World Nutrition, June 2026;17(2): 109-116
DOI: https://doi.org/10.26596/wn.2026172109-116

WORLD NUTRITION
The Official Journal of the World Public Health Nutrition Association
Journal homepage: https://www.worldnutritionjournal.org
ISSN: 2041-9775

Research Article

Assessment of nutritional status and dietary pattern of people living with HIV/AIDS attending antiretroviral therapy clinic at Adeoyo State Hospital, Ibadan, Oyo State, Nigeria

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OPEN ACCESS

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Article History
Received: May 28, 2025
Reviewed: August 10, 2025
Revised: June 01, 2026
Accepted: June 08, 2026
Published: June 30, 2026

Citation
Adekolujo O.B., Faleye Z.O., & Adebususyi Y.G. (2026). Assessment of nutritional status and dietary pattern of people living with HIV/AIDS attending antiretroviral therapy clinic at Adeoyo State Hospital, Ibadan, Oyo State, Nigeria. *World Nutrition*, 17(2), June, 109–116. https://doi.org/10.26596/wn.2026172109-116

Academic Editor
Ted Greiner, PhD

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Highlights/Key Messages

- Nutrition is an important component of HIV/AIDS treatment and management.
- There is a high proportion of overweight among the participants (34.3%), a smaller proportion of obesity (7.8%), and a small proportion of underweight (9%).
- The average BMI of the participants was within the normal range, 24.9kg/M^2.

Background
Nutrition plays a crucial role in the management of HIV/AIDS. However, there is currently limited data on the nutritional status and dietary patterns of people living with HIV/AIDS (PLWHA) in Nigeria.

Objective
This study aims to evaluate the nutritional status and dietary patterns of PLWHA who attend the antiretroviral therapy clinic at Adeoyo State Hospital, Ibadan.

Methods
A cross-sectional study was conducted among 140 PLWHA. Anthropometric measurements were taken, and dietary patterns were assessed using a food frequency questionnaire. Chi-square tests and measures of association were used to analyse the relationship between dietary habits and BMI.

Results
The mean BMI was 24.9±4.3 kg/m^2, with 34.3% of participants being overweight, 7.8% obese and 9% underweight. Central obesity was prevalent, especially among women (45.7% at high risk). The dietary patterns observed included high consumption of staples such as rice (85% daily or frequent), cassava products (74.2%), and vegetables (90.7% of respondents consumed green leafy vegetables). Palm oil and sugary beverages were consumed frequently by over 80% and 56.4% of participants, respectively. No significant association was found between the dietary patterns measured and BMI.

Conclusion
This study reveals a tendency towards overweight and obesity in PLWHA, alongside a now less serious problem of persistent undernutrition. We found no significant association between dietary habits, food practices, and BMI. Thus, this study underscores the need for targeted nutritional interventions in HIV/AIDS care, particularly those dealing with overweight.

Keywords: nutritional status, dietary patterns, HIV/AIDS, antiretroviral therapy

Introduction

Human immunodeficiency virus (HIV) is an infection that attacks the body's immune system. Acquired immunodeficiency syndrome (AIDS) is the most advanced stage of the disease. Approximately 39.0 million [33.1–45.7 million] people were living with HIV at the end of 2022 (WHO, 2023a). HIV targets the body's white blood cells, weakening the immune system and increasing susceptibility to diseases such as tuberculosis, infections, and some cancers. HIV is transmitted from the body fluids of an infected person, including blood, breast milk, semen and vaginal fluids and from mother to child (WHO, 2023b). HIV infection has been found to be strongly associated with malnutrition.

Nutrition is an important component of comprehensive care for PLHWA and the key to sustaining the ability to live a normal life and continue participating in the workforce. Inadequate dietary intake to meet increased metabolic demands associated with HIV/AIDS compromises the nutrition of people living with HIV/AIDS (PLWHA), resulting in deteriorating health, well-being, and development (Omwanda et al., 2020). Monitoring and evaluation of the nutritional status of PLWHA must be conducted regularly and promptly, and appropriate nutritional interventions must be provided if there is a risk or sign of deterioration. Good nutritional status positively affects CD4 levels in the blood. This can be explained by the protective effect of fat cells (adipose tissue), which are a source of the hormone leptin. Leptin is known to mitigate the detrimental effects of cytokines whose levels are elevated in HIV patients (Gebremichael et al., 2018). On the other hand, poor nutritional status may speed up the progression of AIDS-related illnesses, while optimal nutrition can help boost immune function, maximise the effectiveness of antiretroviral therapy, reduce the risk of chronic illnesses such as diabetes and cardiovascular disease, and contribute to a better overall quality of life (Nadhiroh, 2006).

In populations in which malnutrition is endemic, body size and composition changes associated with protein-energy malnutrition may always be accompanied by deficiencies in vitamins and minerals important for immune function. Changes in the immune function due to malnutrition are strikingly similar to those induced by HIV/AIDS (Oguntibeju et al., 2007). For many years, the impairment to immune function caused by malnutrition was referred to as the Nutritional Acquired Immune Deficiency Syndrome or NAIDS. Studies have shown that even relatively small losses in weight (5%) have been associated with decreased survival in individuals with AIDS (Fathima et al., 2022). A study conducted in 2020 found that underweight status (BMI < 18.5 kg/m^2) remained prevalent among PLWHA (Tang et al., 2015; Khatri et al., 2020). The weight loss and wasting could result from reduced food intake, malabsorption, and metabolic alterations.

Long before the AIDS epidemic emerged in Africa in the 1980s, the synergistic interactions between infections, nutritional status and immune function were recognised (Oguntibeju et al., 2007). Since normal immune function depends on good nutritional status (Fathima et al., 2022), this study assessed the nutritional status and dietary patterns of PLWHA to develop effective interventions tailored to the consumption of nutrient-dense foods for healthy living.

Methods

Study Population and Sampling Procedure

The study utilised a cross-sectional design to collect data from PLWHA within the age of 18-60 years attending the Antiretroviral Therapy (ART) clinic at Adeoyo State Hospital, Ibadan, Oyo State, Nigeria in early 2024.

The sample size was calculated using the following formula: $n=\frac{z^2pq}{d^2}$, q = (1-p). Where z is the z constant value at 95% confidence level=1.96 (p prevalence set at 10%, q (1-p), 1-0.10= 0.9, d = the precision set at 5% (0.05)). Hence, n (sample size) =138.3 and upon the addition of 10% attrition, the total sample size is 152.

Data collection

A semi-structured interviewer-administered questionnaire was used to obtain information on age, gender, occupation, ethnicity, and estimated income. Eligibility depended on respondents who were on ART for at least six months, had no acute illnesses that could skew anthropometric measurements, and consented willingly

An eleven-food-group food-frequency questionnaire was used to collect data on respondents' dietary patterns. A digital weighing scale was used to assess respondents' weights to the nearest 0.1kg. Respondents were asked to remove their shoes and any other items that could add weight (e.g., bags, belts). A stadiometer was used to measure respondents' height to the nearest 0.01m, and a non-stretchy tape rule was used to measure the circumference of respondents' waists.

Data Analysis

A serial number was assigned to each questionnaire for easy identification. The authenticity of the information collected was checked in the field. This involved reviewing each participant's responses as recorded in the questionnaire. Problems discovered during data collection were solved immediately in the field. Using the coding guide, the edited questionnaires were coded, and the data from each questionnaire were analysed using descriptive statistics (frequencies, means with standard deviations, percentages) and chi-square tests in SPSS version 25.0.

Ethical Approval

Ethical approval was obtained from the Ethical Committee of the Oyo State Ministry of Health, Ibadan, and the Lead City University Health Research Ethics Committee, with approval numbers NHREC/OYOSHRIEC/10/11/22 and LCU-REC/24/055, respectively. Permission was obtained from the head of the ART clinic. Verbal consent was also obtained from the willing participants.

Results

The socio-demographic characteristics of the respondents are presented in Table 1. The dietary and food practices of the respondents are shown in Table 2. Table 3 presents the frequency of major food items consumed by the respondents.

Table 1. Socio-demographic characteristics of respondents (n=140)

Variables	Frequency	Percentage (%)
Age(years)	**42.0 ± 9.72**	
18-30	21	15.0
31-45	72	51.4
46-60	47	33.6
Gender		
Male	32	22.9
Female	108	77.1
Religion		
Christianity	83	59.3
Islam	51	36.4
Traditional	1	0.7
Others	5	3.6
Ethnicity		
Yoruba	123	87.9
Hausa	2	1.4
Igbo	7	5.0
Others	8	5.7
Marital status		
Single	18	12.9
Married	101	72.1
Divorced	5	3.6
Others	16	11.4
Occupation		
Artisan	26	18.6
Student	1	0.7
Businessman/woman	20	14.3
Civil servant	7	5.0
Farmer	7	5.0
Trader	44	31.4
Unemployed	11	7.9
Retired	7	5.0
Professionals	14	10.0
Sales representative	3	2.1
Education level		
No formal education	13	9.3
Primary	19	13.6
Secondary	64	45.7
Tertiary	44	31.4
Estimated monthly income (₦)	6	4.3
<20,000	25	17.9
20,000-50,000	58	41.4
50,000-100,000	51	36.4
>100,000		

Table 2. Dietary and food practices

Variables	Frequencies	Percentage (%)
1. Access to enough quality food to meet daily needs		
Always sufficient	87	62.1
Sometimes insufficient	41	29.3
Often insufficient	12	8.6
2. Frequency of consumption of a variety of different foods	79	56.4
Regularly	43	30.7
Sometimes	18	12.9
Rarely		
3. Do you believe you receive adequate nutrients in your diet?	86	61.4
Adequate amount	54	38.6
Inadequate amount		
4. Currently on any special diet recommended due to a health condition	21	15.0
Yes	119	85.0
No		
5. Amount of food eaten before diagnosis		
More	34	24.3
Less	38	27.1
The same	68	48.6
6. Use of multivitamin supplements	39	27.9
Yes	101	72.1
No		
7. Do you practice proper food safety, like thorough cooking and safe storage?	127	90.7
Always	11	7.9
Sometimes	2	1.4
Never		
8. Boiling of water before drinking it	13	9.3
Always	57	40.7
Sometimes	70	50.0
Never		
9. Frequency of proper food storage	120	85.7
Always	14	10.0
Sometimes	6	4.3
Never		
10. Frequency of eating raw eggs or uncooked foods	91	65.0
Never	19	13.6
Rarely	23	16.4
Sometimes	7	5.0
Often		
11. Washing of fruits and vegetables properly before eating/cooking them	129	92.1
Always	11	7.9
Sometimes		
12. Frequency of alcohol consumption	9	6.4
Regularly	35	25.0
Sometimes	96	68.6
Never		

Table 3. Frequency of food consumed among respondents

Food Groups	Daily Freq (%)	Frequently (4-6 times/wk) Freq (%)	Occasionally (1-3 times/wk) Fre (%)	Never Freq (%)
Grains and cereals				
Maize	9(6.4%)	49(35%)	67(47.9%)	15(10.7%)
Rice	45(32.1%)	74(52.9%)	21(15%)	-
Wheat and wheat products (bread, spaghetti, semolina, noodles, etc)	19(13.6%)	90(64.3%)	26(18.6%)	5(3.6%)
Oats	6(4.3%)	34(24.3%)	65(46.4%)	35(25%)
Sorghum	9(6.4%)	40(28.6%)	58(41.4%)	33(23.6%)
Millet	5(3.6%)	35(25%)	55(39.3%)	45(32.1%)
Starchy roots and tubers				
Cassava and products (*gari, eba, fufu, lafun*)	38(27.1%)	66(47.1%)	26(18.6%)	10(7.1%)

Food Groups	Daily Freq (%)	Frequently (4-6 times/wk) Freq (%)	Occasionally (1-3 times/wk) Fre (%)	Never Freq (%)
Yam and products	18(12.9%)	79(56.4)	38 (27.1%)	5(3.6%)
Potatoes (Sweet/Irish) and products	8(5.7%)	48(34.3%)	65(46.4%)	19(13.5%)
Plantain	22(15.7%)	78(55.7%)	34(24.3%)	6(4.3%)
Legumes				
Beans and products (*moin-moin, akara, gbegiri,* baked beans)	31(22.1%)	83(59.3%)	24(17.1%)	2(1.4%)
Locust beans (*Iruworo/irupete*)	31(22.1%)	77(55%)	28(20%)	4(2.9%)
Soy beans and products (tofu/*wara*, soy milk)	7(5%)	36(25.7%)	66(47.1%)	31(22.1%)
Nuts and seeds				
Peanuts/Groundnut and products	17(12.1%)	40(28.6%)	66(47.1%)	17(12.1%)
Cashew nuts	10(7.1%)	29(20.7%)	72(51.4%)	29(20.7%)
Melon seeds (*egusi*)	21(15%)	74(52.9%)	37(26.4%)	8(5.7%)
Kola nut	-	7(5%)	14(10%)	119(85%)
Vegetables				
Green leafy vegetables (*ugwu, soko, ewedu, tete,* etc.)	66(47.1%)	61(43.6%)	12(8.6%)	1(0.7%)
Okra	35(25%)	62(44.3%)	22(15.7%)	21(15%)
Cabbage	11(7.9%)	56(40%)	54(38.6%)	19(13.6%)
Cucumber	27(19.3%)	53(37.9%)	49(35%)	11(7.9%)
Tomatoes, pepper, onions	69(49.3%)	62(44.3%)	8(5.7%)	1(0.7%)
Carrots	16(11.4%)	45(32.1%)	66(47.1%)	13(9.3%)
Fruits				
Citrus (orange, tangerine)	28(20%)	69(49.3%)	35(25%)	8(5.7%)
Mango	19(13.6%)	67(47.9%)	45(32.1%)	9(6.4%)
Pawpaw	16(11.4%)	72(51.4%)	44(31.4%)	8(5.7%)
Pineapple	14(10%)	68(48.6%)	46(32.95)	12(8.6%)
Apple (local, green, red)	27(19.3%)	77(55%)	31(22.1%)	5(3.6%)
Banana	20(14.3%)	74(52.9%)	39(27.9%)	7(5%)
Watermelon	29(20.7%)	73(52.1%)	34(24.3%)	4(2.9%)
Meat, poultry and fish				
Beef	37(26.4%)	74(52.9%)	24(17.1%)	5(3.6%)
Poultry (chicken, turkey, duck)	17(12.1%)	53(37.9%)	58(41.4%)	12(8.6%)
Fish	48(34.3%)	67(47.9%)	17(12.1%)	8(5.7%)
Snail	6(4.3%)	28(20%)	70(50%)	36(25.7%)
Offal	24(17.1%)	55(39.3%)	46(32.9%)	15(10.7%)
Egg	53(37.9%)	66(47.1%)	16(11.4%)	5(3.6%)
Pork	1(0.7%)	9(6.4%)	24(17.1%)	106(75.7%)
Goat meat	22(15.7%)	37(26.4%)	63(45%)	18(12.9%)
Bush meat	11(7.9%)	28(20%)	75(53.6%)	26(18.6%)
Dairy products				
Milk	28(20%)	65(46.4%)	40(28.6%)	7(5%)
Yoghurt	13(9.3%)	46(32.9%)	68(48.6%)	13(9.3%)
Cheese	5(3.6%)	29(20.7%)	75(53.6%)	31(22.1%)
Fats and oils				
Butter/Margarine/Mayonnaise	13(9.3%)	51(36.4%)	57(40.7%)	19(13.6%)
Vegetable oil	60(42.9%)	56(40%)	23(16.4%)	1(0.7%)
Palm oil	62(44.3%)	60(42.9%)	16(11.4%)	2(1.4%)
Groundnut oil	13(9.3%)	28(20%)	36(25.7%)	63(45%)
Beverages				
Tea (Lipton, top tea, etc)	11(7.9%)	67(47.9%)	51(36.4%)	11(7.9%)
Cocoa (Milo, Bournvita, Ovaltine, etc)	10(7.1%)	71(50.7%)	50(35.7%)	9(6.4%)
Ginger drink	4(2.9%)	39(27.9%)	53(37.9%)	44(31.4%)
Soft drinks (Coca-Cola, Pepsi, etc.)	16(11.4%)	63(45%)	44(31.4%)	17(12.1%)
Fruit juice	11(7.9%)	63(45%)	63(45%)	3(2.1%)
Sweets and desserts				
Sugar/honey	12(8.6%)	43(30.7%)	53(37.9%)	32(22.9%)
Cake/pastries	7(5%)	28(20%)	68(48.6%)	37(26.4%)
Ice cream	-	25(17.9%)	59(42.1%)	56(40%)
Chocolate	3(2.1%)	14(10%)	64(45.7%)	59(42.1%)
Jam	1(0.7%)	16(11.4%)	55(39.3%)	68(48.6%)

Anthropometric status of respondents

The anthropometric measurements of the respondents are presented in Table 4. The mean weight and height were 67.4±13.2 and 1.67≈0.6, respectively. Waist circumference categorises them by risk level. Among females, 39.3% fell in the high-risk category, with another 6.4% categorised as at risk and 31.4% labelled low risk for central obesity. In comparison, among males, 19.3% were deemed to be high-risk and 0.7 % as being at risk from central obesity.

Table 4. Mean values for anthropometric measurements

Variable	Male (n=56)	Female (n=84)
Weight (kg)	68.4 ± 11.5	63.2 ± 12.8
Height (m)	1.68 ± 0.07	1.58 ± 0.08
BMI	24.2 ± 3.8	25.3 ± 4.6
Waist Circumference (cm)	90.2 ± 9.8	87.4 ± 11.1

Based on BMI, the majority (49.3%) had a normal weight, with 34.3% overweight, while 7.1% and 0.7%, respectively, belonged to Class I and II obesity groups. A small percentage (8.6%) fell within the underweight category.

Association between dietary and food practices and body mass index of the respondents

The relationship between dietary and food practices and BMI is shown in Table 5. There was no significant association between dietary habits and food practices and respondents' body mass index (BMI) ($p < 0.05$).

Table 5. Association between dietary habits and food practices and body mass index of the respondents

Variables		Underweight n (%)	Normal weight n (%)	Overweight n (%)	Obesity (1) n (%)	Obesity (II) n (%)	x^2, p-value
1.	**Rate of access to enough quality food to meet daily needs**						
	Always sufficient	5(5.7)	35(40.2)	39(44.8)	7(8.0)	1(1.1)	x^2=17.451
	Sometimes insufficient	6(14.6)	27(65.9)	7(17.1)	1(2.4)	0(0.0)	p=0.26
	Often insufficient	1(8.3)	7(58.3)	2(16.7)	2(16.7)	0(0.0)	
2.	**Frequency of consumption of variety of different foods**						
	Regularly						
	Sometimes	4(5.1)	36(45.6)	32(40.5)	6(7.6)	1(1.3)	x^2=19.311
	Rarely	3(7.0)	24(55.8)	15(34.9)	1(2.3)	0(0.0)	p=0.13
		5(27.8)	9(50.0)	1(5.6)	3(16.7)	0(0.0)	
3.	**Nutrient adequacy in diet**						
	Adequate amount	6(7.0)	43(50.0)	31(36.0)	6(7.0)	0(0.0)	x^2=2.487
	Inadequate amount	6(11.1)	26(48.1)	17(31.5)	4(7.4)	1(1.9)	p=0.647
4.	**Currently on any special diet recommended due to health condition**						
	Yes	2(9.5)	12(57.1)	6(28.6)	1(4.8)	0(0.0)	x^2=0.943
	No	10(8.4)	57(47.9)	42(35.3)	9(7.6)	1(0.8)	p=0.918
5.	**Food consumption after diagnosis**						
	More	2(5.9)	20(58.8)	12(35.3)	0(0.0)	0(0.0)	x^2=11.925
	Less	5(13.2)	18(47.4)	13(34.2)	1(2.6)	1(2.6)	p=0.155
	The same	5(7.4)	31(45.6)	23(33.8)	9(13.2)	0(0.0)	
6.	**Use of multivitamin supplements**						
	Yes	4(10.3)	23(59.0)	10(25.6)	2(5.1)	0(0.0)	x^2=3.080
	No	8(7.9)	46(45.5)	38(37.6)	8(7.9)	1(1.0)	p=0.544
7.	**Practice of proper food safety like thorough cooking and safe storage**						
	Always	11(8.7)	60(47.2)	46(36.2)	9(7.1)	1(0.8)	x^2=11.028
	Sometimes	0(0.0)	9(81.8)	9(9.1)	1(9.1)	0(0.0)	p=0.200
	Never	1(50.0)	0(0.0)	1(50.0)	0(0.0)	0(0.0)	
8.	**Boiling of water before drinking it**						
	Always	2(15.4)	5(38.5)	4(30.8)	2(15.4)	0(0.0)	x^2=5.214
	Sometimes	5(8.8)	27(47.4)	19(33.3)	5(8.8)	1(1.8)	p=0.734
	Never	5(7.1)	37(52.9)	25(35.7)	3(4.3)	0(0.0)	
9.	**Frequency of proper food storage**	12(10.0)	55(45.8)	43(35.8)	9(7.5)	1(0.8)	x^2=5.428
	Always	0(0.0)	10(71.4)	3(21.4)	1(7.1)	0(0.0)	p=0.711
	Sometimes	0(0.0)	4(66.7)	2(33.3)	0(0.0)	0(0.0)	
	Never						
10.	**Frequency of eating of raw eggs or uncooked foods**						
	Never	8(8.8)	41(45.1)	34(37.4)	8(8.8)	0(0.0)	
	Rarely	1(5.3)	11(57.9)	6(31.6)	0(0.0)	1(5.3)	x^2=11.963
	Sometimes	2(8.7)	14(60.9)	5(21.7)	2(8.7)	0(0.0)	p=0.449
	Often	1(14.3)	3(42.9)	3(42.9)	0(0.0)	0(0.0)	
11.	**Washing of fruits and vegetables properly before eating/cooking them**						

Variables		Underweight n (%)	Normal weight n (%)	Overweight n (%)	Obesity (I) n (%)	Obesity (II) n (%)	x^2, p-value
	Yes, always	11(8.5)	61(47.3)	46(35.7)	10(7.8)	1(0.8)	x^2=3.176
	Sometimes	1(9.1)	8(72.7)	2(18.2)	0(0.0)	0(0.00	p=0.529
12.	**Frequency of alcohol consumption**	1(11.1)	5(55.6)	2(22.2)	1(11.1)	0(0.0)	
	Regularly	1(2.9)	18(51.4)	14(40.0)	2(5.7)	0(0.0)	x^2=3.424
	Sometimes	10(10.4)	46(47.9)	32(33.3)	7(7.3)	1(1.0)	p=0.905
	Never						

(underweight <18.5kg/m^2, normal: 18.5-24.9kg/m^2, overweight: 25-29.5kg/m^2, obesity(i): 30-34.5kg/m^2, obesity (ii): 35-39.5kg/m^2)

Discussion

In our sample, there is a pronounced gender disparity, with women accounting for 77.1% of respondents. This has been the case in several previous studies of PLWHA (Adeniji, 2012; Roy, 2015; Omwanda et al., 2020; Buh et al., 2023) Most did not consume alcohol (68.6%), as reported in similar research conducted in Nigeria (88.6%; Ezenwosu et al., 2022), Tanzania (70%; Malindisa et al., 2023), and Uganda (66.5%; Kiyimba et al., 2022).

Starchy roots and staples were the most commonly consumed food groups, similar to the findings of Ezenwosu et al. (2022). This may be because people living in low- and middle-income countries often consume a monotonous diet consisting mainly of starchy staples (Banwat et al., 2014). 90.7% of the respondents consumed green leafy vegetables daily or frequently, which contrasts with Kiyimba et al. (2022), who reported less than 50% among PLWHA in Uganda.

Over 39% of female respondents fell into the high-risk category with waist measurements above 88cm, and an additional 6.4% had a somewhat increased risk related to their waist circumferences. For males, only 19.3% were in the high-risk classification, with waistlines exceeding 102cm. About half (49.3%) fell within the normal BMI range (18.5-24.9 kg/m^2), consistent with studies by Folasire et al. (2015) and Iheme (2023). However, 34.3% were overweight, similar to Gabriel (2022), who found a 33.8% prevalence of overweight. The presence of 8.6% underweight individuals is also noteworthy and may indicate nutritional deficiencies in a subset of the population, as reported by Roy (2015), who found a 6% prevalence of underweight.

No significant associations were observed between the dietary habits/food practices and BMI. Thus, these practices cannot dependently predict weight-related problems.

The double burden of malnutrition, such as underweight (12.1%) and overweight/obesity (42.2%) among our sample of PLWHA, complicates clinical care by weakening immunity and increasing NCD risks, respectively, while straining public health systems through higher costs. ART clinics can address this by implementing quarterly dual screenings, tailored counselling, supplementation, integrated care, and advocacy for food support, leveraging local partnerships and national programs to assist those suffering from food insecurity.

Limitations

The use of a cross-sectional design limits the ability to establish causality, as it simply captures a snapshot of the data. Also, sampling from a single hospital restricts generalisation, as the data may not reflect the diverse experiences of PLWHA across Nigeria's varied urban and rural settings or other healthcare facilities. The reliance on a food frequency questionnaire introduces potential recall bias, as participants' self-reported dietary habits may be influenced by memory lapses or social desirability, particularly for less healthy items such as alcohol or sugary beverages. This dietary assessment method also does not provide a measure of the diet's nutritional adequacy. Respondents' beliefs in that regard may have little validity.

Conclusions

The study examines the nutritional status and dietary patterns of HIV/AIDS patients attending Adeoyo State Hospital, Ibadan. Anthropometric findings showed high rates of overweight/obesity alongside some cases of underweight, with central obesity being particularly prevalent among women. Dietary analysis revealed a mix of traditional and modern food choices, with high consumption of starchy staples (rice, cassava, and yams), vegetables, palm oils and sugary beverages. No correlation was found between dietary habits and food practices and BMI.

Lifestyle modifications, such as light aerobic exercise and healthier food choices, should be incorporated into the HIV care program by the health care provider, especially for women. ART clinics should advocate for food support by leveraging local partnerships and national programs to assist those experiencing food insecurity. Results from this study can serve as a basis for targeted nutrition interventions, such as comprehensive nutrition education and counselling that incorporate local food preferences and cultural norms.

Author Contributions

The first draft of the manuscript was written by ZOF, OBA, and YGA. The introduction was reviewed by ZOF, the presentation of the results by YGA, and the discussions, conclusions, and references by OBA. All authors have read and approved the final version of the paper and its submission and have given consent for publication

Declaration of Generative AI and AI-Assisted Technologies in Scientific Writing

Nothing to disclose.

Acknowledgements

We acknowledge the Department of Human Nutrition and Dietetics for providing us with the opportunity to conduct this research, and the staff of the Adeoyo Antiretroviral Therapy Clinic for their support.

Data Availability Statement

The data are available on request

Funding

This research was solely funded by the researcher

Conflict of Interest

We declare that there were no conflicts of interest regarding the publication of this paper

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