Socio-Cultural Factors Engendering Vulnerability to HIV Epidemic in Enugu South Local Government Area of Enugu State.

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ABSTRACT

This study examined sociocultural practices perceived to be associated with vulnerability to HIV in Enugu South Local Government Area, Enugu State, Nigeria. It adopted a descriptive survey design and used a structured questionnaire to obtain respondents' views on selected sociocultural practices and their implications for HIV prevention and mitigation. The data were analysed using descriptive statistics and principal component analysis (PCA). The findings reported that traditional marriage practices were observed to a very great extent, while cultural festivals, cultural groups or societies, circumcision, and masquerading were observed to a great extent. Multiple female partners, extramarital relationships, death rites, taboos, traditional medicines, gender inequalities, male-child preference, and early marriage were reported at a moderate extent. PCA grouped selected variables into three components: cultural festivals and cultural groups or societies; blood covenants or oaths and bloodletting; and polygamy and multiple female partners. The reported percentage of variance explained requires confirmation against the original statistical output. The study recommends culturally responsive HIV-prevention education, community engagement, and further research into the relationship between social practices and access to prevention services. The findings reflect respondents' perceptions and should not be interpreted as proof that any single cultural practice directly causes HIV infection.

Keywords: sociocultural practices; HIV vulnerability; HIV prevention; Enugu South; Nigeria.

INTRODUCTION

Human immunodeficiency virus (HIV) remains a major global public health challenge, affecting millions of people worldwide and continuing to cause substantial morbidity and mortality. According to UNAIDS (2025), approximately 40.8 million people were living with HIV globally in 2024, while an estimated 1.3 million people acquired new HIV infections and 630,000 died from AIDS-related illnesses during the same year. Although significant progress has been made in HIV prevention, testing and antiretroviral treatment, the continued incidence of new infections and the persistence of AIDS-related deaths underscore the need for sustained public health interventions, improved access to treatment, and effective prevention strategies (UNAIDS, 2025; WHO, 2025). HIV/AIDS has become a continuing global burden and a major public health concern despite decades of prevention and treatment efforts. Approximately 1.3 million people acquired HIV in 2024, demonstrating that prevention efforts still need strengthening. An estimated 630,000 people died from AIDS-related illnesses in 2024, although deaths have declined substantially since 2010 (UNAIDS 2025).

Sub-Saharan Africa continues to account for a substantial share of the global HIV epidemic, making targeted prevention, testing and treatment particularly important in the region. In Nigeria, human immunodeficiency virus (HIV) remains a significant public health concern, despite advances in prevention, diagnosis and antiretroviral therapy. The Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) 2018 estimated national HIV prevalence at 1.4% among adults aged 15–64 years. At the state level, Enugu State recorded an estimated prevalence of approximately 1.8%, underscoring the need for sustained state-specific HIV prevention and control programmes (Federal Ministry of Health, Nigeria, 2019). More recently, the Enugu

State Agency for the Control of AIDS (ENSACA) has continued to strengthen HIV programme monitoring and data validation to improve the accuracy of information on testing, treatment and patient outcomes (ENSACA, 2026). These efforts reinforce the importance of evidence-based interventions, public awareness, early testing, access to antiretroviral treatment and the reduction of stigma and discrimination against people living with HIV.

Investigations have shown that the high prevalence rate of the Acquired Immune Deficiency Syndrome in Enugu State was due to low knowledge about the disease by the majority of the people in the state. A review indicated that low risk perception, the belief by many people that they cannot contact the disease, further contributed to the spread of the scourge, especially in the metropolis (ENSACA). The state, with a 6.5 per cent prevalence rate, has the highest in the South East and the fourth in the nation and the pandemic is feared to be on the increase in recent times following indiscriminate sexual activities of teenagers and young adults who constitute a large portion of the population (Enugu State Action Committee on HIV/AIDS, 2005).

EMPIRICAL REVIEW

In a study carried out by Modo, Modo and Enang (2011) on "Socio-Cultural Factors Responsible for Increasing Rate of HIV/AIDS in Akwa Ibom State of Nigeria." They revealed that Akwa Ibom State is rated second in terms of HIV/AIDS pandemic (with 8.1 seroprevalence rate) out of the 36 states in Nigeria. The authors carried out an intensive three month fieldwork in Uyo capital area and its surrounding villages of Itam, Itiam and Mbiabong Anyaya, using purposive and random sampling techniques. Their findings show that the people's belief system and socio-cultural practices favour the contracting and spread of HIV/AIDS. The researchers' recommendations for mitigating the spread of the pandemic include massive awareness campaign about covert cultural practices that aid the spread, and opening up of more Voluntary and Counselling Testing Centers (VCCT).

The work authored by Auerbach, Parkhust, Caceres and Keller (2012) on "Addressing Social Drivers of HIV/AIDS: Some Conceptual, Methodological, and Evidentiary Considerations" focused on how aspects of social influence operate and facilitate HIV transmission in order to mount a social-level response. They revealed that progress in HIV prevention requires new approaches that engage with underlying social-structural drivers of patterns of practices that influence vulnerability and facilitate the spread of HIV. Patterns of behavior and practices will arise from combinations of drivers, operating in specific social, economic, and political contexts. As such, no single causal pathway can be drawn from a social driver to a set of practices or behaviors; rather, a range of potential outcomes may arise. Associations made between social drivers and HIV vulnerability should have "sociological plausibility" and should draw from extant social science and epidemiological data. Engaging with social drivers requires methods and approaches beyond traditional conceptualizations that seek to identify and intervene on single, causal determinants or universal mechanisms of influence.

They noted that many terms, methods, and notions of evidence are contested, but action in the face of a continuing pandemic is urgent, so some compromise is required. It is important to keep interrogating what constitutes "evidence" (and who gets to decide what constitutes it), but avoid becoming mired in epistemological and paradigmatic combat that stymies action. Thus, both evidence-based medicine/science-based research "true believers" and pro-qualitative, "counter-science" adherents must give a little. They pointed out that HIV prevention science – currently dominated by biomedical and clinical science paradigms – must better integrate understandings and approaches (theoretical and methodological) from the social sciences and from social epidemiology, as social science methods are valid for social-level analysis and assessment. At the same time, social scientists must not reject experimental methods where they may be appropriate and valid for testing the efficacy of new HIV prevention approaches. HIV prevention researchers and advocates must reject and resist oversimplified language for social drivers.

Adeokun (2011) in his work on "Social and Cultural Factors affecting the HIV Epidemic" revealed that from the sentinel survey data, Nigeria's HIV epidemic is moving from the high-risk-group stage to a disseminated phase in the general population. At the same time, knowledge about the virus has moved out of the AIDS-

is-a-killer phase to a recognition that infection can be managed to maintain quality of life and survival of infection. In effect, the literature lags behind by being preoccupied with the formation of exclusive networks of so-called high-risk groups. Other networks in the general population can be as prolific as any, especially in the context of a permissive male sexual culture. In addition, the public health focus has shifted from avoiding transmission to making VCT the basis of access to antiretroviral programs. He noted that given these changes, a continued focus on the negative features of culture and exposure to risk can become counterproductive if it gives a false sense of safety to those who perceive themselves as being free of negative cultural events. On the other hand, attempts at propagating HIV surveillance and advocating VCT are in their relative infancies. For these efforts to be effective and for VCT to become normative, emphasis must shift from the negative features to the positive features of the culture. The fuller range of social and cultural factors should be exploited in a new phase of aggressive HIV prevention efforts and of coping with the secondary epidemic of paediatric AIDS.

METHODOLOGY

The study was carried out in Enugu South Local Government of Enugu State, Nigeria. Enugu State is one of the states in the eastern part of Nigeria. The state shares borders with Abia State and Imo State to the south, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest and Anambra State to the west. The State Government and the Local Government are the two levels of government in Enugu State and in all other states of Nigeria. The state has 17 local governments, of which Enugu south is one of them. Its head quarter is in the town of Uwani. It has an area of 67 km² and a population of 3,267,837 at the 2006 census (NPC, 2009). The descriptive survey research design was used to determine the nature and scope of study carried out or proposed. It means the restricting of investigation aimed at identifying variables and their relationship to one another (Anderson, Sweeney and Williams, 2011). It serves as a useful guide to the researcher to generate data for the study. According to Onwumere (2009:39), "studies of the nature of descriptive research aim mainly at collecting information that reveals the characteristics or features of an existing phenomenon."

The study is on combination of primary and secondary data. The primary source of data used for this study was collected through the administration of a structured questionnaire. The questionnaire is designed to collect information on the various study objectives. The instrument is divided into two sections: A and B. Section A captures the demographics of the respondents while section B captures data on the socio-cultural practices of the respondents and their attendant effect on HIV epidemic in Enugu south LGA. A5 – Scale Likert answer/options was adopted for section B, where: very great extent (VGE, 5), great extent (GE, 4), moderate extent (ME, 3), little extent (LE, 2) and not at all (NaA, 1). The secondary sources of data were from journals, online publication, the library and other unpublished research materials, which was used as reference materials in reviewing related and relevant literature. The appropriate sample size for this study is determined by using Taro Yamane' formula (Onwumere, 2009). The sampling method that was used in this study is multi-stage approach. The population was classified into different groups (strata) and within each stratum; a simple random sampling method was adopted. In carrying the reliability of the research instrument, the Cronbach's Alpha is used. The questionnaire was administered personally by the researcher, with three research assistants.

RESULT AND DISCUSSION OF FINDINGS

Research Question

What are the socio-cultural factors engendering vulnerability of HIV epidemic practice in Enugu South Local Government Area?

Descriptive Statistics			
	Mean	Std.	Analysi

		Deviation	s N
Blood covenants/oaths	2.26	1.140	200
Bloodletting (making tribal marks)	2.39	1.210	200
Caste System	2.13	1.345	200
Circumcision	3.70	1.443	200
Cultural festivals	4.05	1.045	200
Cultural groups/societies	3.63	1.209	200
Death rites	2.83	1.611	200
Divorces rites	2.14	1.232	200
Early Marriage	3.04	1.221	200
Extended Family system	3.68	1.134	200
Gender Inequalities	3.16	1.278	200
Having Extramarital relationships	2.92	1.417	200
Having multiple female partners	3.11	1.221	200
Initiation rites	2.49	1.345	200
Male-child syndrome	3.46	1.388	200
Masquerading	3.62	1.347	200
Polygamy	2.23	1.100	200
Sexual initiation during rites of passage	1.89	1.170	200
Skin cutting during traditional medical treatment	2.42	1.265	200
Taboos	2.59	1.292	200
Traditional Marriages	4.64	.840	200
Traditional Medicines	3.31	1.262	200
Widow cleaning	2.18	1.298	200
Wife inheritance	1.78	1.049	200
Wife Substitution (bringing another woman/wife for child bearing)	1.84	1.020	200

Table 1:1 Descriptive Statistics of Response of participants on Socio-Cultural Practice

Table 1:2 Reliability statistics on the responses of participants on socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.729	.730	25

Table 1:3 Appropriateness of factor analysis on the responses of participants on socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.610
Bartlett's Test of Sphericity	Approx. Chi-Square	1157.772
	Df	300
	Sig.	.000

Table 1:4 Communalities of socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Communalities		
	Initial	Extraction
Blood covenants/oaths	1.000	.574
Bloodletting (making tribal marks)	1.000	.689
Caste System	1.000	.684
Circumcision	1.000	.643
Cultural festivals	1.000	.680
Cultural groups/societies	1.000	.671
Death rites	1.000	.705
Divorces rites	1.000	.544
Early Marriage	1.000	.602
Extended Family system	1.000	.587

Gender Inequalities	1.000	.607
Having Extramarital relationships	1.000	.645
Having multiple female partners	1.000	.634
Initiation rites	1.000	.740
Male-child syndrome	1.000	.773
Masquerading	1.000	.710
Polygamy	1.000	.691
Sexual initiation during rites of passage	1.000	.657
Skin cutting during traditional medical treatment	1.000	.667
Taboos	1.000	.495
Traditional Marriages	1.000	.547
Traditional Medicines	1.000	.670
Widow cleaning	1.000	.641
Wife inheritance	1.000	.582
Wife Substitution (bringing another woman/wife for child bearing)	1.000	.533
Extraction Method: Principal Component Analysis.		

Table 1:5 Number of factors to extract (Latent root criterion): Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.754	15.016	15.016	3.754	15.016	15.016	2.350	9.398	9.398
2	2.312	9.246	24.262	2.312	9.246	24.262	2.115	8.460	17.858
3	2.058	8.232	32.494	2.058	8.232	32.494	2.081	8.322	26.180

4	1.630	6.519	39.013	1.630	6.519	39.013	1.933	7.731	33.911
5	1.448	5.791	44.804	1.448	5.791	44.804	1.796	7.185	41.096
6	1.266	5.065	49.869	1.266	5.065	49.869	1.684	6.735	47.831
7	1.226	4.904	54.773	1.226	4.904	54.773	1.354	5.417	53.248
8	1.201	4.802	59.575	1.201	4.802	59.575	1.352	5.408	58.655
9	1.078	4.312	63.887	1.078	4.312	63.887	1.308	5.232	63.887
10	.961	3.844	67.731						
11	.885	3.542	71.273						
12	.824	3.296	74.568						
13	.775	3.099	77.668						
14	.730	2.918	80.586						
15	.651	2.604	83.190						
16	.616	2.463	85.653						
17	.569	2.274	87.928						
18	.552	2.209	90.137						
19	.504	2.014	92.151						
20	.433	1.732	93.883						
21	.400	1.602	95.485						
22	.325	1.299	96.784						
23	.304	1.216	98.000						
24	.279	1.115	99.115						
25	.221	.885	100.000						

Extraction Method: Principal Component Analysis.

Table 1:6 Variable loadings on components: Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Rotated Component Matrix[a]			
	Component		
	1	2	3
Cultural festivals	.858		
Cultural groups/societies	.848		
Blood covenants/oaths		.854	
Bloodletting (making tribal marks)		.813	
Polygamy			.824
Having multiple female partners			.784
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

Table 1:7 Final Check of communalities: Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Communalities		
	Initial	Extraction
Blood covenant/oaths	1.000	.748
Bloodletting (making tribal marks)	1.000	.679
Cultural festivals	1.000	.751
Cultural groups/societies	1.000	.740
Having multiple female partners	1.000	.662
Polygamy	1.000	.704
Extraction Method: Principal Component Analysis.		

Table 1:8 Total variance of extracted components: Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.925	32.091	32.091	1.925	32.091	32.091	1.496	24.925	24.925
2	1.331	22.179	54.271	1.331	22.179	54.271	1.492	24.870	49.795
3	1.028	17.132	71.402	1.028	17.132	71.402	1.296	21.607	71.402
4	.752	12.538	83.941						
5	.612	10.196	94.137						
6	.352	5.863	100.000						
Extraction Method: Principal Component Analysis.									

The result of the analysis on Table 1:1 shows:

Little Extent

These socio-cultural practices: wife inheritance, wife substitution, sexual initiation during rites of passage, caste system, divorces rites, widow cleaning, polygamy, blood covenants/oaths, bloodletting (making tribal marks), skin cutting during traditional medical treatment and Initiation rites with average mean score of 2, thus indicative of responses having Little Extent. This implies that in Enugu South Local Government Area socio-cultural practices are observed at little extent.

Moderate Extent

Taboos, death rites, having extramarital relationships, early marriage, having multiple female partners, gender inequalities, traditional medicines and male-child syndrome are socio-cultural practices with average mean score of 3, thus indicative of responses observed moderately in Enugu South Local Government Area.

Great Extent

These socio-cultural practices (masquerading, cultural groups/societies, extended family system, circumcision, and cultural festivals) with average mean score of 4, thus indicative of responses observed at great extent in Enugu South Local Government Area.

Very Great Extent

This Socio-cultural practice (traditional marriages) has an average mean score of 5, thus indicative of the response observation at a very great extent, thus in Enugu South Local Government Area.

Research Hypothesis

There are no socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area.

Reliability statistics on the responses of participants on socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area.

Chronbach's Alpha is located at the bottom of the output (Table 1:2). An alpha of 0.60 or higher is the minimum acceptable level. Preferably, alpha will be 0.70 or higher, as it is in this case.

Appropriateness of factor analysis on the responses of participants on socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area.

Principal component analysis requires that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy be greater than 0.50 for each individual variable as well as the set of variables. On iteration 1, the MSA for all of the individual variables included in the analysis was greater than 0.5, supporting their retention in the analysis (Table 1:3).

In addition, the overall MSA for the set of variables included in the analysis was 0.610, which exceeds the minimum requirement of 0.50 for overall MSA (Table 1:3).

Principal component analysis requires that the probability associated with Bartlett's Test of Sphericity be less than the level of significance. The probability associated with the Bartlett test is <0.001, which satisfies this requirement (Table 1:3).

Communalities of socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area.

Communalities represent the proportion of the variance in the original variables that is accounted for by the factor solution. The factor solution should explain at least half of each original variable's variance, so the communality value for each variable should be 0.50 or higher.

On iteration 1, the communality for the variable "Taboos" [Taboos] was 0.495 (Table 1:4). Since this is less than 0.50, the variable should be removed from the next iteration of the principal component analysis. The variable was removed and the principal component analysis was computed again.

Once any variables with communalities less than 0.50 have been removed from the analysis, the pattern of factor loadings was examined to identify variables that have complex structure.

Complex structure occurs when one variable has high loadings or correlations (0.40 or greater) on more than one component. If a variable has complex structure, it should be removed from the analysis. Variables are only checked for complex structure if there is more than one component in the solution. Variables that load on only one component are described as having simple structure.

Number of factors to extract (Latent root criterion): Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Using the output from iteration 1, there were 9 eigenvalues greater than 1.0. The latent root criterion for number of factors to derive would indicate that there were 9 components to be extracted for these variables (Table 1:5).

In addition, the cumulative proportion of variance criteria can be met with 9 components to satisfy the criterion of explaining 60% or more of the total variance. A 9 components solution would explain 63.887% of the total variance (Table 1:5).

Variable loadings on components: Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

On iteration 5, the 3 components in the analysis had more than one variable loading on each of them. No variables need to be removed because they are the only variable loading on a component (Table 1:6).

Final Check of communalities: Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area

Since, all problems with complex structure have been resolved; the communalities are checked one last time to make certain that we are explaining a sufficient portion of the variance of all of the original variables (Table 1:7). .

The communalities for all of the variables included on the components were greater than 0.50 and all variables had simple structure. The principal component analysis has been completed.

Total variance of extracted components: Socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area.

The 3 components explain 71.402% of the total variance in the variables which are included on the components (Table 1:8).

The opinion of participants on socio-cultural factors engendering vulnerability to HIV epidemic in Enugu South Local Government Area were analyzed Principal Component Analysis (PCA) and the results were presented from Table 1:2 to Table 1:8. From the analysis, the information in 6 of the variables can be represented by 3 components:

Component 1 includes the variables

- "Cultural festivals" [Cultural festivals], and
- "Cultural groups/societies" [Cultural groups/societies].

Component 2 includes the variables

- "Blood covenants/oaths" [Blood covenants/oaths], and
- "Bloodletting (making tribal marks)" [Bloodletting (making tribal marks)].

Component 3 includes the variables

- "Polygamy" [Polygamy], and
- "Having multiple female partners"[Having multiple female partners].

The 3 components explain 71.402% of the total variance in the variables which are included on the components (Table 1:8).

Since PCA has extracted 6 variables composing 3 components, the null hypothesis is rejected. This means that there are socio-cultural factors (variables) engendering vulnerability to HIV epidemic in Enugu South Local Government Area in Enugu States (Table 1:8).

SUMMARY OF FINDINGS, IMPLICATION AND CONCLUSION

Blood covenant, bloodletting (tribal marks), cultural festivals, cultural groups/societies, having multiple female partners, and Polygamy were loaded as principal components. This imply that respondents or inhabitants in Enugu South Local Government of Enugu State should pay heed to this outcome (the

protection from exposure to body fluid via multiple sex partnership, polygamy, skin cutting and unprotected sex). For this reason, many inhabitants or respondents need to be awakened for these socio-cultural practices that engender HIV spread and eradicate or reduce or protect themselves.

The resident of Enugu South Local Government Area (LGA) where this study was conducted will benefit immensely from the findings if adequately equipped with these findings to promote their livelihood and long-term well-being. Health and Wellness planners, government and non-governmental organizations (NGOs) should provide these findings for community and faith based education, all the schools, workplaces and markets in the LGA under study as instructional materials for teachers to teach and instruct students, town chieftains and leaders.

REFERENCES

1. Adeokun, L. (2011) Social and Cultural Factors affecting the HIV Epidemic, Association for Reproductive and Family Health, Lagos Vol. 5 no 2, p. 124.
2. Anderson, D.R, Sweeny, D.J., and Williccams, T.A. 2011, Statistics for Business and Economics, USA: South Western Cengage Learning.
3. Auerbach, J. D., Parkhurst, J. O., & Caceres, C. F. (2011). Addressing social drivers of HIV/AIDS. Addressing social drivers of HIV/AIDS for the long-term response: Conceptual and methodological considerations. Global Public Health, 6(Supp. 3), S293-S309.
4. Enugu State Agency for the Control of AIDS. (2026, July 3). ENSACA Q2 HIV data validation coordination meeting.
5. Federal Ministry of Health, Nigeria. (2019). Nigeria HIV/AIDS Indicator and Impact Survey (NAIIS) 2018: Technical report. Abuja, Nigeria.
6. Joint United Nations Programme on HIV/AIDS (UNAIDS). (2025). Global AIDS update 2025: AIDS, crisis and the power to transform.
7. Joint United Nations Programme on HIV/AIDS (UNAIDS). (2025). Global HIV & AIDS statistics—Fact sheet.
8. Modo, I.V.O., Modo F. N., & Enang, P. I. (2011) Socio-Cultural factors responsible for the increasing rate of HIV/AIDS in Akwa Ibom State of Nigeria. Ethno-medicine, 5(2), 141-147.
9. National Agency for the Control of AIDS. (2009). National HIV/AIDS policy review report: Report of desk review and stakeholders' intervention.
10. National Action Committee on AIDS (2009) National HIV/AIDS Behaviour Change Communication Strategy (2004 – 2008), Abuja: National Action Committee on AIDS.
11. National Population Commission (NPC) (Nigeria) and ICF Macro. (2009). Nigeria Demographic and Health Survey 2008, Abuja, Nigeria. NPCc and ICF macro
12. Onwumere, J.U.J. (2009) Business and Economic Research Methods, Enugu: Vougasen Limited.
13. World Health Organization. (2025). HIV and AIDS: Global health estimates and statistics. [WHO HIV data](https://www.who.int/data/gho/data/themes/hiv-aids?utm_source=chatgpt.com).