



Gender Based Comparison of Nutrition Status among Primary School Children in Selected Urban and Rural Areas in Ondo State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

In today's Nigeria, widespread and severe poverty is a reality that depicts a lack of food, clothes, education and other basic amenities and basically affects women and children. This study compared and contrasts gender-based nutritional status in primary school children of selected rural and urban settlements in Ondo State, South-West Nigeria. Using the Multi-staged sampling technique, two hundred and forty (240) primary school students of between the ages of 5 and 10 years were ethically recruited from aforementioned area. Socio-demographic data was collected by way of interview, using a research administered questionnaire that contained both open and closed ended questions. Secondary information was also sourced from the ministry of health, internet, published research papers, journals and other relevant sources. Here, dependent variables consisted of the nutritional status of children in study area(s) that were measured through various nutrition indicators as; height-for-age, weight-for-height, weight-for-age. These indicators were measured through anthropometric techniques, as well as gender specific variations in target variables. Results were sorted, analysed and presented in percentage (using the statistical package for social sciences, SPSS) were used for quantitative data integration on socio-economic and demographics. From the result, most (60.0%) of the respondents' parents in the urban are within the age range of 31-40 years while most (44.0%) in the rural were within the age range of 21-30 years. In all, none of the urban parents were within the age range of 15-20 years while

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10.0% of the rural parents were within the age range of 15-21 years. The mean age of urban parents was 34 years while the mean age of rural parents was 31 years. It can be deduced from the results that rural parents involved were higher than their urban counterparts. Mean consumption pattern of carbohydrates by urban respondents was higher than that of the rural counterparts, lower for proteins consumption pattern as well as in vitamins, even though nutritional status proved otherwise for urban against rural children. Nutritional enlightenment programmes is recommended for parents of rural settled children in order keep abreast of the importance of healthy eating. Further study aimed at corroborating these findings should also be carried out.

Keywords: Children; nutrition status; malnutrition; Akure; Ondo State.

1. INTRODUCTION

Youngsters are in a continuous state of growth, and their body in a phase of endless wear, tear and repair. Often time, the brain of the young is developing, bones are growing; and thus, making them to constantly require supplementation of calories, proteins and micronutrients. In order to limit the pace of their being, nutritional inadequacies will result in the hampering of this constant development [1]. If these nutritional inadequacies continue for a long period of time, it results in the growth faltering manifested in the form of low weight, small height, low intelligence quotient (IQ) [2].

Malnutrition has serious physical, psychological, academic and social consequences in the life of school age children [2]. Ensuring optimum growth and development for school age children is essential for the better future of a nation. There is a 'nutritional transition' in many developing countries like Nigeria and Brazil [3]. Though the problem of under nutrition still exists, the propensity of over nutrition and obesity has been increasing over the years due to the changing life styles and dietary habits of citizens, as a result of the recent economic growth. Such changes are more evident among school age children as they get easily attracted to the so called 'junk foods', pushing them to be morbid and unhealthy at an earlier stage of life and the future victims of various non-communicable diseases [4].

It is the health status of children of any country that represents the health status of the people in that country. Since this growing generation is going to be the future productive citizens, they should be healthy enough to make use of protein to reach the full potential of their productive age. Scientific evidence has shown that beyond the age of 2-3 years, the effects of chronic malnutrition are irreversible [3]. Child malnutrition is the single biggest contributor to children mortality due to greater susceptibility to infections and slow recovery from illness. Misconception

prevalent in the present time is the unavailability of the enough food. Between 6-18 months, young child requires only 200-300 kcal food to maintain normal growth and development but because of insufficient knowledge of parents about feeding practices they do not provide enough food to their children leading to faltering of growth and consequently illness and death of the child [5].

Child malnutrition is a wide spread public health problem having international consequences because good nutrition is an essential determinant of their well-being. The most neglected form of human malnutrition is malnutrition, particularly among school age children. Nigeria is one of the few countries in the world where poor nutritional status among children is detrimental to their health outcome [6]. Nutritional status indicators like wasting, stunting, low birth weights, Exclusive breastfeeding, sufficient breastfeeding until child is 2 years and proper complementary feeding, and vitamin A deficiency are also still high in developing countries. Child malnutrition reflects a number of intermediary processes such as household access to food, access to health services and caring practices.

Globally, an estimated 155 million children were stunted and 52 million were underweight in 2016 [7]. In 2016, more than one third stunted children lived in Africa, one quarter of overweight children lived in Africa, and more than one quarter of wasted children lived in Africa [8,9]. About 212,000 children were reported to be malnourished in 2010 alone in Northern Nigeria [9].

In spite of having the best indicators for child development, certain disturbing trends have emerged in the Ondo State in recent years affecting this status [10]. These include low birth weight, stunting of growth, increasing trends of underweight, poor maternal nutritional status and high rate of anemia among women and children

[8]. Nutritional status is an important index for measuring quality of life especially in children. In this respect, understanding the nutritional status of children has far reaching implications on better development of future generations, as well as future development of humanity. Health problems due to poor nutritional status in primary school children are among the most common causes of low school enrolment, high absenteeism, early drop out and unsatisfactory class performance. Preschool age is a dynamic period of physical growth as well as of mental development of the child [6].

1.1 Aim of Study

This study aimed at evaluating the gender-specific nutritional status of primary school children in selected urban and rural settlements of Ondo state, Nigeria. Specifically, the study;

- i. Ascertained the socio-economic characteristics of subjects' parent in the study area;
- ii. Determined the food consumption pattern of rural and urban primary schools' children in the study area;
- iii. Determined the nutritional status of rural and urban primary schools' children aged between 5-10 years.

2. MATERIALS AND METHODS

2.1 Study Location

The study was carried out in two Local Government Areas (LGA) of Ondo State, Southwest Nigeria; Akure North (rural) and Akure south (an Urban). The said state (Ondo) has a land mass of 14,788.723 square Kilometres (km²) with a population of about 3,460,877, consisting 1,745,057 males and 1,715,820 females. It is located in the central senatorial zone of the state. Akure south LGA has a land mass area of about 331 km² with a total population of 353,211. The populations of males and females are 178,672 and 181,596 respectively [10]. Contrarily, Akure North LGA, a rural area of the state has a land mass area of 660 km² and an estimated population of 131,587. The populations of males and females are 66,526 and 64,239 respectively [10].

2.2 Population of the Study

The population of the study comprised of resident children of the target areas aged between 5-10 years.

2.3 Sample and Sampling Technique

Using the Multi-staged sampling technique, two hundred and forty (240) respondents were drawn from the aforementioned population.

2.4 Study Design

In the first stage, the targeted two LGAs; Akure South and Akure North were purposively selected. The second stage involved random selection of four urban (4) and four (4) rural communities each from selected LGAs. In the third stage, thirty (30) households comprising children aged 5 to 10 years old were randomly selected from each selected urban and rural communities. This gave a total of two hundred and forty (240) sampled respondents for the study.

2.5 Data Collection

Primary data for the study was collected from the selected households with primary school children through the use of interview schedule consisting of validated and reliable open and close ended questionnaire; targeted on socio-economic characteristics of the respondents, accessibility, affordability and awareness of nutritious food in the study area. Secondary information was sourced from the ministry of health, internet, published research papers, journals and other relevant sources.

2.6 Measurement of Variables

Dependent variables in this study were the nutritional status of children in the study area(s). This was measured through various nutrition indicators like: height-for-age, weight-for-height, weight-for-age. These indicators were measured through anthropometric techniques. To carry out anthropometric analysis, several variables such as child's age, sex, height, and weight were considered. These measurements were used in generating indices such as, height-for-age, and weight-for-height, as well as gender specific variations in assayed variables.

2.7 Statistical Analysis

Data obtained were analysed and presented in simple percentage. Descriptive and inferential statistical techniques were used for quantitative data integration of data on socio-economic and demographic information, anthropometry, food intake to generate frequencies and percentages using statistical package for social sciences

(SPSS) Version 22.0. The anthropometric data obtained was used to determine the mean weight for age and mean weight for height. Primary data obtained from respondents was subjected to descriptive and inferential statistics. The socio-economic characteristics of the respondents was analysed using the statistical measures of central tendencies (mean and standard deviations) statistical tables and charts were used to present results. Correlation coefficients for obtained variables were calculated using the spearman rank's correlation.

3. RESULTS

Table 1. Socio-economic characteristics of the respondents

Variable	Urban		Rural	
	Frequency	Percentage	Frequency	Percentage
Age				
15-20	-	-	12	10.0
21-30	32	26.7	53	44.1
31-40	72	60.0	35	29.2
41-50	16	13.3	20	16.7
Religion				
Christianity	73	60.8	70	58.3
Islamic	32	26.7	22	18.3
Traditional	15	12.5	28	23.4
Marital status				
Single	-	-	-	-
Married	93	77.5	100	83.3
Divorced	10	8.3	05	4.2
Separated	05	4.2	-	-
Widowed	12	10.0	15	12.5
Years Spent in School				
0	10	8.3	30	25.0
1-6	20	16.7	35	29.1
7-12	35	29.1	45	37.5
>12	55	45.8	10	8.4
Occupation				
Farming	10	8.3	35	29.2
Petty trading	25	20.8	30	25.0
Artisanship	45	37.5	40	33.3
Civil Service	40	33.3	15	12.5
Family size				
1-5	60	50.0	35	29.7
6-10	50	41.7	55	45.8
11-15	10	8.3	20	16.7
16-20	-	-	10	8.3
Av. Monthly Income				
≤50,000	22	18.3	47	39.2
50,001-100,000	36	30.0	33	27.5
100,001-150,000	42	35.0	28	23.3
150,001-200,000	15	12.5	10	8.3
≥200,001	05	4.2	02	1.7

The results on the socio-economic characteristics of the respondents' parents are presented in Table 1. The Table revealed that most (60.0%) of the respondents' parents in the urban are within the age range of 31-40 years while most (44.0%) of the respondents' parents in the rural are within the age range of 21-30 years. Also, none of the urban parents are within the age range of 15-20 years while 10.0% of the rural parents are within the age range of 15-21 years. The mean age of urban parents was 34 years while the mean age of rural parents was 31 years. It can be deduced from the results that rural parents involved in parenthood earlier than their urban counterparts

Table 2. Consumption pattern of carbohydrates and proteins by urban respondents

	NC F(%)	OCC F(%)	MNT F(%)	FTN F(%)	EW F(%)	1-3 DS/W F (%)	4-6 DS/W F(%)	ED(7) (%)	Mean
Carbohydrates									
Maize	14(11.7)	12(10.0)	0	7(5.8)	29(24.2)	18(15.0)	18(15.0)	17(14.2)	3.20
Rice	0	22(18.3)	7(5.8)	6(5.0)	26(21.7)	46(38.3)	12(10.0)	24(20.0)	3.3
Yam	3(2.5)	1(0.8)	1(0.8)	14(11.7)	17(14.2)	38(32.8)	14(11.7)	14(11.7)	3.86
Cassava	11(9.2)	6(5.0)	2(1.7)	5(4.2)	33(27.5)	27(22.5)	18(15.0)	17(14.2)	3.30
Potato	31(25.8)	6(5.0)	10(8.3)	8(6.7)	28(23.3)	18(15.0)	20(16.7)	24(20.0)	3.00
Cocoyam	28(23.3)	21(17.5)	9(7.5)	15(12.5)	18(15.0)	12(10.0)	10(8.3)	15(1.5)	3.48
Proteins									
Beans	16(12.7)	8(6.4)	0	20(16.6)	44(30.3)	59(52.5)	40(32.7)	66(58.5)	3.98
Groundnut	12(10.0)	2(1.7)	10(8.3)	10(8.3)	22(18.3)	39(32.5)	20(16.7)	17(14.2)	2.98
Soy bean	44(36.7)	25(30.8)	2(1.7)	13(10.8)	11(9.2)	10(8.3)	7(5.8)	8(6.7)	2.87
Pork	46(38.3)	29(24.2)	12(10.0)	10(8.3)	8(6.7)	7(5.8)	3(2.5)	5(5.2)	3.20
Goat	30(25.0)	40(33.3)	22(18.3)	11(9.2)	6(5.0)	6(5.0)	2(1.7)	3(2.5)	4.25
Snail	17(14.2)	53(44.2)	19(15.8)	13(10.8)	7(5.8)	5(4.2)	1(0.8)	5(4.2)	5.00
Bush meat	10(8.3)	57(47.5)	17(14.2)	15(12.5)	12(10.0)	2(1.7)	5(4.2)	7(5.8)	5.35
Turkey	6(5.0)	56(40.7)	20(16.7)	11(9.2)	13(10.8)	9(7.5)	1(0.8)	4(3.3)	5.35
Chicken	6(5.0)	42(35.0)	17(14.2)	12(10.0)	17(15.8)	10(8.3)	2(1.7)	12(10.0)	4.85
Beef	6(5.0)	10(8.3)	3(2.5)	8(6.7)	34(28.3)	16(13.3)	19(15.5)	24(20.0)	3.25
Egg	14(11.7)	7(5.8)	2(1.7)	11(9.2)	18(15.0)	18(15.0)	22(18.3)	28(23.3)	2.78
Fish	25(20.8)	4(3.3)	1(0.8)	6(5.0)	17(14.2)	19(15.8)	16(13.3)	32(26.7)	2.32
Shrimp	45(37.5)	9(7.5)	5(4.2)	5(4.2)	14(11.7)	5(4.2)	17(14.2)	20(16.7)	2.27
Crab	38(31.7)	21(19.3)	10(8.3)	9(7.5)	16(13.3)	9(7.5)	16(13.3)	10(8.3)	3.02
Prawn	10(8.3)	13(10.8)	4(3.3)	12(10.0)	24(20.8)	16(13.3)	19(15.8)	22(18.3)	3.25
Vitamins									
Bitter leaf	10(8.3)	6(5.0)	1(0.8)	11(9.2)	30(25.0)	28(23.3)	15(12.5)	19(15.8)	3.05
Africa spinach	12(10.0)	4(3.3)	1(0.8)	9(7.5)	28(23.3)	31(25.8)	15(12.5)	19(15.8)	2.55
Malabar spinach	12(10.0)	8(6.7)	2(1.7)	9(7.5)	32(26.7)	25(20.8)	15(12.5)	18(15.0)	2.38
Spinach	10(8.3)	12(10.0)	4(3.3)	7(5.8)	29(24.2)	23(19.2)	18(15.0)	17(14.2)	3.20
Ugwu	4(3.3)	1(0.8)	20(16.7)	9(7.5)	17(14.2)	12(14.2)	14(11.7)	14(11.7)	3.86
Pineapple	2(1.7)	6(5.0)	1(0.8)	11(9.2)	33(27.5)	25(20.8)	18(15.0)	17(14.2)	3.30
Pawpaw	3(2.5)	6(5.0)	3(2.5)	10(8.3)	28(23.3)	26(21.7)	20(16.7)	24(20.0)	3.00
Orange	20(16.7)	21(17.5)	10(8.3)	12(10.0)	18(15.0)	14(11.7)	10(8.3)	15(1.5)	3.48
Tangerine									

Keys: NC-not consumed, OCC-occasionally, MNT-monthly, FTN-fortnightly, EW-every week, 1-3DLW-one to three days per week, 4-6D/W-four to six days per week, ED-everyday

Table 3. Consumption pattern of carbohydrates, vitamins and proteins by rural respondents

	NC F(%)	OCC F(%)	MNT F(%)	FTN F(%)	EW F(%)	1-3DS/W F (%)	4-6DS/W F(%)	ED(7) (%)	Mean
Carbohydrates									
Maize	10(8.3)	56(46.7)	0	7(5.8)	3(2.5)	18(15.0)	3(2.5)	12(10.0)	4.51
Rice	13(10.8)	2(1.7)	7(5.8)	6(5.0)	14(11.7)	46(38.3)	12(10.0)	20(16.0)	2.52
Yam	4(3.3)	2(1.7)	1(0.8)	14(11.7)	16(13.3)	38(32.8)	22(18.3)	24(20.0)	2.57
Cassava	2(1.7)	2(1.7)	2(1.7)	5(4.2)	21(17.5)	27(22.5)	21(17.5)	31(25.8)	2.48
Potato	3(2.5)	25(20.8)	10(8.3)	8(6.7)	12(10.0)	18(15.0)	7(5.8)	8(6.7)	3.17
Cocoyam	20(16.7)	25(20.8)	9(7.5)	15(12.5)	19(15.8)	12(10.0)	4(3.3)	8(6.7)	3.53

	NC F(%)	OCC F(%)	MNT F(%)	FTN F(%)	EW F(%)	1-3DS/W F (%)	4-6DS/W F(%)	ED(7) (%)	Mean
Proteins									
Beans	16(6.7)	4(3.2)	0	10(8.3)	22(18.3)	39(32.5)	20(16.7)	46(38.5)	2.47
Groundnut	12(10.0)	2(1.7)	10(8.3)	10(8.3)	22(18.3)	39(32.5)	20(16.7)	17(14.2)	2.98
Soy bean	44(36.7)	25(30.8)	2(1.7)	13(10.8)	11(9.2)	10(8.3)	7(5.8)	8(6.7)	2.87
Pork	23(19.3)	25(22.2)	6(15.0)	5(4.3)	8(6.7)	7(5.8)	3(2.5)	3(2.2)	2.20
Goat	15(12.5)	20(17.0)	11(9.3)	11(9.2)	3(2.5)	8(4.5)	3(1.8)	3(2.5)	3.89
Snail	9(7.2)	26(22.2)	10(9.8)	11(9.8)	5(2.8)	5(4.2)	1(0.8)	5(4.2)	2.60
Bush meat	5(4.3)	14(12.5)	7(6.2)	6(5.5)	10(5.0)	2(1.7)	5(4.2)	3(2.4)	2.55
Turkey	6(5.0)	28(20.7)	10(8.7)	7(8.2)	11(8.8)	6(4.5)	1(0.8)	4(3.3)	3.65
Chicken	3(2.5)	23(19.0)	8.5(7.2)	6(6.0)	9(7.8)	5(4.3)	2(1.7)	6(6.0)	3.25
Beef	6(5.0)	10(8.3)	3(2.5)	8(6.7)	34(28.3)	16(13.3)	19(15.5)	24(20.0)	3.25
Egg	14(11.7)	7(5.8)	2(1.7)	11(9.2)	18(15.0)	18(15.0)	22(18.3)	28(23.3)	2.78
Fish	25(20.8)	4(3.3)	1(0.8)	6(5.0)	17(14.2)	19(15.8)	16(13.3)	32(26.7)	2.32
Shrimp	45(37.5)	9(7.5)	5(4.2)	5(4.2)	14(11.7)	5(4.2)	17(14.2)	20(16.7)	2.27
Crab	38(31.7)	21(19.3)	10(8.3)	9(7.5)	16(13.3)	9(7.5)	16(13.3)	10(8.3)	3.02
Prawn	10(8.3)	13(10.8)	4(3.3)	12(10.0)	24(20.8)	16(13.3)	19(15.8)	22(18.3)	3.25
Vitamins									
Bitter leaf	5(4.3)	3(2.8)	1(0.8)	6(4.5)	20(15.0)	18(13.3)	10(7.5)	10(8.8)	2.86
Africa spinach	6(5.0)	2(1.3)	1(0.8)	5(3.5)	14(12.3)	17(12.8)	9(8.5.5)	11(7.8)	2.15
Malabar	6(5.0)	4(3.7)	2(1.7)	4(7.5)	16(16.7)	13(10.8)	9(10.5)	11(10.0)	2.10
spinach	10(8.3)	12(10.0)	4(3.3)	7(5.8)	29(24.2)	23(19.2)	18(15.0)	17(14.2)	3.20
Spinach	15(12.8)	25(23.3)	16(14.0)	13(9.0)	17(17.7)	27(19.7)	11(8.0)	16(12.0)	3.12
Ugwu	2(1.8)	1(0.4)	10(8.3)	5(4.5)	10(9.2)	10(8.5)	12(7.9)	12(9.7)	2.86
Pineapple	2(1.7)	6(5.0)	1(0.8)	11(9.2)	33(27.5)	25(20.8)	18(15.0)	17(14.2)	3.30
Pawpaw	3(2.5)	6(5.0)	3(2.5)	8(6.3)	22(16.3)	18(17.7)	18(12.7)	20(16.0)	2.56
Orange	10(8.7)	22(18.5)	18(6.5)	14(12.0)	16(13.0)	12(9.7)	10(8.3)	17(3.5)	3.20
Tangerine									

Keys: NC-not consumed, OCC-occasionally, MNT-monthly, FTN-fortnightly, EW-every week, 1-3DLW-one to three days per week, 4-6D/W-four to six days per week, ED-everyday

Table 4. Correlation result of nutritional status and the consumption pattern of the respondents

Variables	Urban			Rural		
	r-value	P value	Remark	r-value	p-value	Remark
Carbohydrates Consumption	-0.196	0.032	Sig.	0.465	0.035	Sig
Protein Consumption	0.187	0.041	Sig.	0.552	0.087	Not Sig
Vitamin consumption	-0.060	0.518	Not Sig.	0.542	0.079	Not Sig

From above table (Table 4), there was no significant relationship between selected socio-economic characteristics and the nutritional status of the respondents in the study area. Spearman rank Correlation was used to test this hypothesis. The correlation result shows that age ($r= 0.179$, p -value 0.050) have significant and positive relationship with nutritional status for urban children. It implied that the nutritional status of urban children improved as they advance in age

4. DISCUSSION

From Table 1 of this study, the socio-economic characteristics of the respondents were summarized using descriptive statistics such as frequency distribution, percentages and averages. Eight point likert scale was used to determine the consumption pattern of urban and rural respondents and four point likert scale was

used to determine the level affordability of nutritious food by rural and urban children. Spearman rank correlation was used to examine the difference in the nutritional status of primary school children in rural and urban communities in the study area.

The study revealed that the mean age of urban parent was 34 years and that of rural parent was

31 years, indicating that rural parents involved in early parenthood than urban parent. The results also showed that while Christianity and Islam dominated religion practised among urban parents, traditional religion dominated religion practice among rural parents. The results further showed that the proportions of urban parents (46.0%) that had education beyond secondary school was higher than that of rural parents (8.0%). The analysis also showed that urban parents that earned ₦200,001 (low income) and above (4.2%) were more than rural parents that earned this same income range.

The results of the analysis showed that the mean consumption pattern of carbohydrates by urban respondents was higher than that of the rural counterparts, decreasing for proteins consumption pattern and vitamins. It was revealed from the results that rural respondents were able to afford carbohydrates than protein and vitamins. In the same manner, urban respondents were able to afford proteins than carbohydrates. Meanwhile, there was no much disparity in the affordability of vitamins for both urban and rural children [7].

The results on the socio-economic characteristics of the respondents' parent are presented in Table 2. The Table revealed that most (60.0%) of the respondents' parents in the urban are within the age range of 31-40 years while most (44.0%) of the respondents' parents in the rural are within the age range of 21-30 years. Also, none of the urban parents are within the age range of 15-20 years while 10.0% of the rural parents are within the age range of 15-21 years. The mean age of urban parents was 34 years while the mean age of rural parents was 31 years. It can be deduced from the results that rural parents involved in parenthood earlier than their urban counterparts. This may be due the educational level, social status as well as the dictates of the economy of the parents in the urban areas [8,9].

The distribution of children parents according to religious engagement revealed that about 61.0% of urban parents engaged in Christianity while about 58.0% of rural parents engaged in Christian religion. Also, about 27.0% of urban parents engaged in Islamic religion while about 18.0% involved in Islamic religion. In the same manner, about 13.0% of urban parents engaged in traditional religion while the proportion of rural parents that engaged in traditional religion was about 23.0%. This could be attributed to

civilization and education which urban parents are better exposed to than their rural counterparts. Religious engagements could also have effects on consumption pattern of the respondents [10,11].

The analysis further revealed that about 78.0% of urban parents were married while about 83.0% rural parents were also married. About 10.0% of urban parents widowed while about 13.0% of rural parents were widowed. Meanwhile, only about 4.0% of urban parents were separated. It implied from the findings that greater proportions of the sampled parents were married. This could have a significant effect on affordability of food substances and hence, the consumption regime of the children [12,13].

The consumption pattern of nutritious food by urban and rural households is presented in Tables 2 and 3, respectively. The results revealed that both urban and rural households consumed nutritious food such as carbohydrates, protein and vitamins but in dissimilar proportions. Eight likert scale questions were used to probe the frequency of consumption of these food substances. The following results were revealed for carbohydrates, protein and vitamins consumption, respectively.

The results in Tables 2 and 3 showed that the urban households mean consumption pattern of maize, rice, yam, cassava, potato and cocoyam were 3.2, 3.3, 3.8, 3.3, 3.0 and 3.48 respectively, as compared to 4.51, 2.52, 2.57, 2.48, 3.17 and 3.53 respectively by rural households. The overall mean consumption of carbohydrates by urban children was 3.34 while that of rural children was 3.13. It implied that the urban households consumed carbohydrates more than the rural households.

The Table also revealed that the urban households mean consumption of beans, groundnut, snail, goat, beef, egg and fish were 3.98, 2.98, 5.00, 4.25, 3.25, 2.78 and 3.32 respectively, compared to rural households which were 2.47, 2.98, 2.6, 3.89, 3.25, 2.78 and 2.32, respectively. The mean consumption pattern of proteins by urban children exceeds that of rural households. It can be concluded that the urban children consumed proteins better than rural households.

The results of Tables 2 and 3 also showed the vitamin consumption pattern of urban and rural children, respectively. The result revealed that

the mean consumption of bitter leaf, uguwu, pineapple, pawpaw, orange and tangerine by urban children were 3.05, 2.89, 3.86, 3.30, 3.00 and 3.48, respectively, while the mean consumption of bitter leaf, uguwu, pineapple, pawpaw, orange and tangerine by rural children were 2.86, 3.12, 2.86, 3.3, 2.56 and 3.2, respectively. With the mean consumption of 3.92 for urban children and 3.58 for rural children, it can be deduced from the findings that urban children consumed more vitamin than rural children.

5. CONCLUSION

Nutritional inadequacies portends great danger to children in the areas of physical, psychological, academic and their social well-being. The study compared the nutritional status of urban and rural children aged 5-10 years. The study concluded that majority of urban children were better nourished than the rural counterparts. It was also found that urban children consumed proteins than rural children. Factors that significantly influenced the nutritional status of urban children were age and education while income influences the nutritional status of both urban and rural children. The study hypothesized that there was great significant relationship between protein and carbohydrates consumption by urban children and their nutritional status while significant relationship existed between carbohydrates consumption by rural children and their nutritional status.

ETHICAL APPROVAL AND CONSENT

Ethical approval was obtained from the Research and Ethics committee of the College of Health Sciences, Novena University, Ogume, Delta State. Informed consent of respondents was also sought, and only those whose consents we got were actually used in the study. Being children with little or no sense of discernment, permissions were also obtained from their parents / teachers before actual participation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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