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Level of Awareness on the Nutrient Contents and Utilization of *Moringa Oleifera* in Oyo State, Nigeria

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Abstract

One of the problems of malnutrition is not only having access to the right foods but also knowing the nutrient contents of foods and consumes them in the right proportion. This study assessed the level of awareness on the nutrient contents and utilization of Moringa oleifera among urban dwellers in Ibadan metropolis Oyo State. One hundred and twenty (120) respondents were selected using snowball sampling techniques while information were obtained using interview schedule and structured questionnaire. The result revealed low level of awareness (54.2%) on nutrient contents of Moringa oleifera which consequently influence its utilization. Respondents' level of awareness on nutrient content of Moringa oleifera is significantly related to their utilization of ($r = 0.451$; $p<0.005$).The study concluded that there is low awareness on nutrient contents of Moringa oleifera which subsequently affect its utilization. Adequate awareness of its richness in vitamins, calcium, protein and other essential nutrients and its medicinal properties will increase consumption of Moringa oleifera.

Keywords: Awareness, Vitamin C, Calcium, Protein, Medicinal value, Utilization.

Introduction

Moringa oleifera is a food security and nutrition crop as well as a poverty reduction crop in the sense that it is also a source of income generation when processed in diverse forms. Both rural and urban dwellers often have poor access to nutritious foods, they cannot afford and utilize nutritional foods, and this is often due to low awareness level, which will invariably lead to low level of utilization of foods with high nutritional value, and consequently, resulting in low immunity level of the blood and the rate of combating diseases and infections will be low too.

Food contains nutrients, which constitutes nourishing substances like minerals, protein and vitamins, which help to fight against diseases in the human body, boost immunity and generally aid growth. These nutrients can be obtained from various classes of food like Carbohydrates (rice, yam), which gives energy to the body; Protein (beans, egg), which helps in the repair of worn-out tissues in the body; Vitamins and Minerals (onions, leafy vegetables) which helps to boost the

immunity of the blood against infections; Water, which aids metabolic processes in the body and also helps to excrete waste products in form of sweat and urine; Fats & Oil (coconut, butter, groundnut), which supplies heat and energy to the body and also supplies body fats. Food nutrition, therefore, according to Thesaurus dictionary (2009) is the process of absorbing nutrients from food and processing them in the body in order to keep healthy and also to grow. Getting adequate food implies that, one is able to consume food that contains all the food nutrients in correct proportion, and so we can infer that one is food secure. Food security is defined as 'situation whereby there is access to food, particularly for the poor, food availability, and enhancement of stability of food supplies', (Anderson, 2009). That is to say that, food security is said to exist in a family or household when all members have assured access at all times to adequate food needed for a healthy life. Specifically, adequate utilization of food nutrients will ensure adequate nutrition, be it of a rural or urban dweller. Most people are perceived to consume food generally to avert hunger, grow strong and have energy to do their day-to-day activities only. Often times, they do not know what it means to combine food materials in order to obtain a healthy and adequate diet, they do not understand the different classes of food and they usually end up taking the same classes of food over and over again, which could lead to stunted growth and other health risks in the body.

Scientific research shows that, gram for gram; *Moringa oleifera* leaves contain 7 times the vitamin C in oranges, 4 times the Calcium in milk, 4 times the vitamin A in Carrots, 2 times the protein in milk, and 3 times the potassium in bananas. Moringa *oleifera* leaf Powder, according to research, will give a child the following recommended daily allowances: protein 42%, Calcium 12.5%, Magnesium 61%, Potassium 41%, Iron 71%, Vitamin A 27.2% and Vitamin C 22%. These numbers are particularly outstanding, considering that this nutrition is available when other food sources may be scarce (Donovan, 2007). *Moringa oleifera* leaf boosts one's energy in a natural manner, and is a remarkable source of nutrition. This energy promotion does not happen because of sugar, so it lasts for a long time. Another property of the *Moringa oleifera* leaf is its soothing ability, because it can lower blood pressure and promote good sleep. Until now, various laboratory researches have confirmed that *Moringa oleifera* is a natural energy booster, strengthens the immune system, has antibiotic properties, cures headaches, migraines, asthma, and ulcers, the skin problems are restored, reduces arthritic pains and inflammations, controlled blood pressure, and restricted tumor growths and have stronger defenses against diseases. In the field of medicine, it has been found that *Moringa oleifera* can help to prevent common killer diseases like hypertension and diabetes and has become the poor man's prophylaxis against malaria and some common ailments. *Moringa oleifera* can also detoxify the body given its ability to

purify water by attaching itself to impurities and harmful bacteria and allowing them to be expelled as a waste. It can also purify water since it has a detoxifying effect. Also a coagulant agent, *Moringa oleifera* can attach itself to hazardous bacteria and other materials, a process that is surmised to occur in the body too. The happy outcome is more sustained energy without any over-activity, balanced hormone and gland system, controlled blood pressure and a rested nervous system.

Moringa oleifera leaf has no proven bad effects and is absolutely safe and organic. Because of its tolerant properties, it has often been given to malnourished little babies in Africa. Athletes all over the world often boost their performance abilities by taking huge quantities of the leaf to keep them fit both mentally and physically. Even for senior citizens who are losing their sharpness of mind, the *Moringa oleifera* tree leaf could be a great help. In fact, the powder is suitable for people from any age group. Few foods, like *Moringa oleifera*, are known to contain all essential amino acid, hence, the importance of a complex, rich diet. The 9 essential amino acids are: histidine, isoleucine, leucine, lycine, methonine, phenylalanine, threonine, tryptophan and valine. *Moringa oleifera* 's essential amino acids presence and digestibility scores are more than adequate when measured against the standards of World Health Organization (WHO), Food and Agriculture Organization (FAO) and United Nations Organization (UNO) for small children, the most at-risk population group when it comes to protein in food. Commonly known in the English language as the Ben oil tree, the horseradish tree, or the drumstick tree, *Moringa oleifera* belongs to the plant family *Moringaceae*. In Nigeria, it is called *Ewe igbale*, in Yoruba; *Rimin turawa, Zogale*, or *Zogalla-gandi* in Hausa; and *Odudu oyibo, Okochi egbu, Okughara ite,* Uhe in Ibo.

There is a growing global interest in the use of *Moringa oleifera* to address malnutrition because it is readily available and inexpensive. In Africa, it has become popular as a locally produced nutritional supplement for individuals infected with the Human Immune-Deficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) virus. Nursing mothers have shown to produce far more milk and malnourished children gained more weight after the leaves were added to their diets (Guardian, 2009). However, the awareness and rate of utilization in Nigeria is very low. This is why this study is being carried out, so as to determine the awareness level of *Moringa oleifera* nutrient contents and the rate of its utilization.

Objectives of the study

The general objective of this study was to determine the awareness of the nutrient contents and utilization of *Moringa oleifera* among urban dwellers in Ibadan metropolis.

The study:

1.) identified the personal characteristics of the respondents in the study area

2.) ascertained the awareness of nutrient contents of *Moringa oleifera* among the respondents in

the study area.

3.) determined the utilization of *Moringa oleifera* by the respondents in the study area.

Hypotheses of the study

Ho_1: There is no significant relationship between the personal characteristics of the respondents and utilization of *Moringa oleifera*.

Ho_2: There is no significant relationship between respondent's awareness on nutrient contents of *Moringa oleifera* and utilization.

Methodology

***Design of the study*:** The essence of research design in this study was to provide answers to research questions unambiguously. The steps involved in carrying out this study include:

i. data collection
ii. data analysis
iii. discussion of the results
iv. summary and recommendations

***Area of study*:** This study was carried out in Ibadan, Oyo State and the target population for this study includes all the urban dwelling in Ibadan metropolis. Ọyọ State is an inland state in south-western Nigeria, with its capital at Ibadan. It is bounded in the north by Kwara State, in the east by Osun State, in the south by Ogun State and in the west partly by Ogun State and partly by the Republic of Benin. Oyo State covers approximately an area of 28,454 square kilometers and is ranked 14th by size. The landscape consists of old hard rocks and dome shaped hills, which rise gently from about 500 meters in the southern part and reaching a height of about 1,219 metre above sea level in the northern part. Some principal rivers such as Ogun river, Oba, Oyan, Otin, Ofiki, Sasa, Oni, Erinle and Osun river take their sources from this highland. Oyo State contains a number of natural features including the Old Oyo National Park. The Climate is equatorial, notably with dry and wet seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0 °F), almost throughout the year. All kind of crops and trees are grown in Oyo State on subsistence and commercial basis including *moringa oleifera.*

***Population for the study*:** All the urban dwellers in Ibadan metropolis.

***Sample selection for the study*:** One hundred and twenty (120) respondents were sampled using snowball sampling technique, while data were gathered using interview schedule and well-structured questionnaire.

***Instrument for data collection*:** The questionnaire was divided into sections that measured the personal characteristics of the respondents, their awareness on the nutrient contents of *Moringa oleifera* and its utilization.

***Data collection and analysis technique*:** The data generated was analyzed with the use of appropriate statistical tools to give the descriptive statistics of the variables and the significance of relationships between independent and dependent variables. Pearson Product

Moment Correlation and Chi Square were used to test the hypotheses.

Findings of the study

Majority (83.4%) of the respondents fall between the ages of 26 years and 45 years. While, very few fall between the ages of 20 and 24 years (16.7%). This shows that the respondents are still in their active years and could still run around to get this *moringa* planted in their gardens. The table also shows that majority (65.8%) of the respondents are Christians, which indicated as the prominent religion among them. While thirty-four percent are Muslims. About 72.5% were married and very few were single. This is an indication that the respondents will be interested in anything that will improve the health status of the family members. Seventy percent of the respondents had one form of formal education or the other. The prominent occupations among the respondents were government employed (37.5%) and privately employed workers (35%) while very few of them are into business (19.2%) and farming (8.3%).

Table 1 Distribution of Respondents by their awareness of nutritional content of *Moringa*

S/N	Nutritional content of *Moringa*	Aware		Not aware	
		Freq	%	Freq	%
1.	*Moringa* contains 42% protein	28	23.3	92	76.7
2.	*Moringa* has 12.5% calcium	55	45.8	65	54.2
3.	*Moringa* contains 41% of potassium	68	56.7	52	43.3
4.	*Moringa* is rich in iron as high as 71%	50	41.7	70	58.3
5.	*Moringa* contains 22% Vitamin C	62	51.7	58	48.3
6.	*Moringa* contains 27.2% Vitamin A	15	12.5	105	87.5

Table 1 shows that more than half (56.7%) of the respondents were aware that *moringa oleifera* contains potassium, 51 percent were aware that *moringa oleifera* contains vitamin C. less than half (45%) of the respondents were aware that *moringa* contains calcium. An inference can be made that a larger percentage (76.7%) of the respondents are not adequately aware of the protein content of *moringa*. High percentage (87.5%) was not aware that *moringa* contain vitamin A. These high numbers that lack the knowledge may not want to consume *moringa* in any form. However, it is also possible for some to consume *moringa* without knowing the nutritional content. People who are adequately aware of *moringa* are likely to be well educated and cared to know the nutritional content of the food substances they consume or people who have one ailment or the other and are adequately aware of the healing properties of *Moringa*. Majority (54.2%) of the respondents had low level of awareness on the nutritional content of *moringa oleifera*. Few (25%) and (20%) of the respondents had average and high level awareness respectively. This is an

indication that awareness campaign on the nutrition value of *moringa oleifera* is crucial.

Table 2: Distribution of Respondents' by their usage of *Moringa*

Reason Utilization of *Moringa*	Yes		No	
	Freq	**%**	**Freq**	**%**
Consumption for food	38	31.7	82	68.3
Consumption for medicinal	29	24.3	91	75.8

Table 2 shows that majority (68.3%) of the respondents neither consume *moringa* as food nor for medicinal purpose (75.8%). These are set of people who are not aware of *moringa* as a food substance or are not aware of its rich nutritional content. The low percentage (31.7%) of the respondents indicated that they eat *moringa* are likely to be those who are adequately aware of nutrition contents *moringa* and while very few (24.2%) respondents also use *moringa* for medicinal purpose.

Hypotheses Testing

Ho 1. There is no significant relationship between the personal characteristics of the respondents and awareness of *Moringa oleifera*.

Table 3 PPMC Analysis between age and educational background of respondents' and their awareness of nutritional content of *Moringa*

Variables	r	P	Decision
Age	0.068	0.362	Not significant
Educational background	1.99	0.004	Significant

Level of significance p < 0.05 (significant)

Table 3 shows that there is no significant relationship between age (r = 0.068; p = 0.362) of respondents and their awareness of nutritional contents of *moringa* meaning that their age do not influence their awareness. There is a significant relationship (r = 1.99; p = 0.004) with their educational background which implies that the higher the level of education the more aware are the respondents on nutritional contents of *moringa*. The more educated ones have access to information than the less educated ones; they could have come across information on *moringa* through the internets, magazines and newspapers. It also implies that the more educated ones cares to know the nutritional contents of the food they consume which is of no importance to the less educated ones.

Table 4: Relationship between respondent's personal characteristics and their awareness of nutritional content of *Moringa*

Variables	Df	x^2 value	P-value	Decision rule
Sex	1	15.04	0.38	Not Significant
Marital Status	2	14.06	0.99	Not Significant
Occupation	3	15.63	0.34	Not Significant

Table 4 shows that there is no significant relationship between respondents' sex, marital status and occupation, and their awareness of nutritional content of *Moringa* as shown in this result (x^2 = 15.04, p =0.38), (x^2 = 14.06, p=0.99), (x^2 =15.63, p=0.34) respectively. This implies that sex, marital status of respondents and their occupation do not influences respondents' awareness of nutritional content of *moringa.*

Table 5: Correlation between respondents' awareness of nutritional contents of *Moringa* and their utilization

Variables	r-value	p-value	Decision
Respondents' awareness of nutritional content and utilization of *moringa*	0.4518	0.001	Significant

*significant p < 0.05

Table 5 indicates that the respondents' level of awareness of nutritional content is significantly correlated to their utilization of *moringa oleifera* (r = 0.451; p<0.001). This suggests that the utilization of *Moringa* by respondents is dependent upon their level of awareness of the various forms of nutritional contents of *moringa*. Hence, the more their awareness about the nutritional contents of *Moringa,* the more the consumption of *moringa*. Therefore, further efforts should endeavor to include creating more awareness about the nutritional contents of *moringa oleifera*.

Discussion of findings

The result revealed that majority (83.4%) of the respondents fall between the ages of 26 and 45 years. This indicates that the respondents are still in their active years and could still run around to get this moringa planted in their gardens, it also implies that the consumption will be sustained. Majority (65.8%) of the respondents are Christians, which indicated as the prominent religion among them, while others (34%) are Muslims. Majority (72.5%) of the respondents were married and very few were single. This is an indication that the respondents will be interested in anything that will improve the health status of the family members. Seventy percent of the respondents had one form

of formal education or the other. The prominent occupations among the respondents were government employed (37.5%) and privately employed workers (35%) while very few of them are into business (19.2%) and farming (8.3%).

More than half (56.7%) of the respondents were aware that *moringa oleifera* contains potassium, 51 percent were aware that *moringa oleifera* contains vitamin C. less than half (45%) of the respondents were aware that *moringa* contains calcium. An inference can be made that a larger percentage (76.7%) of the respondents are not adequately aware of the protein content of *moringa*. High percentage (87.5%) was not aware that *moringa* contain vitamin A. These high numbers that lack the knowledge may not want to consume *moringa* in any form. People who are adequately aware of *moringa* are likely to be well educated and cared to know the nutritional content of the food substances they consume or people who have one ailment or the other and are adequately aware of the healing properties of *Moringa*. However, majority (54.2%) of the respondents had low level of awareness on the nutritional content of *moringa oleifera*. Few (25%) and (20%) of the respondents had average and high level awareness respectively. This is an indication that awareness campaign on the nutrition value of *moringa oleifera* is crucial.

Conclusion

The study concluded that there is low awareness on the nutritional value of *moringa oleifera* which subsequently affected its utilization. Adequate awareness of its richness in vitamins, minerals, protein, essential nutrients and its medicinal properties will increase consumption of *moringa oleifera* for nutritional security. This will in no doubt grant an impetus to the nation's drive towards achieving the health–related Millennium Development Goals (MDG) for food and nutrition security and also increase source of income of people as there will be increase in cultivation of *moringa* which will also help to reduce the menace of poverty and malnutrition.

Recommendations

- Awareness should be created on the nutritional and medicinal contents of *Moringa oleifera* among rural and urban dwellers to increase its level of utilization.
- People should be encouraged to use *Moringa oleifera*, irrespective of their ages, educational and/ or marital status for sustainable food and nutrition security.

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