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CONSUMPTION OF LEAFY VEGETABLES IN RURAL HOUSEHOLDS IN IJEBU-IGBO, OGUN STATE, NIGERIA

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ABSTRACT

Problem of low consumption of vegetables by all in order to alleviate nutrition-related diseases is still unresolved. This study investigated the pattern of consumption of leafy vegetables among the inhabitants of Ijebu-Igbo enclave in Ogun State, Nigeria. The instrument of data collection was interview schedule used to collect information from 175 respondents sampled through simple random sampling technique from five quarters in the locality. The head of the household was interviewed and question items ranged from socio-economic characteristics of respondents to handling of and type of leafy vegetables consumed, and awareness of the importance of consumption of these vegetables. Consumption of leafy vegetables which was the dependent variable was measured on an eight point scale. Both descriptive and inferential statistics were used to analyze the data. The descriptive statistics involved frequency tallies, percentages and averages while the inferential statistics used was chi-square analysis (X^2). The results showed that most (74.9%) of the respondents were literate, having secondary education and above, mostly (69.1%) females, married (56%) and predominantly Christians (74. 3%). They were mostly (37%) traders and (22%) farmers. The level of vegetable consumption was low, an average of 1.57 times weekly in the study area with 'Ugwu' being most preferred over other vegetables which were celosia, waterleaf, amaranthus and okra leaf. Only 35.4% of the respondents consumed vegetables adequately but not properly handled or prepared. This is only 31.4% of the recommended intake of 5 times daily. Only 9.1% of them adopted the most appropriate method of preparation and handling of vegetables for maximum absorption of nutrients but the closest method to the recommended method was adopted by most (42%). The results of the hypotheses testing at 95% confidence level showed a significant relationship between marital status (x^2=0.26), religion (x^2=0.94), awareness level (x^2=0.96) and consumption level. The study, therefore, recommended a more strategic awareness-raising campaign and nutrition education to agricultural extension and rural development agencies in order to influence people's behaviour in making vegetables consumption a lifestyle in the study area.

Key words: consumption, leafy vegetable, rural household

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INTRODUCTION

Nutrition deficiency can occur in any country where food supplies are inadequate or adequate. Under-nutrition, vitamin and mineral deficiencies, obesity and other diet-related diseases are world notorious diseases affecting the health status of many citizens in many countries. Non-consumption of vitamin A rich food sources like green leafy vegetables among others causes reddened eyes, dry eyelids, retarded growth, weakened respiratory systems, high infants and maternal mortality, mental retardation and learning disability in human beings [1,2, 3,4]. Interestingly, there is increasing evidence that consumption of vegetables is capable of solving these precarious nutrition-related diseases in the world [5]. However, it is crucial that people are knowledgeable about how best to make use of their resources to ensure nutritional wellbeing.

Generally, vegetables contain high protective substances which are meant for the development and proper functioning of bodily organs. Leafy vegetables from a wide variety of plants including potherbs, green vegetables, green or leafy greens are eaten as vegetables. Nearly one thousand species of plants range from short-lived herbaceous plants such as Lettuce, Spinach, woody plants such as Aralia to fodder crops which include alfalfa, wheat and barley with edible leaves are known [5]. They can be grown in pots, plastics, as home garden to make them available and accessible.

Leafy vegetables are typically low in calories, low in fat, high in protein per calorie, high in dietary fiber, high in iron and calcium and very high in phytochemicals such as vitamin C, carotenoids, lutein, folic acid and other anticarcinogenic compounds such as dithiolthiones extra.[5]. The high level of dietary fibre allows potentially harmful substances to be moved through the intestinal tract and help to lower blood cholesterol levels [6**,** 7]. They complement those cereals and tuber crops with lysine from pulses and methioine from leafy vegetables [8]. They have a wide range of health benefits. Hence, the importance of vegetables in diet cannot be overemphasized, for maintaining good health, fighting diseases and building body immunity, preventing nutrient deficiency disorders like obesity and reducing the risk of cardiovascular diseases [7]. Despite the dietary guideline recommendation of consuming five servings of vegetables of 80g per day, most people are consistently not reaching even half of this requirement **[**6, 9, 10]. The World Health Organization (WHO) attributes approximately 3 million deaths a year from non-communicable diseases to inadequate consumption of vegetables [9]. A report of a study conducted in Ijebu North Local Government Area of Ogun State in 2002stated that non-consumption of vitamin A rich food sources like green leafy vegetables caused reddened eyes, dry eyelids, retarded growth, weakened respiratory systems, high infants and maternal mortality, mental retardation and learning disability in human beings [4]. In developing countries like Nigeria, the most important way of sustainably solving Vitamin A deficiency problems at the resource-poor household`s level is by encouraging improved production and consumption of vitamin A rich indigenous food items like green leafy vegetables[4]. Deliberate consumption of vegetables regularly is essential for improving health status of the people. There is,

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therefore the need to investigate vegetables consumption in order to ascertain the level of consumption. In line with the foregoing, the study therefore assessed consumption of leafy vegetables in rural households in Ijebu-Igbo, Ogun State.Nigeria.

The objectives were to investigate the social and personal characteristics of the respondents, awareness of importance of vegetables consumption and ascertain methods of preparation, types/dishes of vegetables consumed in the study area.

Hypotheses

Ha^1: There is significant relationship between some selected personal characteristics and vegetables consumption.

Ha^2: There is significant relationship between awareness level and consumption level of vegetables in the study area.

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METHODOLOGY

The study was conducted in Ijebu-Igbo, the seat of the Ijebu-North Local Government Area of Ogun State, Nigeria. Agriculture is the dominant occupation of the inhabitants of the area.

Sampling technique and sample size

Using a systematic sampling technique, the area was stratified into five (5) quarters and thirty-five (35) households were randomly selected from each of the five (5) quarters in Ijebu–Igbo. The head of each household was interviewed. In all, one hundred and seventy five (175) respondents represented the sample size for the study.

Measurement of Variables

The instrument of data collection was interview schedule which consisted of questions ranging from personal and socio-economic characteristics to types of, handling and consumption of leafy vegetables. Consumption level was measured by considering the consumption of the five (5) most important leafy vegetables in the study area namely: Ugwu, celosia, water leaf, amaranthus and okra leaf, though there are other traditional vegetables that are not as popular. Responses on weekly consumption were placed on an 8-point frequency scale of everyday (7) to six times weekly (6), five times weekly (5), four times weekly (4), thrice weekly (3), twice weekly (2), once weekly (1) and half to seldom. The data were grouped into low, average and high consumption levels.

Method of Data Analysis

The data were analyzed using descriptive statistics such as frequency counts, percentages, and means. The inferential statistics was chi square analysis (X^2) at 95% confidence level, Average weekly consumption was calculated by multiplying average daily calculated consumption of 100g during the rainy season and 50g and during the dry season with the corresponding frequencies and divided by the total number of respondents as described by Akinbile & Ndaghu [11]. The results were categorized into three: low, average and high levels of consumption.

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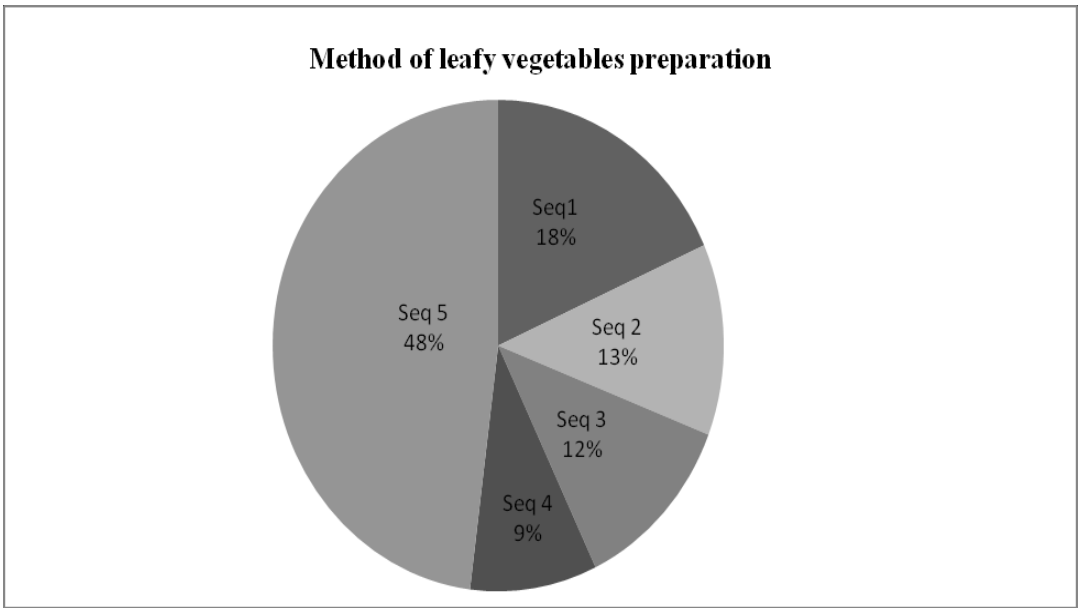
RESULTS

The socio-economic characteristics of respondents as shown in Table 1 reflected higher percentage of females (69.1%) than males (30.9%) with the majority married (56.0%) and 74.9% attained an educational background ranging from completed primary education to tertiary education. Higher percentages (37.1%) of the respondents were traders while just 22.9 % practised agriculture as their occupation. Christianity is the dominant (74.3%) religion practised among the respondents (Table1).

There were five different preparation methods of leafy vegetables in the study area, these are presented in Figure1. The various methods used by the majority (80.9%) of the respondents included Sequence 1, 2, 3, and 5 while sequence 4 was the least used (9.1%) in the study area. The preference for leafy vegetables is shown in Table 2. Ugwu was (46.3%) preferred. The awareness of the importance of leafy vegetables in the diet was high (64.0%). At 0.05 degree of significance, there was a significant relationship between selected variables such as marital status, religion and consumption. Also, a significant relationship was established between awareness level and consumption (Table3).



KEYS

Seq1: Cutting into smaller sizes, over-washing, squeezing, soaking in water and long cooking

Seq2: Cutting into smaller sizes, over- washing, over-boiling, soaking in water, and long cooking

Seq3: Rinsing, cutting into smaller sizes, boil slightly and long cooking

Seq4: Rinsing, cutting into bigger sizes, no boiling and steaming for few minutes

Seq5: Rinsing, cutting into smaller sizes and cook for few minutes.

Figure 1: Respondents' method of leafy vegetables preparations

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DISCUSSSION

Some methods of vegetables preparation (Sequence 1, 2, 3, and 5) have been found to reduce uptake of adequate nutrients by increasing loss of nutrients and preventing availability of water-soluble nutrients However, the proper handling method of vegetables preparation is rinsing, cutting to bigger sizes, no boiling but steaming for few minutes [12]. This proper handling method is illustrated in Seq4 and was adopted by only 9.1% of the respondents. Though the method closest to the recommended method was adopted by most (48%) of the respondents, that is cutting to smaller bits and boiling for few minutes, This may be due to people's preference for vegetables being eaten as tiny pieces rather than for nutritional value. It can be implied from these results that there was inadequate knowledge about how best to prepare vegetables for minimum loss of water-soluble nutrients, in spite of the high literacy level suggesting a tendency for the people to be knowledgeable about the importance of consuming leafy vegetables.

The high consumption of Ugwu as compared to other vegetables could be related to the belief that it supplied blood and can therefore be substituted for blood tonic. Incidentally, Ugwu has been particularly confirmed to be rich in iron and protein [8]. However, the varieties consumed seemed inadequate as compared to the campaign for daily consumption of different varieties per day. This was supported by a report that consumption of varieties of leafy vegetables aids absorption and utilization of some chemical compounds due to their dependency on each other for metabolism [13].

Table 2 shows the consumption of vegetables in the household per week. The estimated average consumption is 1.57 times weekly, implying less than twice per week. This average is far below the recommended 5 servings per week [6].This is only 31.4% of the recommended weekly consumption.

The consumption level is therefore very low. Consequently, only 35.4% of the respondents consumed adequate amounts of vegetables.

All the respondents (100.0%) consumed leafy vegetables in form of vegetable soup while other dish types were hardly prepared by respondents. It is not unlikely those other preparations of leafy vegetables were not known or that there was lack of knowledge about how they could be prepared. Having adequate knowledge of preparing leafy vegetables into different dishes is likely to promote consumption of leafy vegetables. It is plausible for awareness to culminate into consumption as expected. This was not so in this study as confirmed by a report that increasing public consumption of vegetables remained a challenge despite the high awareness level [6]. Raising people’s interest is likely to spur them into taking conscious and favourable actions toward vegetables consumption.

Table 3 shows the results of the Chi-square analysis between selected socio-economic variables, awareness level and consumption. It could be inferred from the results that married people were more likely to consume leafy vegetables than the singles. This is

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probably so because of the responsibilities expected of the married couples especially women to prepare adequately nutritious food for their households at cheaper cost in which leafy vegetables would likely be preferred. There is a strong association between religious beliefs of people and consumption of leafy vegetables in the study area. The more people are aware of the importance of eating leafy vegetables, the more likely they consume them.

CONCLUSION/RECOMMENDATION

The study revealed low consumption level of leafy vegetables in the study area. Consumption of Ugwu variety of leafy vegetables in form of pot herb was preferred as people believed that it helped boost blood supply. Marital status and religion influence consumption of leafy vegetables as well as level of awareness. The study recommended a strategic awareness–raising campaign to influence the behaviour of people and nutrition education to increase knowledge of nutritional value of leafy vegetables and to develop personal skills and motivation to habitually consume leafy vegetables to stay healthy at all times.

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Table 1: Personal and Socio-economic characteristics of respondents

Characteristics	Frequency	Percentage	Cumulative percentage
Sex			
Male	54	30.9	30.9
Female	121	69.1	100.0
Marital status			
Single	77	44	44.0
Married	98	56.0	100.0
Level of education			
No formal education	30	17.1	17.1
Primary education	49	28.0	45.1
Secondary education	35	20.0	65.1
Tertiary education	61	34.9	100.0
Occupation			
Farming	40	22.9	22.9
Civil servant	13	7.4	30.3
Self-employed	37	21.1	51.4
Teaching	20	11.4	62.9
Trading	65	37.1	100.0
Religion			
Christianity	130	74.3	74.3
Islam	44	24.1	99.4
Traditional	01	0.6	100.0

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Table 2: Distribution of respondents by type &frequency of leafy vegetables consumed

Variety	Frequency	Percentage	Cum. Percentage
Ugwu	81	46.3	46.3
Celosia	47	26.9	73.2
Water leaf	24	13.7	86.9
Amaranthus	20	11.4	98.3
Okra leaf	03	1.7	100.0

Consumption (weekly)	Frequency	Percentage	Cum. Percent
Once	43	21.6	24.6
Twice	35	20.0	44.6
Thrice	20	11.4	56.0
Four times	10	5.7	61.7
Five times	2	1.1	66.9
Everyday	*3*	1.7	64.6
Seldom	62	35.4	100.0

Respondents' level of awareness of importance of leafy vegetable consumption

Awareness level	Frequency	Percentage	Cum. Percent
High (35>)	38	21.7	21.7
Average (26-35)	112	64.0	85.7
Low (<25)	25	14.3	100.0

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Table 3: Relationship between selected variables and consumption of leafy vegetables

Variables Consumption level	Chi-square Calculated	Chi-square Tabulated	Deg. Of freedom	Contingency Co-efficient	D.
Selected personal characteristics					
Level of education	0.098	1.64	6	0.024	Ns
Occupation	0.419	1.64	6	0.049	Ns
Marital status	0.256	0.103	2	0.038	S
Religion	0.940	0.711	4	0.073	S
Sex	0.006	0.103	2	0.006	Ns
Level of awareness					
Awareness level	0.962	0.711	4	0.073	S

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REFERENCES

1. **Taylor OA** Utilization of Vegetables, Proceedings of the National Workshop on Fruits and Vegetable seedlings Production. FMST Ibadan, 1987. 111-113.
2. **Ayorinde AA, Adedoyin SF and BA Balogun** Home Garden **:** its relevance to family nutrition and food security. Oyo State Household Security and Nutrition Programme (HFSN) Secretariat, Ibadan. Nigeria. 1991 p5.
3. **World Bank** Enriching Lives**:** Overcoming Vitamin A and Mineral malnutrition in Developing Countries. International Bank for Reconstruction and Development. World Bank Publication Washington DC. 1994 73pp.
4. **Adedoyin SF, Karim OR and OM Aina** Socio,economic Factors impeding the Consumption of Vitamin A Rich foods. *Ogun J.of Agric.Scs.*2002 *;***II:** 142-150.
5. **Wikipedia Encyclopedia**. Leafy vegetables ; *http://en.wikipedia.org/wiki/Leaf_vegetble accessed on 18-07-2009.*
6. **Food and Agriculture Organization** (FAO) Increasing fruits and vegetable consumption become a global priority. FAO's Food and Nutrition Division, 2003 *http://www.fao.org/english/newsroom/focus/index.html accessed on 18-07-09.*
7. **Peeters PHM** Consumption of vegetables and fruits and risks of breast cancer *The J.of Am.Med.Ass.*2005;**293**(**2**) http://jama.ama.assn.org/cgi/collection/breast_cancer *accessd on 18-07-2009.*
8. **Messsiaen CM** *The tropical vegetable garden* 2nd revised ed. Macmillan Press Limited, London. 1992; 357-365.
9. **Food and Agriculture Organisation** (FAO) Promoting nutritionally adequate diets for all people is major aim of FAO 2009; http://www.fao.org/ag/human nutrition /nutrition education/8915/en/accessed on 13-07-2009.
10. **Biing-Hwan L, June R and L Gary** U S Fruit and vegetable consumption: Who What Where and How much? 2004; Agriculture information Bulletin No (AIB792-2) 22pp *http://www.ers.usda.gov/Publicatios/aib792/aib792-2/aib792-2.pdf,accessed18-07-2009.*
11. **Akinbile LA and AT Ndaghu** Access to extension and poverty alleviation strategies of farm families in Adamawa State, Nigeria *J. of Agric.Ext., 2005; **8:*** 1-6.
12. **Muoehlhoff E** Preparing fruits and vegetables FAO's Food and Nutrition Division 2003; *NEWSROOMFOCUS*. *http://www.fao.org/english/newsroom/focus/index.html* accessed on 18-07-2009.
13. **Clay WD** Get the best from your food FAO's Division Programmes Services 2003; http://www.fao.org/ag/humannutritio/nutritioeducation/48915/en/ accessed on 13-07- 2009.