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Nutritional Knowledge, Attitude and Practice of People Living with HIV (PLWHIV) in Nigeria

Ethel E. Adimora[1], Eze E. Ajaegbu[1*], Juliet O. Nwigwe[1], Adaora L. Onuora[1] and Ola N. Onuoha[2]

[1]Department of Applied Sciences, Federal College of Dental Technology and Therapy, Trans-Ekulu, Enugu, Nigeria.
[2]Department of Home Science, Nutrition and Dietetics, University of Nigeria, Nsukka, Enugu, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Authors Ethel E. Adimora, Eze E. Ajaegbu and ONO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors Ethel E. Adimora and Eze E. Ajaegbu managed the analyses of the study. Authors Eze E. Ajaegbu, JON and ALO managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The purpose of this research was to investigate the influence of socio-demographic data on nutritional knowledge, attitude and practices among people living with HIV (PLWHIV) in Enugu State of Nigeria. A standardized questionnaire was designed to collect information on the socio-demographic characteristics, nutritional knowledge, attitude and practice of PLWHIV who attended the HAART centre at the Ntasi Obi Ndi No N'afufu Specialist Centre. Results showed that the respondents scored 65.6% on nutritional knowledge, 13.7% on nutritional attitude, and 54.9% on nutritional practices. The Bivariate analysis showed significant positive correlations between nutritional knowledge and attitude; nutritional knowledge and practices; and nutritional attitude and practices. Monthly income was seen as a common predictor for nutritional knowledge, attitude and practice; hence local foods should be included in their food chart for affordability and accessibility.

**Corresponding author: E-mail: ajaegbuee@yahoo.com;*

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1. INTRODUCTION

Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome (HIV/AIDS) being an infectious is a world problem. And this is a virus that attacks the immune system and leaves the person prone to infections and disorders. This leads to gradual destruction of the CD4+ T-cells in the body; and the part of the body's immune system that fight infections and some cancers [1,2,3,4].

The spread of HIV in Nigeria is complex and varies widely by region. For some states , the spread is more concentrated and driven by high-risk behaviors, while other states have more generalized spread that are sustained primarily by multiple sexual partnerships in the general population. The youths in Nigeria are vulnerable to HIV, with young women at higher risk than young men. Some risk factors contribute to the spread of HIV, including prostitution, high-risk practices among itinerant workers, high prevalence of sexually transmitted infections (STI), clandestine high-risk heterosexual and homosexual practices, international trafficking of women, and irregular blood screening [5].

HIV causes changes in nutritional status, including loss of appetite, weight loss and malnutrition. Hence, HIV can really compromise the nutritional status of infected persons and worsen the effects of the disease. Good nutrition is therefore necessary for good health and development. Better nutrition implies stronger immune system, better health and less illness [4, 6]. Healthy people are always stronger, more productive and able to create opportunities to gradually break the cycles of poverty and hunger in a sustainable way than unhealthy counter parts [4,7]. One will understand that personal nutritional status influences the impact of morbidity and mortality irrespective of the disease progress. Thus, adequate nutrition is important for the health and survival of all individuals regardless of HIV status. All people regardless of their level of education, social and economic status or geographical location therefore need nutrition education for better nutrition [4,8].

The knowledge and attitude of people towards nutrition are important factors of nutritional practices and are, thus, targets for appropriate planning of nutritional care programmes for people living with HIV (PLWHIV). Nutrition education enhances nutritional knowledge, thereby influencing attitude and practices towards adequate nutrition [9,10,11]. In Nigeria, we have limited information concerning nutritional knowledge, attitude and practices among people living with HIV. Therefore, the aim of this study was to examine the nutritional knowledge, attitude and practice and its influence on socio-demographic factors among people living with HIV in Enugu State of Nigeria.

2. METHODS

2.1 Respondents and Study Design

The study, which is a cross sectional survey, was conducted in Enugu metropolis, Enugu State, South Eastern Zone of Nigeria. Enugu is one of the commercial cities in the zone. The target population included both young and adults living with HIV who attended the HAART centre at the Ntasi Obi Ndi No N'afufu Specialist Centre. The age range of the PLWHIV included in the study was 11 years and above, who were constantly visiting the HAART centre within the time of the research.

Data on nutritional knowledge, attitude and practices were obtained using a standardized questionnaire. The questionnaire was designed to collect information on the socio-demographic characteristics, nutritional knowledge, attitude and practice of the respondents. Each of the sections contains its specific questions and scoring pattern. The nutritional knowledge was assessed using a scoring system based on responses to 16 nutrition-related questions with 2-point scale (1 implies yes and 0 implies no). The knowledge scores were expressed as percentages of total points of 16. The nutritional attitude was assessed using a scoring system based on responses to 15 items measuring attitude towards nutrition with a 3-point scale (1 implies agree, 2 implies don't know and 0 implies disagree). The attitude scores were expressed as percentages of total points of 15. The last part of the questionnaire was scored using 2-point scale (1 implies yes and 0 implies no). The practice scores were expressed as percentages of total points of 15.

The Statistical Package for Social Sciences (SPSS) version 21 was used to analyze the data. Descriptive statistics were utilized to assess the

frequency and data presented as mean ± standard deviation. The correlation between nutritional knowledge, attitude and practice and the socio-demographic data were determined using the Pearson's Product Moment Correlation Coefficient (significance level being $p<0.05$). Bivariate analyses were used to assess the relationship between nutritional knowledge, attitude and practice and the socio-demographic factors, while the regression analysis was carried out to assess the predictors of nutritional knowledge, attitude and practices.

3. RESULTS

Results shows that out of the 57 respondents used, 42.1% were males and 57.9% were females. Fourteen percent were business men, and the rest includes teachers (5.2%), students (3.5%), public servants (8.8%), drivers (3.5%), mechanics (1.8%), applicants (1.8%), self-employed (15.8%), retired (3.5%) and others (42.1%). Most of the respondents (89.6%) were Christians and the rest were Muslims and Traditionalists. The age range of the respondents was from 11 years and above, while majority of the PLWHA (35.1%) were aged 31-40 years. The results show that the PLWHIV was higher among respondents aged 31-40 years.

Close to half of the respondents were married (42.1%) and widowed (5.3%) respectively and 42.1% were single, the rest includes divorced (3.5%) and separated (7%). All the respondents had some form of education, with 68.4% having secondary education and the rest having tertiary education. The average monthly income of the respondents is ₦25,833 as shown in Table 1.

For the nutritional knowledge, the average percentage score was approximately 10.49/16 points (65.6%); the average percentage score for nutritional attitude was approximately 2.05/15 points (13.7%); while for nutritional practice, the average percentage score being 8.23/15 points (54.9%) as tabulated in Table 6. More than fifty percent of the respondents had knowledge about the foods in the UNAIDS food chart for PLWHIV. Most of the respondents had being eating those foods such as rice, yam, bread, corn, Irish potatoes, groundnut, beans, milk, crayfish, chicken, beef, fish, orange, pineapple and others.

Table 1. Demographic data of respondents

Variables	No.	Percentage (%)
Age		
11-20 years	6	10.5
21-30 years	6	10.5
31-40 years	20	35.1
41-50 years	18	31.5
51-60 years	5	8.8
61-70 years	1	1.8
71 years and above	1	1.8
Sex		
Male	24	42.1
Female	33	57.9
Occupation		
Teacher	3	5.2
Business men	8	14.0
Public servant	5	8.8
Student	2	3.5
Driver	2	3.5
Mechanic	1	1.8
Self employed	9	15.8
Retired	2	3.5
Applicant	1	1.8
Others	24	42.1
Marital Status		
Married	24	42.1
Single	24	42.1
Divorced	2	3.5
Separated	4	7.0
Widow/widower	3	5.3
Ethnic group		
Igbo	48	84.2
Yoruba	5	8.8
Hausa	3	5.3
Others	1	1.7
Educational level		
Primary	0	0
Secondary	39	68.4
Tertiary	18	31.6
Others	0	0
Religious group		
Traditional	3	5.7
Islam	3	5.7
Christianity	51	89.6
Others	0	0
Residential area		
Rural	13	22.8
Urban	44	77.2
Monthly income (₦)		
Less than 5,000	2	3.5
5,000 – 10,000	38	66.7
10,001 – 20,000	5	8.8
20,001 – 30,000	3	5.2
30,001 – 40,000	5	8.8
40,001 – 50,000	2	3.5
Above 50,000	2	3.5

Table 2. Respondents' responses to knowledge related questions

Questions	Yes		No	
	No	%	No	%
Have you ever heard of HIV?	52	91.2	5	8.8
Do you know that HIV infections increases the body's need for energy?	44	77.2	13	22.8
Do you know that ARV drugs have side effects?	36	63.2	21	36.8
Do you know that PLHIV should follow the dietary guidelines provided for them?	45	79.0	12	21.0
Have you heard of Go, Grow and Glow foods?	33	57.9	24	42.1
If yes, do you get the information during the health talk?	33	57.9	24	42.1
Have you ever received teachings on which foods that make up Go, Grow & Glow foods?	31	54.4	26	45.6
If yes, do you the health benefits of consuming Go foods to your health?	31	54.4	26	45.6
Do you know the health benefits of consuming Grow foods to your health?	31	54.4	26	45.6
Do you know the health benefits of consuming Glow foods to your health?	33	57.9	24	42.1
If no, would you like any teachings on nutrition that can help your health?	24	42.1	33	57.9
Have you ever received any teachings on ways by which you can store foods to prevent infection?	32	56.1	25	43.9
If no, would you like to receive any teachings on nutrition that can help your health?	54	94.7	3	5.3
Do you know that adequate nutrition can help the ARV drugs work better?	45	78.9	12	21.1
Have you ever received any teachings on ways of processing foods especially vegetables to conserve nutrients?	37	64.9	20	35.1
Do you know about the nutritional guidelines for making food choices?	37	64.9	20	35.1

Table 3. Respondents' responses to attitude related questions

Questions	Disagree		Don't know		Agree	
	No.	%	No.	%	No.	%
It is important for individuals to know about the effects of HIV infection on both rich and poor	2	3.5	13	22.8	42	73.7
Males and females have the same chance of acquiring HIV infection	16	28.1	2	3.5	39	68.4
Knowing about opportunistic infections accompanying HIV infection is a waste of time	14	24.6	40	70.2	3	5.2
It is important for individuals to know that consumption of nutritious foods can slow down the rate of development of opportunistic infections	10	17.5	36	63.2	11	19.3
I should eat fruits and vegetables only when I feel like	17	29.8	38	66.7	2	3.5
Taking antiretroviral drugs is better than eating foods	13	22.8	42	73.7	2	3.5
Cooked vegetables are more microbial safe, but less nutritious than raw edible vegetables	12	21.1	42	73.7	3	5.2
Dried foods like legumes should not be consumed	11	19.3	45	78.9	1	1.8
Food cannot be a source of infection ever	14	24.5	42	73.7	1	1.8
Drinking of fluid does not matter at all	17	29.8	40	70.2	0	0
Method of food preparation cannot affect the nutrient content of the food content of the food	12	21.1	40	70.2	5	8.8
It does not matter whether vegetables is cut before washing	18	31.6	37	64.9	2	3.5
Choice of food does not play an important role in the management of HIV infection	11	19.3	43	75.4	3	5.3
Vegetables must be over-cooked to kill micro-organisms	18	31.6	36	63.2	3	5.2
A nutritious meal can only come from Go foods	10	17.5	47	82.5	0	0

The Bivariate analysis showed that all the socio-demographic factors were significantly related with nutritional knowledge, attitude and practices. There were instances of significant positive correlations between nutritional knowledge and attitude with 0.568, nutritional knowledge and practices with 0.980; and nutritional attitude and practices with 0.645 at p = 0.001respectively.For regression analysis, age (p = 0.001), occupation (p = 0.001), ethnic group (p = 0.029), educational level (p = 0.007), religious group (p = 0.001), residential area (p = 0.001) and monthly income (p = 0.020) are predictors of nutritional knowledge. Religious group (p = 0.001) and monthly income (p = 0.001) are the predictors of nutritional attitude. Age (p = 0.001), occupation (p = 0.001), ethnic group (p = 0.014), educational level (p = 0.001), residential area (p = 0.001) and monthly income (p = 0.035) are predictors of nutritional practices.

Table 4. Respondents' responses to practices related questions

Questions	Yes		No	
	No.	%	No.	%
Do you keep a track of your weight and CD4 cell count?	43	75.4	14	24.6
Do you continue to eat food during the period of illness?	34	59.6	23	40.4
Do you choose foods from all groups of food?	28	49.1	29	50.9
Do you assume seasonal foods?	34	59.6	23	40.4
Do you drink at least 8-10 glasses of water daily?	30	52.6	27	47.4
Do you include snacks in between your main meal?	34	59.6	23	40.4
Is there reduction in the alcohol intake or in?	33	57.9	24	42.1
Do you wash fruits and vegetables before consumption?	50	87.7	7	12.3
Do you consume fried foods?	44	77.2	13	22.8
Are you taking any kind of vitamin or mineral supplement?	25	43.9	32	56.1
Do you consume many colours of foods in your meals?	22	38.6	35	61.4
Do you drink milk or milk products daily?	6	10.5	51	89.5
Do you steam your raw inedible vegetables before consumption?	42	73.7	15	26.3
Do you add nuts to your meals?	8	14.0	49	86.0
Do you apply your nutritional guidelines in making your food choices?	37	64.9	20	35.1

Table 5. Reasons for not applying nutritional knowledge in making food choices

Variables	Yes	
	No.	%
Dislike	0	0
Not always available	40	70.2
Not convenience to cook	10	17.5
Too costly	43	75.4
Forbidden by religion	0	0
Forbidden by culture	1	1.8
I do not know how to prepare them	24	42.1
Takes time to cook	5	8.8
I do not know how to combine them with other foods	15	26.3

Table 6. Summary of nutritional knowledge, attitude and practices of the respondents

Questionnaire	Total score	Minimum score	Maximum score	Mean±STD
Nutritional Knowledge	16	1	16	10.49±6.23
Nutritional attitude	15	1	13	2.05±2.37
Nutritional practices	15	1	15	8.23±5.54

4. DISCUSSION

Some studies have showed socio-demographic status as a major confounder of good nutritional practices, but there are few data on how these status could influence the nutritional knowledge, attitude and practices among PLWHIV [11].

The findings revealed that their ages ranged from 11 years and above, while the higher percentage was within 31-40 years. This shows that both younger and older people have accepted their HIV status unlike in some countries where younger people hardly accept their HIV status [4]. Most of the respondents had only secondary school education. This probably affected their level of nutritional knowledge, attitude, and practice. At this educational level, schools only take elementary courses on nutrition in Nigeria. In fact such subjects are always considered the least important to males. Only young ladies are expected to learn such subjects, which only few show interest.

The average income of the respondents was ₦25,833, which is too small for any person living with HIV in Nigeria to survive within a period of one month. Many of the respondents indicated that their reasons for not applying nutritional knowledge when making food choices were due to the fact that the foods are too costly. This, in addition to their earning small income will affect their food affordability and accessibility, even the locally available foods, not to mention the exotic ones. For this reason, their nutritional knowledge may not be effectively transformed into attitudes when making food choices. Some of them may even need to work for about four to eight months, before their employer could pay them either one or two months out of the four or eight months

owned. Food supplementation by stakeholders is necessary to ensure proper maintenance of optimal nutritional status considering the fact that they need extra 10-30% extra calorie intake compared to normal individuals [4,6].

The average percentage score for respondents' attitudes toward nutritional knowledge was approximately 13.7%. This is very low compared to the nutritional knowledge and practices which were more than 50% respectively. This may be attributed to their indication of "don't know" response mostly to reasons for not applying nutritional knowledge. This indicates the need for exposing PLWHIV to nutrition education to help them transform their nutritional knowledge into positive behavioral changes. Workshops and seminars based on nutritional education should be organized for the respondents from time to time by stakeholders. Nti et al., [4] in their study on the nutritional knowledge, diet quality and nutritional status of PLWHIV in Ghana suggested that it is always important that PLWHIV are educated and counselled as stressed by USAID because it makes them to use locally available food wisely.

A positive significant correlation existed between nutritional knowledge and nutritional attitude ($r = 0.568$, $p = 0.001$), which showed that nutritional knowledge is dependent on nutritional attitude. Even though the positive significant correlation between the nutritional attitude and nutritional practice ($r = 0.980$, $p = 0.001$) was much better than the one between the nutritional knowledge and nutritional attitude. It also confirms the indication that most of the respondents don't really know the reasons for taking such foods or its primary or main functions in their body.

Monthly income was part of the predictors for nutritional knowledge, attitude and practice because most of the respondents were low income earners and it also shows that most of the foods are exotic and/or expensive. The respondents need to be educated on how to use locally available foods as substitutes for adequate nutrient intake. They need to know that the local foods contain all the essential nutrients for their healthy living despite their immune integrity. Every country needs to make a food chart for all PLWHIV that will include all their locally available foods. When this is done, PLWHIV would have a wider list of foods to select from when making food choices irrespective of their income level.

5. CONCLUSION

In conclusion, the findings show that the nutritional knowledge was dependent on nutritional knowledge and practice. The monthly income of the respondents inversely affects their nutritional knowledge, attitude and practice, meaning the foods were not affordable or accessible or expensive or exotic. Therefore, the nutritional care package for PLWHIV should be upgraded to incorporate locally available foods for better food security.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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