ANALYSIS OF CONSUMPTION PATTERN OF SELECTED FRESH VEGETABLES BY WOMEN IN SELECTED LOCAL GOVERNMENT AREAS OF NIGER STATE, NIGERIA.

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ABSTRACT

This study, investigated the consumption pattern of some selected vegetables in three Local Government Areas of Niger State. To achieve the objective of the study, data were collected with structured questionnaires administered to consumers of fresh vegetables in the study areas. The primary data was complemented with secondary data. The primary data collected was carefully subjected to analysis using descriptive statistics, paired-wise comparison matrix and multiple regression. Amaranthus was found to be the most common vegetable consumed in the study area and was most preferred. Based on statistical and econometric criteria, linear function was chosen as the lead equation with R^2 of 0.608. Out of the four variables fitted for the model, monthly income of the consumers and household size were found to be significant. It was suggested that extension education and dietary awareness on the importance of vegetables in human diet be carried out.

INTRODUCTION

Vegetable is usually used to designate the tender edible shoot, leaves, fruits and roots of herbaceous plants that are eaten whole or in part, raw or cooked on supplementary foods to diversity the diet (Toluyemi, 2008). Nutritionally, Vegetables are rich sources of certain essential vitamins and minerals, dietary fibre and provides additional calories and protein and can provide widely accessible sources of essential vitamins particularly vitamins A,C, Niacin, Riboflavin and Thiamine) (Taylor, 1983). They also promote intake of essential nutrients from other foods by making them more palatable, provide dietary fibre to improve digestion and health, and are essential for a proper balanced diet (Oyenuga and Fetuga, 1975). Income derived from vegetable production is also an important part of the annual income of the farmer, as increased incomes generated by vegetable production and marketing contributes to the improvement of nutrition and other aspects of human condition (Turner *et.al.*, 1996). Vegetable can expand employment in marketing, transportation and export (Ndanitsa, 2005). Examples of vegetables include Lettuce (*Lactuca Sativa*), Cucumber (*Cucumis Sativus*), Amaranthus (*Amaranthus hybridus*), Green Pepper

(*Capsicum hybridus*) and Cabbage (*Brassica-oleracea*). Others include water leaf, Okro, Pepper, egg plant, Onion, bitterleaf, tomatoes, groundnut, beans, carrot, Cauliflower, and Radish.

The growing consciousness of health and better understanding of dietary role of vegetables, increased in affluence of urban dwellers, vegetable consumption has increased considerably (Ndanitsa, 2005). However, there is a huge gap between demand and supply of vegetables consumed by women. This problem is traceable not only to inadequate food supply and poor marketing system but also to seasonal supply, high perishable nature of vegetables, poor transport, storage, processing and packaging (Oyenuga and Fetuga, 1975). This has led to heavy loss of vegetable and as such reduced the amount available for consumption, and increase in the prices of available ones. More to this is the indiscriminate pricing for vegetables due to lack of uniform grading, standard weight and measures (Ndanitsa, 2005). This has seriously hampered effective distribution of vegetables. The following questions therefore emanates from this study: (i) What are the types of vegetables consumed by women in the study area? (ii) Do women in the study area have access to fresh vegetables? (iii) Is vegetable available for consumption throughout the year? (iv) Is prices of fresh vegetable stable throughout the year? (v) What factors affect the consumption of vegetables in the study areas? This study is, therefore, an attempt to provide answers to these and related questions using Shiroro, Suleja and Bida Local Government Areas of Niger State as a case study.

The specific objectives of the study are:

i. To examine the types and pattern of selected fresh vegetables consumed by women in the study area;
ii. To examine consumers' preference among the selected fresh vegetables and
iii. To examine the factors affecting the level of vegetable consumption.

The study has become imperative in that the diet of the majority of the Nigerian women consist largely of starchy staples (Taylor, 1983). It is therefore essential that vitamins and minerals which are lacking in such diets be supplied through other food stuff.

Good and cheap sources of these essential nutrients are fresh vegetables which are abundant in the tropics (Burk and Ezikiel, 1967). So, the current agitation to increase consumption of food which supplies essential nutrients (vitamins and minerals) requires that vegetable consumption be

looked into so as to know where improvement is needed. Better consumption of nutritious and palatable vegetable will contribute to better health and improve quality of life of the consumers of vegetables.

METHODOLOGY

The study Area: The study was conducted in Three Selected Local Government Areas of Niger State namely, Shiroro, Suleja and Bida. The State lies between latitudes 8°20'N and 11°30'N and between longitude 3°30'N and 7°20'E. The state is bordered to the north by Sokoto State, west by Kebbi State, South by Kogi State and South-West by Kwara State. Similarly, Kaduna State and Federal Capital Territory (F.C.T) border the State both to the northeast and south east respectively. The State has a moderate climate characterised by distinct dry and wet season, with annual rainfall varying from 1,100mm in the north to 1,600mm in the south (NGSG Diary, 2003).

The daily temperatures varies from 33°C 37°C. Fertile agricultural lands (mostly fadama, lying the river banks of river Kaduna, river Niger and other small streams and their tributaries) are by far the state's richest resources, and this provides excellent avenue for the cultivation of staple crops, especially vegetables throughout the year especially when supplemented by irrigation practices.

The data for the study were obtained from combination of primary and secondary sources, but mainly through the former. Data were collected between September and October, 2008. The primary data were collected through the use of carefully drawn and well structured questionnaires as well as personal interview. The secondary data were collected from various institutions, including the Niger State Agricultural Development Project (NSADP), Agricultural and Rural Management Training Institute (ARMTI), Ilorin; National Horticultural Research Institute (NIHORT), Ibadan, and other published and unpublished articles and journals that were found to be relevant to the study.

In order to get a representative sample and to achieve the stated objective of the study, forty (40) respondents were randomly selected from each of the three (3) LGAs. The respondents are women that make use of fresh vegetables in the preparation of their diets. Data were collected between September and October, 2008. Meanwhile, only one hundred and two (102) questionnaires were retrieved and found usable for analysis at the end of the survey.

The data was analysed using descriptive

statistics namely mean, percentages, frequency distribution and cumulative frequency distributions. The paired comparison preference ranking technique was used to access the consumer preferences among the selected fresh vegetable. The technique is an element ranking technique in which all elements of the set to which preference ranking is to be made are paired and priority ranking are to be determined.

A pair wise comparison matrix is then set up. Every cell in the matrix presents the total number of "firsts" that the subject represents on the row scored over the one represented in the column. The pair wise comparison score which is used to judge preference ranking is simply the sum of all the first for each element in the row of the matrix. The various scores are then subjected to the least square difference test (LSD) to test the statistical significance of the differences between every estimated adjacent pair wise comparison scores.

Test statistics is given as:

$$LSD(calculated) = t\sqrt{\frac{Bn(n+1)}{6}}$$

Where B = number of the respondent

n = number of vegetables

t = tabulated t value

= level of significance at which the test is carried out.

Multiple Regression Analysis was used to determine the influence of socio-economic variable on monthly expenditure on fresh vegetable on fresh vegetable. The implicit model form used is:

$Y = F(X_1, X_2, X_3, X_4, U)$

Where Y = Household monthly expenditure on vegetable (₦).

X_1 = Educational status of the household head in years.

X_2 = Household size

X_3 = Monthly income of the household head

X_4 = Age of the household head.

U = Disturbance or error terms that is normally distributed

With zero mean and constant variance

It represents the unexplained variation not accounted for.

MEASUREMENT OF VARIABLES

Y = Monthly expenditure per household in Naira (₦). This was obtained from the data collected from the field.

X_1 = Educational status of the respondents in years (number of years spent in school). Educational status of a person may to some extent affect the nutritional status of him

household. It determines the importance placed on difference types of food.

X_2 = Household size (number). This is defined as the number of persons eating from the same pot, although the definition is limited by the fact that persons are not uniform due to age, size and sex (household structure) because these affects the level of food consumed especially vegetable.

X_3 = Monthly income of the household head (N). This refers to the disposable income of the respondent. Income literally means benefit accruing from work done.

RESULTS AND DISCUSSION

Consumption Pattern and Types of Vegetables Consumed by Women in the Study Area.

Table 1: Vegetable types and consumption pattern.

Vegetable consumed	Frequency	Percentage
Amaranthus	84	80.39
Fluted pumpkin	69	67.64
Cabbage	38	39.22
Lettuce	40	36.27
Cucumber	34	33.33
Green Pepper	38	38.24

Source, Field survey, 2008

Table 1 shows the types of vegetable consumed by the respondents in the study area. The table revealed that most of the respondents (80.39%) consumed Amaranthus either singly or with other vegetables.

This shows that Amaranthus is mostly consumed by the respondents and this is probably because it is cheaper, readily available and easy to cook. Cucumber is the least consumed among the respondents (33.33%). This may be due to the fact that cucumber is an exotic vegetable, not quite familiar to most consumers, usually scarce and expensive (Ndanitsa, 2005).

As revealed in table 2, Amaranthus is the most preferred of the six (6) selected vegetables, and as stated earlier, this is because it is cheap and common, and easy to prepare and can be eaten with variety of food such as *Tuwon Shinkafa, Tuwon Masara, Amala, Fufu Pounded Yam, Agidi, Tuwon dawa* and a lot more. Fluted pumpkin is preferred next to Amaranthus probably because it is highly nutritious and cheaper than the exotic vegetables like the Cucumber which is the least preferred.

Table 2: Paired Consumption Matrix for Consumption Preferences for the Selected Vegetables.

Vegetables	Amar-anthus	Fluted pumpkin	Cabbage	Lettuce	Cucumber	Green pepper	Total	Ranking
Amaranthus	-	39	24	27	24	24	142	1st
Fluted pumpkin	20	-	16	21	13	13	86	2nd
Cabbage	6	9	-	21	11	11	63	3rd
Lettuce	4	7	8	-	18	18	52	4th
Cucumber	3	8	10	6	-	-	37	6th
Green Pepper	2	2	11	12	13	13	40	5th

Source: Field survey, 2008

Based on econometric and statistical consideration as well as apriori expectation regarding the signing of the coefficient, and based on experience of food consumption (Aromolaran and Akintunde, 1998; Ndanitsa and Umar, 2008), the linear equation was found to provide the best fit and so was chosen as the lead equation.

The R^2 value was 0.608. This means that the variables accounted for 60.8% of the variations in vegetable consumption in the study area.

The reason for the relatively low R^2 value may be as a result of the fact that consumers do not keep records of their expenditure.

The information about their vegetable expenditure was based on memory recall which is subject to wide margins of error (Upton, 1996). So, this could probably have led to overstating or understating their expenditures.

However, the regression coefficient of respondents monthly income (X_3) was found to be positive and significant at 5% level of significance.

The positive sign of the coefficient shows that the quantity of food consumed is expected to increase with increase in income. Anthonio (1966) in estimating the income elasticity for different classes of food found income elasticity to be lowest for vegetables and highest for animal protein.

The household size (X_2) was found to be positive and significant at 5% level of significance.

This shows that household size to some extent affects the level of expenditure on fresh vegetables in the study area, that is, large households tend to spend more on fresh vegetables than smaller households. However, larger households with low income sometimes may spend less on fresh vegetable which they may consider to be less important and spend more on bulky starchy foods such as gari, rice, and yam.

This is because of the believe that it lasts longer and fill their stomach even though do not cotain necessary vitamins and minerals essential for proper functioning and growth of their body (Davis, 1982).

Table 3: Regression Result (Analysis) of the Factors Affecting the Consumption of Selected Vegetables

Form of equation	Construct	Regression Coefficient					
		X_1	X_2	X_3 -value	X_5	R^2	
Linear	Coefficient	9.000	2.2	19.87	0.01400	-3.37	0.608	6.50
		(214.00)	14.3	(8.61)	(0.000394)	(2.58)		
Cobb Douglas	Coefficient	3.44	0.90	0.026	1.134	0.062	0.307	
		(3.99)	(1.59)	(0.203)	(0.256)	(0.661)		5.97.
Semi Log	Coefficient	3.20	0.002	0.0197	0.00001252	0.0021	0.292	
		(1.62)	(0.108)	(0.0653)	(0.0000299)	(0.0196)		5.63.
Exponential	Coefficient	6490	50	22.6	118.5	-47.30	0.182	
		(578.00)	(2300)	(29.4)	(37)	(95.8)		3.51

Values in parenthesis are standard errors

Looking at the lead equation to identify the order of importance of the variables in bringing about variation in the level of fresh vegetable consumption, income of the household head found to be the most important factor with R2 value of 0.269. Also, the regression coefficient was positive and statistically significant at 5% level.

This was followed by household size (X2) with R2 value of 0.74, the regression coefficient was positive and significant at 5% level of significance. Next was educational status of the household head (X1) with R2 value of 0.014, the regression coefficient was positive but not significant at 5% level of significance.

Age of the household head (X4) came last with R2 value of between zero and one (0 and 1), regression coefficient was negative and not significant at 5% level.

CONCLUSION AND RECOMMENDATION

The study examined the consumption pattern of selected fresh vegetables by women in three selected Local Government Areas of Niger State and the Socio-economic factors influencing the consumption rate.

The results show that Amaranthus, Fluted Pumpkin, Cabbage, Lettuce, Cucumber and Green Pepper were mostly consumed in the area. Similarly, the paired comparison preference ranking technique used to determine the most preferred vegetable in the area revealed that Amaranthus is the most preferred and reason was because it is cheaper, more common, readily available, easy to cook and more so, can be taken with most local foods in the area.

Cucumber was however the least preferred vegetable in the area, and the reason advanced for this was because it is exotic and costly.

Furthermore, the result of the multiple regression analysis shows that monthly expenditure of the household (N) on vegetable consumption in the study area was influenced by the educational status of the household head, household size, monthly income of the household head and not age of the household head.

Finally, it is recommended that people should be educated (extension education) on the nutritional importance of vegetables in human diet so as to be able to obtain all minerals and vitamins in their diet and meet the body requirements of these diets for proper body functioning.

Local production of vegetables should be intensified to reduce over dependence on imports, this will ensure self sufficiency in food production and self reliance in the economy, and as one of the seven points agenda of the present regime and for the attainment of the goals of vision 2020.

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