein in artisans' household in the study area.

ii) The positive sign of b_5 shows that income level is directly proportional to animal protein intake in the household category.

iii) The positive sign of b_7 shows that educational level of individual household member is directly proportional to animal protein intake of the member.

iv) Considering dummy variables X_8 to X_{10}, the positive sign of b_8 shows that males consume more animal protein than their female counterpart.

Table 4.17 DAILY ANIMAL PROTEIN INTAKE CONSUMPTION FUNCTION ESTMATION FOR INDIVIDUAL ARTISANS HOUSEHOLD MEMBER

Functional Forms	b_0	b_1	B_2	b_3	b_4	b_5	b_6	b_8	b_9	B_{10}	Sum of Square	Multi - ple R	R^2	Adjusted R^2	Standa-rd Error	F Value	% bias of predicted to the observed	Correlation between the predicted and the bserved
Linear	0.94	0-.15*	0.05	1.30	7.81	0.0002*	1.18	0.12	-0.69	5.25*	837.34	0.57	0.32	0.22	5.26	3.38	2.91	0.57
Semi-log	-3.83*	-0.82*	1.02*	-0.01	0.03	0.35*	0.27	0.19	-0.49	2.68	13.02	0.59	0.34	0.25	0.62	3.78	12.85	0.51
Double-log**	0.75	-0.15*	0.01	0.04	0.79	1.55E-05*	0.22*	0.10	-0.03	0.54*	12.78	0.58	0.34	0.25	0.62	3.87	12.73	0.61
Reciprocal	-0.25	-0.27	3.14	0.08	0.02	798.45	0.006	0.02	0.71	-0.01	0.15	0.49	0.24	0.13	0.09	2.30	10.18	0.64
Exponential	-11.44	-1.25	2.02	0.85	0.38	0.58	0.38	0.14	-0.60	0.1	-	0.57	0.33	-	-	-	12.42	0.61
Reciprocal of exponential	-4479.19	1404.9 1	62611.11	2096.68	292.73	30359.3	-0.36	0.05	506.72	-258.22	-	0.56	0.31	-	-	-	18.94	0.26

*Significant at 5% α- Level

** Model with best goodness of fit

4.7 Prevailing Coping Strategies of Nutritional Deficiencies in Ekiti state

In terms of nutritional security, there are fallback mechanisms devised by the people to deal with short-term insufficiency of food, which is directly equivalent to under nutrition. The coping strategies of food shortages in the study area are presented in Table 4.18 in terms of rank score.

Based on the ranks score (which indicates the number of households using the strategy) in Table 4.18, the most prevalent coping strategy of all the household categories is "eating less expensive and less preferred food". This strategy had a total score of 192, 121 and 52 in civil servants, farmers and artisans' households respectively. This indicates that the first thing that comes to mind in a household in the event of insufficient food at home is to consider a food less expensive and usually less preferred relative to what should have been consumed by the household in the case of sufficiency of food. Meanwhile, households consume food of lesser energy (calorie supply) with the recommended nutrient intake in order to solve the nutritional crisis at home. This strategy is followed by "reducing/rationing consumption" in civil servants and farmers' households respectively with total rank scores of 106 and 87 respectively. These first two coping strategies in their order follows suit with the result of Maxwell (1996) in his work on frequency and severity of coping strategies in measuring food security.

Other important prevalent strategies in descending order on the aggregate are "borrowing food or money to buy food", Altering household composition", "engaging in additional small scale business", "Backyard crop farming" with total rank scores of 180, 128, 105, 80 and 79 respectively. The practice of backyard crop farming was sixth in both civil servants and farmers' households but was 11th for artisans' households. This implies that artisans hardly have time for farming which would have ease or reduce their nutritional insecurity in times of search for. This is undoubtedly part of the reasons, which subject them to be the poorest of all nutritionally as shown in this study.

Table 4.18: Rank scores of prevailing food shortage coping strategies among households in Ekiti State.

Family Category	Civil Servant						Farmer						Artisan						Aggregates					
Ranks	1st	2nd	3rd	4th	5th		1st	2nd	3rd	4th	5th		1st	2nd	3rd	4th	5th		1st	2nd	3rd	4th	5th	
Coping strategies	X_5	X_4	X_3	X_2	X_1	Total score						Total score						Total score						Total score
Eating less preferred food	31	2	5	7	0	192	20	2	3	2	0	121	9	0	1	0	4	52	60	4	9	9	4	365
Reducing/Rationing consumption	9	8	6	5	1	106	7	11	2	1	0	87	1	5	1	3	1	35	17	24	9	9	2	228
Borrowing food or money to buy food	6	7	7	9	6	103	0	5	2	4	0	34	1	4	7	0	1	43	7	16	16	13	7	180
Altering household composition	1	8	4	6	5	66	0	5	0	5	5	35	1	3	2	2	0	27	2	16	6	13	10	128
Increasd reliance on wild food	0	5	4	2	6	42	0	0	4	0	4	16	2	1	1	2	0	21	2	6	9	4	10	79
Short-term labour migration	0	2	3	1	3	22	0	2	3	2	0	17	0	1	0	2	1	9	0	5	6	5	4	48
Selling labour power	0	1	2	0	7	17	2	0	2	0	4	20	0	0	0	1	4	6	2	1	4	1	15	43
Skipping meals within a day	0	1	4	3	1	23	0	1	1	3	2	15	0	0	1	2	0	7	0	2	6	8	3	45
Backyard crop farming	2	4	6	2	4	52	0	2	3	1	4	23	0	0	0	2	1	5	2	6	9	5	9	80
Backyard livestock farming	0	4	2	6	2	36	0	2	4	3	1	27	0	1	0	1	0	6	0	7	6	10	3	69
Mortgaging and sales of domestic assets	0	1	0	2	5	13	0	0	2	4	0	14	0	0	1	0	1	4	0	1	3	6	6	31
Engaging in additional small scale business	2	7	7	4	6	73	0	0	3	3	8	23	1	0	1	0	1	9	3	7	11	7	15	105
Short-term alteration in crop and livestock farming pattern	0	12	0	4	3	15	0	0	0	2	1	5	0	0	0	0	0	0	0	1	0	6	4	20
Others (specify)	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of the major findings

The general objective of the study is to determine the nutritional status of the different categories of households in the study area to know whether they could meet up with the nutritional poverty line of Recommended Dietary Allocation of calorie intake by the World Health Organization (WHO).

Apart from personal characteristics such as age, education and so on, the type of occupation and the location of à household play important role in determining the probability of being poor nutritionally in the study area. As indicated in tables 4.8 –11 or poverty profile tables, a household headed by an artisan worker would have higher poverty than a household headed by a farmer or a civil servant.

Finally, it is notable that nutritional poverty is highest in the urban area irrespective of the nature or type of work of the household head. It is also noted that access to farming is the remedy to nutritional poverty of the citizens in the study area. This is supported by operation feed the Nation Programme (OFN).

5.2 Conclusion

The result showed that there was widespread of poverty despite increased oil income with 55.55% of the entire population/respondent households living below poverty line nutritionally i.e. they could not consume up to 2150.5kcal per day. This is similar to the result of research of Venezuela between 1999 and 2000 by IFPRI.

Poverty incidence and poverty depth are directly proportional to age among the sampled civil servant households heads but poverty severity is inversely proportional to the age of the household heads.

Poverty incidence is inversely proportional to age in farmer households but the depth of severity is directly proportional to the age of the heads.

In artisan households, poverty, incidence depth and severity are directly proportional to the age of the heads. The older the artisan the less efficient they are in their occupation.

Poverty incidence is directly proportional to family size for all household categories as confirmed by many studies. Incidence of poverty is inversely proportional to educational level of the head for both civil servant and farmer households but directly proportional to educational level in case of artisans' households and poverty trend is highest among the artisans' households.

5.3 Policy Recommendations

Based on the findings of this study, the following recommendations are made to combat "Nutritional poverty in Nigeria".

Nutritional programme: Since the study revealed that artisans' households were the poorest nutritionally, their national union leaders should be thoroughly informed through vigorous enlightenment campaign programme by the government (at grass root) the need of backyard crops and animal farming along with their occupation so as to supplement their daily income (which is not always stable) for their nutrition.

Backyard farming: Households having access to backyard farming in the study area were discovered to be nutritionally rich according to the result of analysis. Therefore, backyard farming in all household should be encouraged in the study area. This is possible as long as majority of the households are owner occupiers.

Favourable economic policy: Economic instability is one of the reasons causing insufficiency of the income of households to meet their nutritional needs. The government should be conscious of the masses so that the various economic policies to be put in place will be favourable to them. By this, different household will be economically buoyant to feed themselves and thereby reducing the incidence of nutritional poverty.

6.0 REFERENCES

African Development Bank (1995): African Development Bank Report. A.D.B. Cote De Ivoire.

Aigbokhan B.E. (2000): Poverty, Growth and Inequality in Nigeria. AERC research Paper 102. *African Economic Research Consortium*, Nairobi. Development Policy Centre, Ibadan.

Akintunde, O.A. (1995). "Analysis of Household Consumption Pattern of Animal Protein Products in Warri, Delta State". B. Agric. Thesis, University of Agriculture, Abeokuta.

Alderman, I.I.; P. Chiappori; L.Haddad, J.Hoddinoth andR.Kanbur.1995. "Unitary Versus Collective Models of the Household: Is it Time to Shift the Burden of Proof". World Bank Reseach Observer. 10(1).

Appliton, S 1996. "Women-Headed Households and Household welfare: An Empirical Deconstruction for Uganda". *World Development*. 24(12).

Aromolaran A.B. (1987): "The Nigerian Nutritional Problem. A case study of Ibadan and selected villages". M. Sc Thesis University of Ibadan.

Aromolaran, A.B.(2000a) "Food Consumption Pattern and woman income: Implications for household food security in Nigeria". A revised Work-in-Progress presented at AERC Mid-year workshop in Nairobi, Kenya.

Aromolaran, A.B.(2000b) "Food Consumption Pattern and woman income: Implications for household food security in Nigeria". Final report presented at AERC biannual workshop in Nairobi, Kenya.

Ayinde, I.A. 1999." An Assessment of poverty Levels among Rural Farming Households in Ogun State. "M.Agric Thesis, University of Agric, Abeokuta.

Bentley, M. and G. Pelto (1991): The Household Production of Nutrition". *Social Science and Medicine*. 33(10).

Carrow, J.S and W.P.T. James (1993). Human Nutrition and Dietics, pg 785 – 786.

CBN/NISER, (1992): The Impact of Sap on Nigeria Agriculture and Rural Life. The National Report of a CBN/NISER National study. 1.

Central Bank of Nigeria (1996): Statistical Bulletin: 7(2).

Dittoh S, Aromolaran,A. B. and Isamah (1994). "Price changes and Poverty in Oyo State Nigeria". A commissioned Research Report submitted to The World Bank, Nigeria.

Ekiti State Government, (1991): Profile of Ekiti state. Publication of Ekiti state government, Ado Ekiti.

FAO, (1973): " Food Policy and Nutrition Division: Food and Nutrition." *Nutrition Newsletter*. 2(4).

FAO, (1992). Food and Agriculture Organisation of United Nation Production Year book, FAO, Rome, Italy.

FAO/WHO/UNU, (1985): Energy and Protein Requirements. World Health Organisation Technical Report. Series 724.

FOS, (1996): "Food and Nutrition". In: Socio-Economic Profile of Nigeria. FOS, Publication, Lagos.

FOS (1999): "Poverty and the Agricultural Sector". A publication of Federal Office of Statistics. Lagos.

Foster, J.J Ggreer and Thorbecke, E.(1984) "A class of decomposable poverty measures". *Econometrics* 52(3).

Igharo, J.A. 1995. "Analysis of the Consumption Pattern of Animal Protein Products by Households in Abeokuta, Ogun state." B. Agric. Thesis in Agric. University of Agriculture, Abeokuta.

International Conference on Nutrition (ICN), (1992). Country Report: Nigeria. International Conference on Nutrition. Dec.

International Food Policy Research Institute, (2000): The Life cycle of Malnutrition.

Jean, A.S.R. 1983. *Nutrition and Families*, Macmillan Education Ltd. London.

Keith G. (1987): *World Hunger and the World Economy*. Macmillan Press Ltd. Hundmills, Basingstoke G 21 2xs and London.

Latif, M. A; Das, S; Rahman, M. F and Habib, M. A. (1995). Mathematical models for estimation of growth and yield of cassia siamean in Bangladesh. Bangladesh Forest Research Institute. P.O. Box 273, Chittagong 4000, Banglash pg 100.

Li, S. (2001): "Changes in Poverty Profile of China". Economic Research Journal discursion paper No. 2001/21. June 2001. Institute of Economics, Chinese Academy of social science, Beijing, China.

Maxwell, D.G. (1996): "Measuring Food Insecurity: The Frequency and Severity of Coping Strategies." *Food Policy*. 21(3).

Okunmadewa, F. Y. (1997): "Poverty Policy and Planning in Nigeria". Invited paper presented at Policy seminar on Poverty Alleviation in Nigeria organized by Federal Office of Statistics. September 1997. Abuja, Nigeria.

Okunmadewa, F.Y. (1998): Poverty and the Agricultural Sector in Nigeria: A Situation Analysis Seminar paper presented at the Dept. of Agric. Economics, University of Ibadan.

Ravallion, M and Bidani, B.(1994) "How robust is a poverty profile?" *World Bank Economic Review*, 8(1).

Ravallion, M. and Binayak, S.(1996) "When methods matter: Monitoring poverty in Bangladesh". *Economic Development and Cultural Change*, 44(4).

Sadoulet, E. and A. de Janvry. (1995): *Development Policy Analysis*. The Johns Hopkins University press, Baltimore and London.

Synder Margaret (1990): Women: The key to Ending Hunger. Published Monograph by Global Hunger Project.

Wally Y.A. (2000): *Ending Hunger*: The Cyprus Initiative. Presentation at the 5thWorld food council ministerial session. Published on an occasional paper by Global Hunger Project.

World Bank, (1996): Nigeria: Poverty in the Midst of Plenty – The challenge of Growth with Inclusion. *World Bank Report*. No.14733UNI.

World Bank, (2000): Poverty and Welfare in Nigeria. Resident Mission – Nigeria. P.O. Box 28265, Garki, Abuja.

APPENDICES

APPENDIX A

QUESTIONNAIRE ON NUTRITIONAL POVERTY ANALYSIS OF HOUSEHOLDS IN EKITI STATE

Household Number..... Location.....

SECTION A: Tick as appropriate

1. Type of housing unit:

   (a) Single rooms (b) Flat (c) Duplex (d) Whole building

   (e) Others...

2. Number of living rooms in the housing unit: .....

3. Material of dwelling floor:

   (a) Wood/Tile (b) Plnks/Concrete (c) Dirt/Straw/Without concrete (d) Others.....

4. Tenure:

   (a) Normal rent (b) Free (c) Nominal/subsidized rent

   (d) Owner occpier

5. Monthly rent for housing in Naira.....

6. Major source of water:

   (a) Pipe-bore water (b) Borehole/Hand pump

   (c) Tanker/Truck/Vendor

   (d) Well/SpringStream/Pond/River/Rain water

   (e) Others (specify).....

7. Distance of source of water:

   (a) In-dwelling (b) Within 500m (c) 500-1km (d) 1km or more

8. Type of fuel most commonly used for cooking:

(a) Electricity (b) Gas (c) Kerosene (d) Wood (e) Coal (f) Sawdust

9. Type of refuse disposal often used:

(a) Household bin collected by Government Agency (b) Household bin collected by private agency (c) Govt. bin or shed (d) Disposal within compound (e) Unauthorized refuse heap (f) Others.....

10. Toilet facilities:

(a) Covered pit (b) Uncovered pit (c) Water closet (d) Toilet on water (e) Bush/Dunghill

11. Distance of Toilet facility from the dwelling place:

(a) In-dwelling (b) Within 500m (c) 500m-1km

(d) 1km or more

12. Electricity supply:

(a) None (b) NEPA only (c) Rural electrification only

(d) Private generator.

SECTION B: NUTRITIONAL POVERTY COPING STRATEGIES

How do you handle nutritional deficiency in your household? (Please rank 5 in order of most frequently used starting from 1 for the most frequently used).

Eating less preferred food	↑
Reducing/rationing consumption	↑
Borrowing food or money to buy food	↑
Increased reliance on wild food	↑
Shot-term labour migration	↑
Short-term alteration in crop/Ls production	↑
Engaging in additional small scale business	↑
Mortgaging and sales of domestic assets	↑
Backyard livestock farming	↑

Altering household consumption

Backyard crop farming

Skipping meals for whole day(s)

Selling labour power

Others (specify)

SECTION C: Household Expenditure

How much did you spend in the last one month on the following?

S/No	Items	Last one month							
		Household members Numbers							
		1	2	3	4	5	6	7	8
1	School fees								
2	Medical expenses								
3	Domestic expenses								
4	Clothing expenses								
5	Remittances								
6	Transportation exp.								
7	Social/clubs								
8	Religious expenses								

SECTION D: HOUSEHOLD ASSETS

S/No	Items	Quantity	Year of purchase	Purchase price	Current price
1	Television (coloured)				
2	Television(black& white)				
3	Car/Vehicle				
4	Land without structure in rural area				
5	Land without structure in high income area				
6	Farmland				
7	Electric/gas cooker				
8	Video set				
9	Refrigerator				
10	Fan				
11	Set of chairs				

SECTION E: HARVEST, STORAGE AND CONSUMPTION PATTERN

Field No	Crop	Qty harvested in local unit	Sales		Seeds stored for planting in local unit	Proportion for house consumption/gift in local unit	Storage local uni
			Qty. sold	Price			
A	1. 2. 3.						
B	1. 2. 3.						
C	1. 2. 3.						
D	1. 2. 3.						

SECTION F: OTHER BUSINESSES

Name of Business	Size of Business (Naira)	Sales/per month (Naira)	Cost of operation in Naira

SECTION G: REGULAR SOURCES OF INCOME

Source	Regular period	Amount (Naira)

SECTION K: INDIVIDUAL DAILY FOOD INTAKE AND EXPEND RECORD AT HOME

S/No	Food Item	Household member 1				Household member 2				
		Day 1		Day2		Day 1		Day2		
		Qty	Price	Qty	Price	Qty	Price	Qty	Price	
1	Yam									
2	Pounded yam									
3	Eba or Gari									
4	Fufu									
5	Amala									
6	Beans									
7	Moinmoin									
8	Akara									
9	Rice									

10	Ogi/Eko/Custard										
11	Maize										
12	Potatoes										
13	Butter										
14	Milk										
15	Baby food										
16	Tea/Coffee										
17	Sugar										
18	Bournvita/Milo										
19	Plantain/Dodo										
20	Bread										
21	Snacks/Buiscuits										
22	Vegetable in spoons										
23	Cowskin/Ponmo										
24	Beef (cow meat)										
25	Pork (Pig meat)										
26	Sheep/goat meat										
27	Chicken										
28	Eggs										
29	Fish										
30	Orange										
31	Pawpaw										
32	Banana										
33	Porridge										
34	Others (specify)										

S/No	Food Item	Household member 1				Household member 2					
		Day 1		Day2		Day 1		Day2			
		Qty	Price	Qty	Price	Qty	Price	Qty	Price		
1	Yam										
2	Pounded yam										
3	Eba or Gari										
4	Fufu										
5	Amala										
6	Beans										
7	Moinmoin										
8	Akara										
9	Rice										
10	Ogi/Eko/Custard										
11	Maize										
12	Potatoes										
13	Butter										
14	Milk										
15	Baby food										
16	Tea/Coffee										
17	Sugar										
18	Bournvita/Milo										
19	Plantain/Dodo										
20	Bread										
21	Snacks/Buiscuits										
22	Vegetable in spoons										
23	Cowskin/Ponmo										
24	Beef (cow meat)										
25	Pork (Pig meat)										
26	Sheep/goat meat										
27	Chicken										
28	Eggs										
29	Fish										
30	Orange										
31	Pawpaw										
32	Banana										
33	Porridge										
34	Others (specify)										

SECTION L: INDIVIDUAL DAILY FOOD INTAKE AND EXPEND RECORD OFF HOME

APPENDIX B

Nutrient Conversion Factor Table

Food item	Conversion gram (raw)	Calorie content	Protein content
1. Yam	50	1.19	1.019
2. Pounded yam	533.793	1.19	1.019
3. Eba	166.67	3.51	0.01
4. Fufu	250	3.37	0.011
5. Amala	145.16	3.37	0.011
6. Beans	96.155	3.42	0.231
7. Moinmoin	19.2	3.42	0.231
8. Akara	27	3.42	0.231
9. Rice	71.425	3.65	0.07
10. Ogi/Eko/Custard	107.143	3.60	0.045
11. Maize	175	3.53	0.093
12. Potatoes	50	1.21	0.016
13. Butter	20	7.25	0.00
14. Milk	7.5	3.53	0.289
15. Baby food	12.5	5.0	0.255
16. Tea/Coffee	2	0	0
17. Sugar	17	4.0	0.00
18. Bournvita/Milo	17	4.01	0.10
19. Plantain/Dodo	Urban 20/Rural 300	1.35	0.012
20. Bread	190	2.61	0.077
21. Snacks/biscuits	25	3.76	0.118
22. Vegetables (in spoons)	Urban 20/Rural 50	0.42	0.046

23. Cowskin (ponmo)	20	0	0
24. Beef (cow meat)	20	1.22	0.206
25. Pork (pig meat)	20	4.18	0.124
26. Sheep/goat meat	20	2.08	0.2365
27. Chicken	20	1.39	0.19
28. Eggs	62.5	1.40	0.118
29. Fish	25	1.03	0.188
30. Orange	162.5	0.43	0.006
31. Pawpaw	750	0.32	0.004
32. Banana	50	0.88	0.015
33. Porridge	244.8	1.19	0.019
34. Games	20	1.50	0.304
35. Soup	70/25	0.3	0.0133
36. Melon soup	72/25	5.67	0.258
37. Palm/vegetable oil	100	9.00	0.00
38. Gari	200	3.51	0.01
39. Groundnut	10	5.95	0.232
40. Garden egg	20	0.32	0.01
41. Tuwo (maize meal)	145.16	3.53	0.093
42. Cocoyam	50	1.02	0.018

Source: Jean, A.S.R. 1983. Nutrition and Families, Macmillan Education Ltd.

APPENDIX C

CALORIE INTAKE

Sex	Male	Female
Age	RDA*	RDA*
< 6years	1475.50	1355.00
6 – 10 years	1970.00	1740.00
11 – 18 years	2487.50	1977.50
19 – 59 years	2550.00	1920.00
60 years and above	2270.00	1870.00
Average	**2150.6**	**1772.50**

RDA = Recommended Dietary Allocation.

- Figure on RDA was extracted from: Carrow, J.S and W.P.T. James (1993). Human Nutrition and Dietics, pg 785 – 786 (after the FAO/WHO/UNU 1985 report).

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