Food Security Status and Dietary Diversity of HIV/AIDs Patients in Abuja Metropolis: Implication for Nutrition Awareness Campaign
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Abstract
This study analysed food security and dietary diversity of HIV/AIDS patients in Abuja Metropolis, Nigeria: Implication for nutrition awareness campaign. A multi-stage sampling procedure was employed to select a total of 97 HIV/AIDS patients for the study using purposive and simple random sampling techniques. Data were collected using an interview schedule and analysed using frequency, percentage, mean score and binary logit regression. Result revealed that the majority (53.61%) of HIV/AIDS patients were females in their productive age of 35years. Nearly half (49.48%) of them were reportedly single with an average household size of 3persons and were educated up to tertiary level (56.7%). The majority (64.95%) of them were food secured with an average daily calorie intake of 3508.88kcal. Results showed that the majority (41.24%) of the respondents were reported to have high dietary diversity score of ≥ 7. Estimates of Binary logit model revealed an R^2 value of 0.5353 indicating 53.5% contributions from the explanatory variables; results further demonstrate that increased education, nutrition awareness, reduced household size, and as well as increased income will improve their food security status in the area. The study calls on Government/Non-governmental organisations (NGOs) to increase awareness on HIV/AIDs prevention among young adults of 35 years and below; women, singles, educated people and the artisans as they were found more susceptible to the virus.

Keywords: Food security; dietary diversity; HIV/AIDS patients; nutrition awareness; Abuja.

Introduction

Food is a basic human requirement that must be met for an individual to live healthy and productive life (Osuji et al., 2017; and Ogunniyi et al., 2021). The concept of food security therefore has undergone various stages of definition and redefinition over time, but the Food and Agricultural Organization's (FAO) definition, which was created in the 1996 World Food Summit, is the one that is most widely accepted. It states that "food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences" (Osuji et al, 2017 and Ayinde et al, 2020; Otekunrin, Otekunrin, 2021).

For better understanding of the concept, Ogunniyi et al. (2020) itemized four essential phases for achieving food security; including availability, accessibility, affordability, and utilisation of food. For instance, it placed emphasis on the stable and sustainable availability of enough food. Also, food security connotes that adequate foods are available, accessible and affordable to people on a sustainable basis, whether it is produced locally or at home or is imported (Onoja, Meludu and Omale, 2021). Food access as mentioned here denotes having enough resources to buy wholesome food without turning to emergency relief or other coping mechanisms. Here, the people must have the financial freedom or purchasing capacity to purchase sufficient and nourishing food, and the food must be available at the appropriate time and location.

It is almost impossible to overstate how important food is to humanity because it is the first and most important requirement of life, which must be met before any other needs appear (Akukwe, 2020; Ayinde, Otekunrin, Akinbode, Otekunrin, 2020; Otekunrin, Otekunrin, 2021; and Onoja, Meludu, and Omale, 2021). Additionally, eating enough food—both in terms of quantity and quality—is essential for living a healthy and active life. This is due to the fact that malnutrition can have serious health, economic and physical implications on mankind (FAO, 2012; Ogunniyi et al 2020; Omotayo, 2020). This further explained the reason why food makes up a sizeable portion of an average household budget (Onoja, Meludu, and Omale, 2021).

However, food insecurity, which can be either chronic or temporary, is the absence of access to enough food or happens when people do not have enough physical, social, or economic access to food (Ibrahim et al. 2016; Opaluwa et al. 2019; Otekunrin, Otekunrin, 2021; and Wilson, et al. 2021). As a result, food insecurity is the absence of food security (Akukwe, 2020). When people are unable to eat enough, hunger and illness occur. One's capacity to work and lead a healthy, productive life is diminished by ill health (Otaha, 2013). No wonder, policy makers and scholars continue to show serious concerned about food security issues across the globe; and Nigeria inclusive.

Food security crises have been on a steady rise in Nigeria, particularly in the northern region, where conflicts/insurgency, abduction, armed banditry, livestock rustling, and harsh weather are exacerbating the problem (Onoja, Bebenimibo, and Onoja,2022). According to the Economist (2022), Nigeria is ranked at 97th position of 113 countries; lagging behind other African countries like South Africa (70th), Ghana (82nd), Kenya (90th), and Uganda (95th) in the index.

Even though much has been written about the food security issues in Nigeria and across the globe; empirical studies examining the food security status with respect to people living with HIV/AID is grossly inadequate. The HIV/AIDS epidemic is a worldwide problem that has persisted for too long. Since the first case was recorded in 1981; not fewer than 20 million people have died of HIV/AIDS related ailments (Browne et al, 2016; Chukwuma et al, 2019; Chijioke-Nwauche, and Akani (2021). Food insecurity in the northern Nigeria portends a lot of health implications especially for people living with HIV/AIDS (PLHIV) who require food in good quantity and quality to combat the virus that often further compromise their immune system.

Given this context, the Nigerian government was committed to incorporate nutrition awareness and supports into routine care for PLHIV from 2017 to 2021 in her National

HIV and AIDS Strategic Plan (NSP, 2017). This was to be accomplished by including nutritional education in ongoing facility- and community-based HIV care programs for PLHIV; routinely assessing PLHIV for nutritional status; and facilitating PLHIV access to nutritional services through appropriate channels and referrals (NSP, 2017).

Hence, the goal of this research is to offer baseline data on the state of food security and dietary diversity for people living with HIV/AIDS in the study region so as to enable the Government and Non-governmental organisations (NGOs) to design a sustainable food and nutritional plan for this category of people in the society. This study, which assessed the food security situation of HIV/AIDS patients in Abuja Metropolis, Nigeria, was therefore designed to fill this gap and explicated its implications for nutrition awareness campaign. Specifically, the study:

i.   described the socio-economic characteristics of HIV/AIDS patients;
ii.   estimated the food security status of HIV/AIDS patients;
iii. measured the dietary diversity status of HIV/AIDS patients; and
iv.   identified factors influencing the food security status of HIV/AIDS patients.

Methodology

Area of study: The study was carried out in Municipal Area Council of Abuja (AMAC). AMAC has land area of 1,769km^2, and with an estimated population of 776,298 as at the 2006 National Population Census (NPC); making it the biggest local government area council by human population and land mass in the Federal Capital Territory (Ajibade,et al, 2021). With Gwagwalada area council to the east, Bwari area council to the north, and Kuje area council to the south, AMAC is situated west of Nasarawa state. Geographically, AMAC is situated between latitude 8° 40^1 and 9° 20^1 north of the equator and longitude 6° 40^1 and 7° 40^1 east of the Greenwich meridian.

Municipal Area Council of Abuja (AMAC) was considered suitable for this study based on the cosmopolitan features of area coupled with high level of commercial activities and hosting people of different races and colours as well as languages/tribes which make the people more vulnerable to HIV/AIDS infection and other related diseases.

Population and sampling procedure: The population of the study comprised all the people living with HIV/AIDS in Municipal Area Council, Abuja, Nigeria. Three steps of a multi-stage sampling strategy were utilized to choose 97 HIV/AIDS patients in total for the study. In the first stage, there are 12 wards in the study area; 5 were randomly selected (City Centre, Gwagwa, Gwarinpa, Jiwa, Wuse) representing 41.7% of the AMAC area. A representative 41.7% was considered good enough since all the 12 wardsin the study area shared similar characteristics in terms of socio-economic activities, demographic features, religion, geographical features, and others (Ajibade, et al, 2021).

In stage two, one government-owned hospital is purposefully chosen from each of the chosen Wards (Kubwa General Hospital, Gwarimpa General Hospital, Maitama General Hospital, National Institute for Pharmaceutical Research Development, and Wuse General Hospital); giving a total of 5 hospitals for the study. These hospitals were selected based on the track records of HIV/AIDS patients intervention programmes. Thirdly, a list of all registered HIV/AIDS patients who were aged 18 years and above and had undergone confirmatory tests ineach of the selected hospitals

were generated following the HIV/AIDS clinic attendance records in the various hospitals. This formed the sampling frame for the study and 20% of those on the list were randomly sampled for the study as demonstrated in Table 1. For the study, 97 HIV/AIDS patients in total were interviewed.

Table 1: Estimated sampling frame and sample size for respondents

Selected hospital	Sample frame	Sample size (20%)
Kubwa general hospital	125	25
Gwarimpa general hospital	105	21
Maitama general hospital	19	95
NIPRD	75	15
Wuse general hospital	85	17
Total	**485**	**97**

NIPRD = National Institute for Pharmaceutical Research Development. **Source:** Author's compilation (2022)

Instrument for data collection: A structured interview schedule was used to collect primary data from HIV/AIDS patients at the study site. The use of an interview schedule allowed for further discussion of the participants' reactions to the study's issues with them, which was useful for presenting and discussing the study's findings. The tool used to gather data was developed with items generated from existing literature and related past studies. Additionally, participation was entirely voluntary, and each respondent's informed consent was obtained before the test instrument was administered. Also, throughout the whole study, strict secrecy was upheld, and participants were free to withdraw their consent without fear of victimization. Participants received care in a comfortable setting of their choosing inside the hospital complex.

Measurement of variables

Food security status of respondents: Daily per capita calorie consumption index was calculated using the food nutrient composition table of frequently consumed food items in Nigeria which was converted into kilograms. The food security line for this study is defined by the FAO's minimum daily calorie recommendation per adult equivalent, which is 2250 kcal. Under the recommended food security line, respondents are classed as food insecure, while those who are above it were regarded as food secure (FAO, 2012).

Food dietary diversity: To determine the respondents' dietary diversity status in the study area, the dietary diversity score (DDS) was utilized. The DDS is described as the quantity of various food groups a person consumes over a predetermined time period, typically 24 hours to 15 days. However, 24-hour recall dietary intake was employed to gather information on nutritional diversity for this study, and a dietary diversity score was then calculated. The 24-hours recall is a short-term dietary assessment technique where the investigator asks the participant to list the foods and beverages they have eaten during the previous full day in order to gather dietary

information on current consumption by recalling the intake from that day (Tiyou, Belachew, Alemseged and Biadgilign, 2012). The 24-hour recall period was chosen for this study because it is less prone to recall error and easier for participant to remember. Additionally, it is consistent with the memory period employed in several research on dietary diversification (Chiemela et al, 2022).

To achieve this, the study employed a list of the meals, dishes, and all food and drink items consumed over the previous 24 hours and the respondents were asked to respond to each item with a "yes" or "no" option. Each item received a score of 1 if the participant had consumed it within the previous 24 hours, and 0 if otherwise. By adding up the variety of foods or food groups consumed over a reference period, dietary diversity was thus calculated. Dietary diversity was measured using the DDS, which had a scale from 0 to 12.

The twelve food groups specified by the Food and Agriculture Organization of the United Nations (FAO, 2012) were utilized in this study to evaluate DDS. Cereals, roots and tubers, vegetables, fruits, meat and poultry, eggs, fish and seafood, pulses/legumes/nuts, milk and milk products, oil/fats, sugar and honey, spices and condiments were the 12 food groups used to determine their dietary diversity score (HDDS). According to FAO recommendations, a person with a DDS of less than 3 is classified as being in the low category of dietary diversity. However, individuals with a score of 4 to 6 in the food groups were classified as having a medium level of dietary diversity, while those with a score of 7 or more were classified as having a high level of dietary diversity.

Factors influencing the food security status of HIV/AIDS patients: This was achieved using Binary logit regression analysis. Implicitly, the model is empirically estimated as:

$Y = \beta o= \beta_i X_i + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_n X_n$ ………………….………..Eqn(iii)

Where:

Y = Food security status of HIV/AIDS patients (Food secure =1; Otherwise =0)

X_1 = Age (in years)
X_2 = Sex (male =1, female =0),
X_3 = Educational attainment (years of formal schooling)
X_4 = Household size (in number),
X_5 = Income (₦)
e = errors term

Result and discussion

Socio-economic characteristics of HIV/AIDS patients in the study location
The result of the study in Table 2 described the Socio-economic characteristics of HIV/AIDS patients in the area. As presented in the table, of the 97 HIV/AIDS positive persons studied; the majority (53.61%) were females while the remainder (46.39%) were males. This finding further affirmed the fact that females were more vulnerable to contracting the HIV/AIDS other related diseases than their male counterparts possibly due to their biological system and economic realities. More so, the average age of the participants computed was 35years; indicating that the HIV/AIDS patients studied were mainly young people of productive age group; this result supports the

widely held belief that young people are more likely than older people to engage in risky sexual behaviors, such as having many partners or engaging in unprotected sexual activity etc which make them more vulnerable to contracting HIV/AIDS than the older persons.

This finding upholds the submission of Semali, Edwin and Mboera (2011) who reported that the large proportion (67.9%) of HIV patients were female and majority of them fall within the age bracket of 245-34 years. Also, nearly half (49.48%) of them were reportedly single with an average household size of 3persons and the majority (56.7%) were educated up to tertiary level. The study upholds the findings from previous scholars like Chukwuma et al (2019) who reported high prevalence of HIV/AIDS among the people of youthful age and females gender than their male counterparts in Niger Delta, South-Eastern and Kwara State, respectively.

Table 2: Socio-economic characteristics of HIV/AIDS infected persons

Socio-economic characteristics	Frequency	Percentage	Mean/Mode
Age			
19-28	26	26.80	
29-38	38	39.18	
39-48	23	23.71	35 years
≥ 49	10	9.7	
Sex			
Female	52	53.61	Female
Male	45	46.39	
Marital status			
Single	48	49.48	Single
Married	28	28.87	
Divorced	9	9.28	
Widower	12	12.37	
Household size			
1-3	65	67.01	3persons
4-6	26	26.80	
≥ 7	5	5.15	
Above 9	1	1.03	
Religion			
Christianity	67	69.07	Christianity
Islam	23	23.71	
Traditional	7	7.22	
Educational level			
No formal education	5	5.15	
Primary education	9	9.28	
Secondary education	28	28.87	
Tertiary education	55	56.70	Tertiary education
Major occupation			
Civil servant	25	25.77	
Farming	11	11.34	
Trading	21	21.65	
Artisan	40	41.24	Artisan

Source: Field Survey 2021

Food security status of HIV/AIDS infected persons

Table 3 displays the distribution of respondents based on their food security status. The daily per capita calorie consumption index reveals that the majority (64.95%) of respondents reported having access to enough food, with an average daily calorie intake of 3508.88kcal indicating that these respondents were able to meet the daily

per capita calorie requirements of 2250kcal. In contrast, 35.05% of respondents reported having access to insufficient food, with an average daily calorie intake of 1206.50kcal. While this finding suggests high nutrition awareness among PLHIV in the study location, it deviates from the reports of John, Kikafunda and Whitehead (2009) who reported poor level of food security among HIV/AIDS patients.

Table 3: Food security index analysis for HIV/AIDS patients

Food security status	Calories intake	Percent (%)
Food secured	3508.88	64.95
Food insecure	1206.50	35.05
Total		**100**

Note: Recommended daily per capita calorie requirements 2250kcal (FAO, 2011)
Source: Field survey, 2021

Dietary diversity of HIV/AIDS infected persons

Table 4 presents the findings about the dietary diversity status of HIV/AIDS patients in the research area. Results indicate that the majority (41.24%) of respondents had high dietary diversity scores of at least (7), while only roughly 35.05% had low dietary diversity scores of at least three (3). This shows that besides having food security, varieties of foods were available to majority of the PLHIV in the study location. However, this finding negates Tiyou, et al (2012)'s submission that HIV/AIDS patients in Jimma Zone Southwest, Ethiopia have low level of dietary diversity.

Table 4: Dietary diversity status of HIV/AIDS patients

Dietary diversity status	Dietary diversity score (DDS)	Percent (%)
High	≥ 7	41.24
Medium	4-6	23.71
Low	≤ 3	35.05
Total		**100**

Source: Field survey, 2021

Factors influencing the food security status of HIV/AIDS patients
As presented in Table 5, the estimates of binary logit model revealed an R^2 value of 0.5353 indicating 53.5% contributions from the explanatory variables. Results further demonstrate that increased education, nutrition awareness, reduced household size, and as well as increased income will improve their food security status in the area. For instance, the coefficient of education level (β=5.292938; p = 0.001) was significant at the 1% level and positive, as predicted based on prior knowledge. According to the regression analysis, the intensity of food security increases as respondents' education levels rise and vice versa. The coefficient of level of nutritional awareness (β=1.456321; p = 0.013) was also positive and significant at the 1% level, suggesting that the more the PLHIV are aware of their nutritional needs, the greater the intensity of their food security.

This supports the need for education and nutritional awareness, which is supported by the National HIV and AIDS Strategic Plan (2017–2021). This is because individuals' levels of (formal) education and nutrition awareness may have a positive impact on their decisions regarding production and nutrition, which will help to alleviate food insecurity crises. Additionally, it is anticipated that education and nutrition awareness will result in improved dietary choices and increased earning potential, respectively. This result supports the findings of Obike et al. (2018), who found a strong and positive correlation between educational attainment and family food security status in Abia State, Nigeria.

The result further demonstrates that the household size regression coefficient (β = -0.3463858; p = 0.025) is statistically negative and significant at 5% level. This suggests that as a household grows, so does the severity of food insecurity and vis-a-vis. The likelihood that food security would decline as household size rose is higher when many other household members depend solely on the household head for income and there is an increase in family size that needs an increase in household food expenditure. From the regression result in Table 3, the regression coefficient of respondents' monthly income (β = 2.955326; p = 0.004) is significantly positive at the 1% level. This shows that the likelihood of respondents experiencing food security rises as monthly income does. Therefore, it may be concluded that the respondents' ability to afford food depends on their income.

Table 5: Factors influencing the food security status of HIV/AIDS patients

Variables	Confident	Std. Error	Z	P>|z|
Age	-0.0060909	0.0379568	-0.16	0.873
Gender	-2.701237	1.602436	-1.69	0.092
Educational level	5.292938	1.581889	3.35	0.001***
Household size	-0.3463858	0.1541859	-2.25	0.025**
Monthly income	2.955326	1.025356	2.88	0.004**
Nutritional awareness	1.456321	0.973422	1.32	0.013**
Constant	2.192424	2.050485	1.07	0.285
Number of obs.	= 97			
LR Chi^2	= 63.35			
Prob > chi^2	= 0.0000			
Pseudo R^2	= 0.5353			
Log likelihood				

Source: Computed from Field Survey Data, 2021. *** and ** = 1% and 5% level of significance

Conclusion and Recommendations

The study examined the dietary diversity and food security of HIV/AIDS patients in Abuja Metropolis: Implication for nutrition awareness campaign and observed that most of the HIV/AIDS patients were females in their productive age of 35years. Nearly half of them were reportedly single with an average household size of 3persons and were mostly educated up to tertiary level. The daily per capita calorie consumption index shows that majority of them were relatively food secured with an average daily

calorie intake of 3508.08kcal and with slightly high dietary diversity score (DDS) of ≥ 7. Also, estimates of Binary logit model demonstrate that increased education, increased nutrition awareness, reduced household size, and as well as increased income will further improve their food security status in the area.

The study therefore concludes that there was food security and food diversity among majority of PLHIV in Abuja metropolis resulting of their high level of education, high nutrition awareness, and high income. The study however calls on Government/Non-governmental organisations (NGOs) to increase awareness on HIV/AIDs prevention among young adults of 35 years and below; women, singles, Christians, educated people and the artisans as they are usually more susceptible to the virus. Additionally, in order to improve the status of the 35% and 35.05% of PLHIV in Abuja Municipal Council who are currently experiencing food insecurity and lack of dietary diversity, respectively, the Government/Non-governmental organizations (NGOs) need to offer more livelihood alternatives to PLHIV in the region. There is also need to also promote more education, create more nutrition awareness and discourage large household among PLHIV in Abuja metropolis.

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