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The Socio-Economic Determinants on Consumption Pattern of Vitamin a Food Sources by Households in Aba South L.G.A. of Abia State.

Mbah, B.O and Eme, P.E
Department of Home Science, Nutrition and Dietetics,
University of Nigeria, Nsukka

Abstract

The study determined the availability of vitamin A food sources and also identified factors influencing the household consumption pattern of these food sources in Aba South Local Government Area (L.G.A.) of Abia state. A total of one hundred and sixty-five (165) subjects from each household were randomly selected from five of the thirteen (13) autonomous communities in Aba South L.G.A. Validated structured questionnaires were distributed to mothers and some adolescent girls who prepare the family meals in these households for data collection. Data were collected on the personal characteristics and on food availability. Data were analyzed with SPSS version 14 using frequency distribution, percentages and ANOVA. Major findings include that on the average, a few (12.9%) of the subjects produced all their foods, 70.8% purchased all their foods and 4.3% partly purchased and produced their food. Acceptance, compliance and behavior change in families must be encouraged among targeted beneficiaries for prevention programmes to be successful e.g. home gardening.

Introduction

Vitamin A deficiency is a major public health problem in less-developed and developing countries. It has a high impact on morbidity and mortality in chronically undernourished and undeserved population (Parker, 2005). Vitamin A deficiency affects an estimated 125-130 millions preschool-aged children and seven million pregnant women in low-income countries (Black, Moris and Bryce, 2003). It reflects a chronicity of dietary deficiency that may extend from early childhood into adolescence (Black *et al.*, 2003) and adulthood.

Vitamin A is used generically for all β-ionone derivatives (other than carotenoids) that have the biological activity of all Trans retinol (Barba and Robert, 2001). Preformed vitamin A is found almost exclusively in animal products, such as human milk, glandular meats, liver and fish oil, especially egg yolk, whole milk and other dairy products. Preformed vitamin A is used to fortify processed foods such as sugar, cereals, condiments, fats and oil (Rodriguez-Amaya, 2000). Provitamin A carotenoids are found in green leafy vegetables (e.g. spinach, *Amaranthus* sp and young leaves from various sources), yellow vegetables (e.g. pumpkins, squash and carrots), and yellow and orange non-citrus fruits (e.g. mangoes, apricots and pawpaw) (Hathcock, 2001).

Vitamin A plays important roles in the wellbeing of an individual. The roles of vitamin A include maintaining epithelial barrier function, regulating cellular and antibody-mediated immunity (Arifeen, Black, Antelman, Baqui, Caulified and Becker, 2001), improving colour vision and vision in bright illumination, and supporting testosterone production (Popkin,1994).

Retinoic acid is necessary for erythrocyte differentiation and also controls metabolism of iron (Toteja, Singh and Dhillion, 2002).

According to CDC, 2004, WHO classified Nigeria among the nations which have vitamin A clinical deficiency. The highest prevalence was in the north-east of Nigeria (IVACG, 1997).

Rich sources of vitamin A include organ meat – liver and kidney, milk and its products and egg yolk are so expensive that many households cannot afford to consume them regularly. The purchasing power of low income earners is weak. They cannot even afford to purchase vitamin A rich foods on a weekly basis. Legumes and cereals form the main plant sources of vitamin A are cheaper than the animal sources. However, consumption was low due to poor nutrition education.

The food consumption pattern of households determines their diet quality. Diet quality is affected not only by age and sex, but also by occupation, education and income levels (Galobardes, Morabia and Bernstein, 2001) – the conventional indexes of socioeconomic status. The different socioeconomic indicators appear to be similar, although independent, effects on nutrition and diets (Turrell, Hewitt, Patterson and Oldenburg, 2003). However, a convincing causal relation between socioeconomic status and food consumption still remains to be established. Given that socioeconomic determinants are likely to affect all aspects of energy

balance from access to healthy foods to opportunities for physical activity, there is a pressing need to address them directly in the context of epidemiologic research (Lallukka, Laaksonen, Rahkonen, Roos and Lahelman, 2007). It may well turn out the reported associations between food consumption patter and better health found in so many epidemiologic studies may have been confounded by unobserved indexes of socioeconomic status.

Purpose of the study

The general purpose of the study was to investigate the socioeconomic determinants of consumption pattern of vitamin A food sources by households in Aba South L.G.A of Abia state. Specifically, the study determined:

- the vitamin A foods sources produced and/or purchased by households in Aba South L.G.A
- the socioeconomic factors (determinants) that influence the household consumption pattern of vitamin A food sources by households in Aba South L.G.A.

Methodology

***Area of study*:** The survey was carried out in households in Aba South L.G.A of Abia State, Nigeria. Aba South L.G.A is located about 64Km from Umuahia the State Capital and the commercial nerve centre of the Southeastern States of Nigeria. It is situated between longitude 7^{o} 24′ and 8^{o} 21′ North and latitude 9^{o} 50′ and 10^{o} 31′ East of the equator with the central coordinate of 1200 meters South and 150 meters West. It is bounded on the North by the Aba North L.G.A., while on the East, it is bounded by Obingwa L.G.A., West and South, it is bounded by the Ugwunagbo L.G.A. Aba South L.G.A has 13 autonomous communities. It has about population of about 425,033. (NPC, 2006).

***Population of study*:** The target populations are the mothers and adolescent girls who prepare meals for their families in Aba South L.G.A of Abia state. The mothers and the adolescent girls were mostly students, civil servants, traders and had skilled jobs. They were those 15 years of age and above.

***Sample for the study*:** A total number of one hundred and sixty-five households were selected. A multi-stage random sampling technique was adopted. Firstly, five communities out of thirteen communities were randomly selected by balloting method without replacement. Thirty-five households in each of the communities were selected using data from the Local Government Area Housing Authority. In the households where the mothers were not present, adolescent girls in those households were used for the study.

***Instrument for Data Collection*:** The instrument for data collection was a structured questionnaire. It was developed based on the purpose of the study and intensive review of literature. Four (4) academic staff of Department of Home Science, Nutrition and Dietetics in the University of Nigeria, Nsukka validated the questionnaire.

Data Collection and analysis technique

One hundred and sixty five copies of the questionnaires were distributed by hand to the respondents. The illiterate homemakers were assisted in interpretation of the questionnaire. All the 165 copies of the questionnaire were retrieved after completion. Food composition table was used to classify the Vitamin A food sources to its varying level of constituents. The data were analyzed using frequency, percentages, means and one way analysis of variance (ANOVA). The means were calculated based on the consumption profile (once, 2-3 times, 4-6 times and > 6 times per week) of the households for each of the food items.

Findings

The following findings were made:

(i) Demographic characteristics of respondents (Tables I and 2)

(ii) The vitamin A food sources produced and/or purchased by households (Table 3)

(iii) Socioeconomic factors (determinants) of household consumption pattern of vitamin A food sources by households

Demographic characteristics of respondents

Table 1: Age, sex, religion, ethnic group and marital status of the subjects

	Frequency	Percentage
Age (Years)		
15-24	30	18.1
25-34	75	45.7
35-44	34	20.6
45-above	26	15.6
Total	**165**	**100.0**
Ethnic Group		
Yoruba	3	1.8
Igbo	160	97.0
Others, Efik	2	1.2
Total	**165**	**100.0**
Marital Status		

Married	99	60.0
Single	57	34.6
Widowed	7	4.2
Separated	2	1.2
Total	**165**	**100.0**
Religion		
Christianity	160	97.0
Traditional religion	5	3.0
Total	**165**	**100.0**

Table 1 shows that about 46% of the respondents fell within the age range of 25-34 years, 20.6% fell within 35-44 years, 18.1% fell within 15-24 years, and 15.6% fell within 45 years and above. Nearly, 100% of the subjects were Igbo. More than half (60.0%) of the respondents were married, 34.6% were single, 4.2% were widowed and 1.2% were separated. Majority of the respondents (97%) of the subjects were Christians and 3% were traditionalists.

Table 2: The Socio-economic status of the Subjects

	Frequency	**Percentage**
Education		
No education	7	4.2
Primary School completed	8	4.8
Secondary School Completed	30	18.2
OND/NCE	107	64.8
HND/B. Sc	13	8.0
Total	**165**	**100.0**
Occupation (Breadwinner's employment		
Skilled job	21	12.7
Unskilled job	8	4.8
Unemployed	8	4.8
Civil servant	104	63.0
Trader	20	12.1
Farmer	2	1.2
Pensioner	2	1.2
Total	**165**	**100.0**
Household size		
1-3	45	27.2

4-6	81	49.1
7-9	24	14.6
10-above	15	9.1
Total	**165**	**100.0**
Income range (breadwinner) ₦		
Less than 10,000	24	14.6
10,000-30,000	85	51.4
31,000-69,000	32	19.4
70,000 and above	24	14.6
Total	**165**	**100.0**

From Table 2, 4.2 % of the respondents had no education, 4.8% attended primary school, 18.2% completed their secondary school, and 64.8% had OND/NCE, while 8.0% had HND/B.Sc. Some 63.0% of the respondents were civil servants, 12.7% had skilled jobs, 4.8% each had unskilled jobs and unemployed respectively, 12.1% were traders and 1.2% was farmers and pensioners. Some 49.1% of the respondent's household size was 4-6 members, 27.2% had 1-3 members, 14.6% had 7-9 members and 9.1% had 10 and above household members, (Table 2). Slightly more than half (51.4%) of the breadwinners earned between ₦10, 000 and ₦30, 000 per month, 19.4% earned between ₦31, 000 and ₦69, 000. Another 14.6% each earned between ₦70, 000 and less than ₦10, 000 respectively (Table 2).

Vitamin A Foods produced/purchased and partly produced/purchased

Table 3: Distribution of the household subjects in relation to Vitamin A foods produced, purchased and partly produced and purchased.

Lists of foods	**Produced (%)**	**Purchased (%)**	***PPP (%)**
Carrot [a]	6.1	87.1	3.1
Spinach [a]	17.8	54.0	2.5
Bitter leaf [a]	35.0	50.0	5.5
Garden egg leaf [a]	22.1	60.1	5.5
Water leaf [a]	25.8	58.3	*7.4*
Pawpaw [a]	21.5	64.4	*9.2*
Whole egg [a]	2.5	83.4	3.1
Liver [a]	1.2	84.7	1.2
Average/Mean[a]	**18.5**	**65.5**	**4.7**
Pumpkin [b]	22.7	65.6	6.8

Tomatoes [b]	5.5	89.9	3.6
Average/Mean[b]	**14.1**	**77.8**	**5.2**
Red pepper [c]	4.3	85.3	7.4
Green pepper [c]	6.1	80.4	1.8
Mango [c]	12.9	69.3	11.0
Orange [c]	21.5	68.1	8.6
Guava [c]	16.0	66.3	4.9
Banana [c]	12.9	70.6	6.8
Avocado pear [c]	16.60	60.7	7.4
Local pear [c]	16.0	63.8	2.4
Cashew [c]	12.3	71.2	0.6
Watermelon [c]	11.7	74.9	1.8
Pineapple [c]	12.3	74.90	-
Fish [c]	-	98.9	1.2
Powdered skimmed milk [c]	-	84.1	-
Liquid skimmed milk [c]	-	74.9	0.6
Condensed skimmed milk [c]	-	54.6	-
Average/Mean[c]	**9.5**	**72.6**	**3.6**

***PPP** - Partly purchased and produced.

[a] represent foods of excellent vitamin A sources (>2000IU)

[b] represent foods of good vitamin A sources (between 1000IU-2000IU)

[c] represent foods of fair vitamin A sources(<1000IU)

Only a few (12.9%) of the subjects produced all their foods, while 70.8% purchased all their foods and 4.3% partly purchased and produced their food, (Table 3). Table 3 also shows that on the average, 9.5% and 72.6% of the respondents produced and purchased fair vitamin A food sources respectively. On the average, it also showed that 14.1% and 77.8% of the respondents produced and purchased good vitamin A food sources respectively and 18.5% and 65.5% of the respondents produced and purchased excellent vitamin A food sources respectively.

Socioeconomic factors (Determinants) of Household Consumption Pattern of Vitamin A Food Sources by Households

Table 4 Effect of household size on average consumption (ANOVA)

		Sum of squares	Df	Mean Square	F	Sig.
Average Consumption	Between Group	1.243	3	0.414	2.705	0.049
	Within Group	27.386	159	0.172		
	Total	28.386	162			

H_0: Household size had no significant influence on average consumption profile
H_1: Household size had a significant influence on average consumption profile
$\alpha = 0.05$
Since $F_{cal} = 2.705 < 2.60 = F_{tab}$, we did reject H_0 and conclude that household size had a significant effect on average consumption.

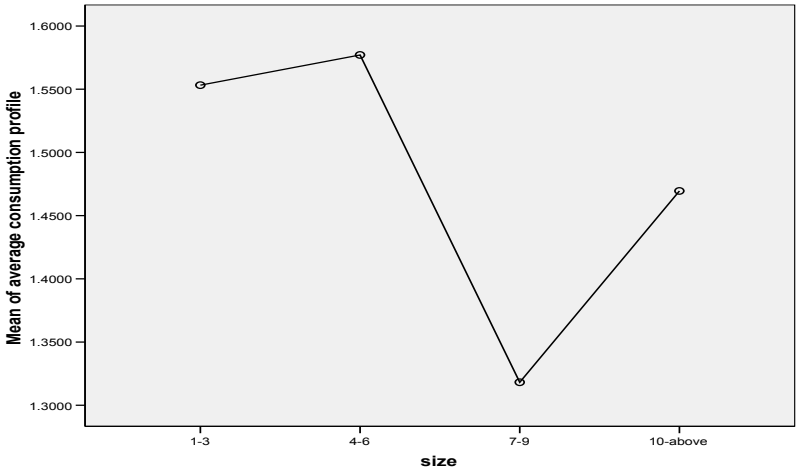

Fig. 1Effect of Household Size on Consumption profile

Interpretation: Households with smaller sizes were poised to consumption of vitamin A foods more often than those with small sizes.

Table 5: Effects of breadwinner's employment on average consumption profile

		Sum of squares	Df	Mean Square	F	**Sig.**
Average Consumption profile	Between Group	2.684	6	0.447	2.690	0.016
	Within Group	25.944	156	0.166		
	Total	28.628	162			

H_0: Breadwinner's employment had no significant influence on average consumption profile
H_1: Breadwinner's employment had a significant influence on average consumption profile
$\alpha = 0.05$

Since $F_{cal} = 2.690 > 2.10 = F_{tab}$, we rejected H0 at $\alpha = 0.05$ and concluded that breadwinner's employment had a significant effect on average consumption profile.

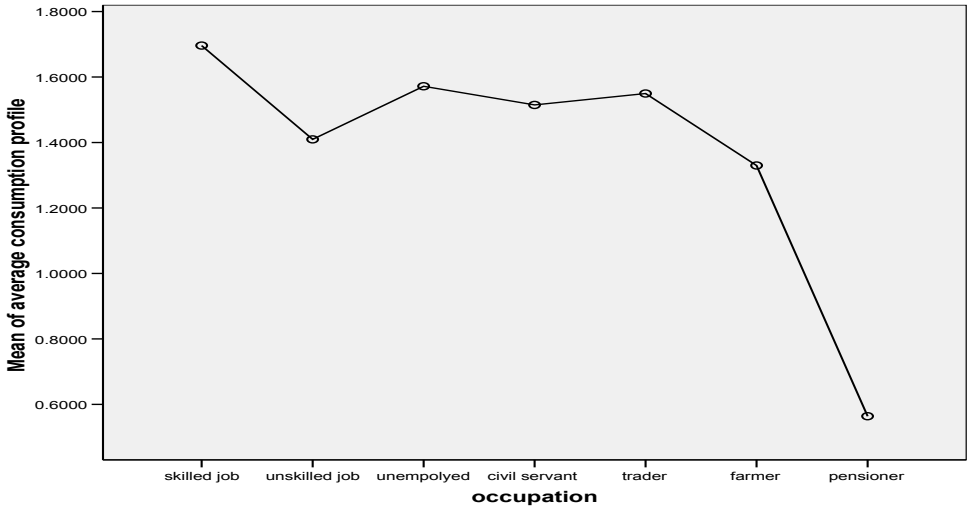

Fig. 2 Effect of Breadwinner's Occupation on Consumption Profile

Interpretation: All the occupations consumed vitamin A food sources more regularly than the pensioners.

Table 6 Effect of income level on average consumption profile

		Sum of squares	Df	Mean Square	F	Sig.
Average Consumption profile	Between Group	0.421	3	0.140	2.790	0.032
	Within Group	28.208	159	0.177		
	Total	28.628	162			

H_0: Income level had no significant influence on average consumption profile
H_1: Income level had a significant influence on average consumption profile
$\alpha = 0.05$

Since F_{cal} = 2.790 < 2.60 = F_{tab}, we did not reject H_0 at α = 0.05 and concluded that income level had significant effect on average consumption profile.

Table 7: Effect of Education on average consumption profile

		Sum of squares	Df	Mean Square	F	Sig.
Average Consumption profile	Between Group	0.531	5	0.113	0.890	0.653
	Within Group	28.208	157	0.181		
	Total	28.739	162			

H_0: Education had no significant influence on average consumption profile
H_1: Education had a significant influence on average consumption profile
α = 0.05
Since F_{cal} = 0.890 < 2.60 = F_{tab}, we did not reject H_0 at α = 0.05 and concluded that education level had no significant effect on average consumption profile.

Discussion

It was not a surprise to observe that the subjects were unskilled to skilled from all walks of life. Aba is a business town in Abia State as such it is imperative that the subjects that live in Aba will include both skilled and unskilled labour according to their qualification. Abia State has Igbo as its major language as such the 97.6% of the subjects that were Igbo was expected. The high percentage of Christians (98.2%) and high percentage of subjects that acquired primary, secondary and post secondary education (92.0%) was due to introduction of Christianity and education by the early European Missionaries, especially those from Ireland and England.

The result showed that 14.1% and 77.8% of the respondents produced and purchased good vitamin A food sources respectively and 18.5% and 65.5% of the respondents produced and purchased excellent vitamin A food sources respectively. A greater percentage of the subjects purchased the rich sources of vitamin A foods which affected the availability and consumption pattern of these foods in their households. Households with poor purchasing power in Aba community will precipitate the low consumption of vitamin A rich foods which will lead to low serum levels. Bloem and Daraton-Hill (2007) reported that differentials in income levels were not reliable for prediction of risk of vitamin A deficiency, however, it provides the basis in

which vitamin A deficiency clusters within households and communities.

The household size adversely affected consumption profile and hence money spent weekly on some vitamin A rich foods. The households that had small size consumed more vitamin A rich foods, than large size households. This might be because most of these food sources were purchased and larger household sizes will find it more difficult to purchase enough than those that had smaller size and consequently will consume less. Household size has been shown to affect the nutritional status of households (Ong, 1997). Another study also showed that household size can result in certain individuals receiving disproportionately more or less of the household food supply (Shankar *et al.*, 1998).

The employed breadwinners consumed more vitamin A rich foods than the pensioners probably because they were paid more regularly than the pensioners. In addition to low purchasing power, the pensioners were aged. Aging is known to affect structure and functions of digestive systems. The oral cavity, loss of dentition, decreased saliva secretion and peristaltic motility through the entire gastrointestinal tract caused low consumption of vitamin A foods. These observations were confirmed by Barba, Bowman and Robert (2001)

The result showed that the income level did affect the consumption of vitamin A among the households. This is in agreement with the observation of another study done in Nepal where income levels of households affected the consumption of vitamin A. (Popkin, 1994). The promotion of high cost foods to low-income people without taking food costs into accounts is not likely to be successful. Food costs are a barrier to the adoption of nutrient-densed diets especially by the lower income groups (Jetter and Candy, 2005). One recent study based on the US Department of Agriculture Thrifty Food Plan reported that the cost of substituting healthier foods such as vitamin A rich foods can cost up to 35-40% of a low-income family's budget (Jetter and Candy, 2005). Other studies have shown that food costs are an obstacle to increasing consumption of vegetables and fruits which are rich sources of vitamin A (Nicole and Adams, 2008)

It was also revealed that the education level did not affect the consumption of vitamin A among the households. One UK study revealed that education of the subjects showed little or no differentiation in their consumption pattern. Similar observations were made in Canada and in France where all the subjects had similar consumption pattern irrespective of

their levels of education (Nicole and Adams, 2008).

Conclusion

This paper provided data on the vitamin A food sources and its consumption pattern in Aba South L.G.A. Some food items such as carrots, spinach, bitter leaf, garden egg leaf, water leaf, pawpaw and whole eggs were identified as excellent vitamin A food sources. The study also shows that some factors such as the household size, breadwinner's employment and income level affected the consumption profile of vitamin A food sources.

Recommendations

1. Acceptance, compliance and behavior change in families must be encouraged among targeted beneficiaries for prevention programmes to be successful e.g. home gardening.
2. Planning, organization, logistics and political will are imperative to launch and sustain programmes at community level.
3. Effective policy, funding and legislation are mandatory to enact national programmes on vitamin A deficiency.
4. Preservation of fruits and vegetables all year round using appropriate food processing method will be an efficient way of preventing vitamin A deficiency.

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