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Review Article

Exploring Prevalence and İncidence rate of HIV/AIDS in West Africa: A systematic review

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Abstract

Background: In Africa, HIV is one of the most serious public health issues. The purpose of this study was to look into the prevalence and incidence rates of HIV/AIDS in West Africa across all age ranges and population groups.

Methods: This is a comprehensive study of published and unpublished studies on HIV/AIDS prevalence and incidence in West Africa. All publications published between 2010 and 2020 that were retrieved from databases, as well as other records containing information on the topic under consideration, were examined.

Results: The comprehensive assessment of the literature generated 13 papers with data on the prevalence and incidence of HIV after applying the inclusion, exclusion, and quality criteria. These items came from nine different countries in West Africa. The prevalence rate of HIV in a specific group ranged from 1.4 percent to 54.9 percent in this article review.

Conclusion: The review found that HIV prevalence in important demographics in West African nations was high. It also revealed that women are the ones who are most affected. HIV prevalence and incidence differ from country to country. In comparison to other nations, HIV prevalence in important populations was greater in Nigeria and lower in Benin.

Keywords: Prevalence, İncidence, HIV, AIDS, Africa, Population

Introduction

HIV/AIDS is still one of the world's most dangerous public health problems (1). So far, 35 million people have died as a result of the epidemic (1). AIDS is the most severe stage of HIV infection, and it can take anywhere from two to fifteen years to develop, depending on the person (1). In 2019, about 38 million people worldwide were living with HIV/AIDS. 36.2 million of these were adults, while 1.8 million were children under the age of 15 (2).

People typically state that HIV first appeared in the United States in the 1980s, however it was only when people became aware of the disease and it was formally recognized as a new health problem (3). The great majority of HIV-positive people live in low and middle-income nations. In 2020, there were 20.6 million HIV-positive persons worldwide (55 percent in Eastern and Southern Africa, 4.7 million (13% in Western and Central Africa, 5.7 million (15%) in Asia and the Pacific, and 2.2 million (6% in Western and Central Europe and North America) (2).

Since the beginning of the pandemic, more than 15 million Africans have died of AIDS, according to estimates in 2007. (4). The WHO African Region is the worst impacted, with 25.7 million people living with HIV in 2018. Furthermore, nearly two-thirds of all new HIV infections occur in Africa (1). Although Sub-Saharan Africa has only 12.5% of the world's population, it accounts for 70% of new HIV infections (5). Nigeria has the highest number of HIV/AIDS patients (3.5 million in 2001) of any country on the continent, second only to South Africa. In West Africa, Côte d'Ivoire has emerged as the epicenter of the outbreak (6).

For the acquisition of HIV and other sexually transmitted illnesses, key populations in western Africa engage in high-risk activities such as unprotected intercourse and IV drug use (7). HIV prevalence data for both male and female sex workers varies significantly between and within nations, and can be five to 10 times greater than the general population (8). Furthermore, children and young women are among the most severely afflicted by HIV in West Africa. Every day, over 160 young women in West and Central Africa are infected with HIV, according to UNAIDS (9).

Due to a number of issues, including a lack of high-quality epidemiological surveillance data, discrimination against critical populations, and inadequate research capability in the majority of West African countries, determining the HIV incidence rate in the region is challenging. The majority of the researchers concentrated their efforts on critical populations in west African countries that engage in high-risk sexual conduct. The goal of this study is to look into the prevalence and incidence rates of HIV/AIDS in West Africa across all age ranges and social groupings.

Methods

From March 1, 2021, to June 30, 2021, a comprehensive assessment of published HIV/AIDS articles was done. Two researchers used PubMed, Google Scholar, and Science Direct to conduct searches that were limited to papers written in English. The study's location was chosen as the West African Region. Western Africa is made up of seventeen countries, including Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, and the United Kingdom overseas territory of Saint Helena, according to the United Nations Statistics Division (10).

"HIV," "epidemiology," "prevalence rate" (PR), "incidence rate" (IR), and "AIDS Epidemiology," as well as a country from the seventeen West African Region countries previously mentioned, were used to search the knowledge base. We looked at the abstracts of articles published between 2010 and 2020 to see whether research fit the inclusion criteria, and we only looked at the full-length articles that met the requirements. Only peer-reviewed studies and those that documented the clinical burden of HIV/AIDS in West African nations with quantitative data were included. Articles published prior to 2010 as well as those written in French were omitted.

The search yielded 382 articles with key terms at first. 45 papers were abstracted for further screening out of a total of 382 articles. Based on their eligibility, 13 articles were selected for detailed editing. The majority of the papers discussed the frequency of HIV infection in specific categories, such as important populations and those with chronic conditions. The Demographic and Health Surveys (DHS) and/or UNAIDS reports were consulted. As a result, estimates of the prevalence of HIV infection in the general population were developed. The UNAIDS or DHS report from the respective nation was used for each study. The necessary information was also checked on the Web pages and fact sheets.

Results

Table 1 presents a selection of articles from nine (nine) nations in West Africa. Nigeria has three articles, Benin has two, Burkina Faso has two, and the remaining nine countries have one each: Ghana, Ivory Coast, Mali, Sierra Leone, Guinea Conakry, and Togo. Ten of the thirteen articles looked at were original works, while three were secondary sources (one review paper, one sentinel surveillance data, and one hospital data). The study includes six cross-sectional study types, three cohort studies, and one descriptive analysis survey. This review's research was done in a variety of settings. Nine studies were undertaken in urban areas. In both rural and urban environments, four tests were conducted. Despite the fact that no study was conducted exclusively in rural areas, the age of the sample population in this study varied. Five studies included people aged 18 and up, three studies included people aged six to eighty-eight, one research included people aged fifteen and up, one study included people aged fourteen to eighty, one study included people aged fifty and up, and one study included people aged less than fifteen. Nigeria had the largest sample population with 16,122 people, followed by Mali with 8,227. The least sample population was 358 persons in Benin. According to the study's focus group, 8% of the study's participants were pediatricians, 15% general public, 8% elderly

and 23% were others, such as cancer patients, suspected Ebola patients, and blood donors. PR can range from 1.4 percent to 54.9 percent in some populations. It also notes that there was only one study among MSM in Benin to assess the HIV incidence rate. MSM have a high HIV prevalence of 5.9 per 100 person-years, according to the study.

These nine countries have an incidence rate of less than 1%, indicating a poor statistical significance. Females have a greater prevalence rate (0.2 percent–4.1 percent) than males (0.2 percent–2.6 percent) across the sixteen West African countries covered in this report.

Table 3 illustrates the prevalence and incidence rates of nine West African countries that contain articles on the issue under examination, according to the United Nations AIDS 2019 report. These countries have an incidence rate of less than 1%, indicating minimal statistical significance. There is a significant difference between the previous and current PR reports for these countries. Benin's DHS reported 1.2 percent PR in the general population in 2012, and UNAIDS' 2019 report on PR Amongst General Adult Population put it at almost the same 1.0 percent. According to the Nigeria NARHS, the PR in 2013 was 3.4 percent, but UNAIDS recorded 1.3 percent in 2019. Togo had PR of 2.3 percent in 2018 and 2.2 percent in 2019. PR of Ivory Coast in 2013 was 3.7 percent and 2.4 percent in 2019. The PR of Guinea Conakry in 2012 and 2019 was 1.5 percent and 1.6 percent, respectively.

With the exception of Saint Helena Territory, which was recently included to West Africa, the UNAIDS 2019 study captured other West African countries that do not have articles. According to the report, HIV PR in the general population aged 15–49 years is 1.5 percent in Liberia, 3.4 percent in Guinea Bissau, 0.6 percent in Cap Verde, 1.9 percent in Gambia, 0.4 percent in Senegal, 0.2 percent in Niger, and 0.2 percent in Mauritania.

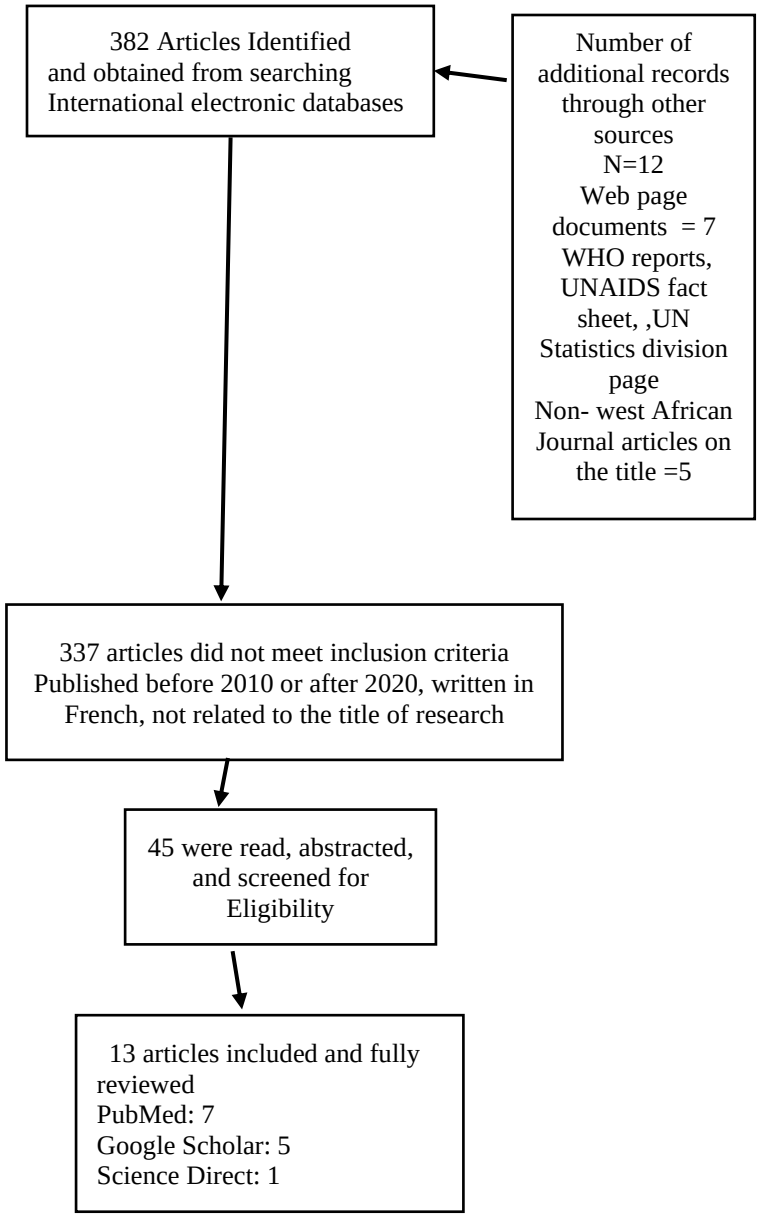

Figure 1. Flow diagram for the process of review of the literature

Table 1. List of the 13 selected articles and date of publication

Author (Ref)	Title of Selected Article	year of Publication
Hessou et al[11]	A behavioral and serological survey on HIV prevalence among prisoners in Benin	2020
Ouedraogo et al[12]	HIV among Female Sex Workers in Five Cities in Burkina Faso: A Cross-Sectional Baseline Survey to İnform HIV/AIDS Programs	2017
Ali et al [13]	Ghana's HIV epidemic and PEPFAR's contribution towards epidemic control	2019
Keshinro et al [14]	High prevalence of HIV, chlamydia and gonorrhea among men who have sex with men and transgender women attending trusted community centers in Abuja and Lagos, Nigeria	2016
Awofala et al [15]	HIV epidemiology in Nigeria	2016
Hessou et al [16]	HIV incidence and risk contributing factors among men who have sex with men in Benin: A prospective cohort study	2020
Gbeasor et al [17]	HIV testing uptake and prevalence among hospitalized older adults in Togo: A cross sectional study	2020
B.O. O et al [18]	Prevalence and clinical pattern of pediatric HIV infection at the University College Hospital, İbadan, Nigeria: a prospective cross-sectional study	2011
Bouscaillou et al [19]	Prevalence and risk factors associated with HIV and tuberculosis in people who use drugs in Abidjan, İvory Coast	2015
Jary et al [20]	Seroprevalence and risk factors for HIV, HCV, HBV and syphilis among blood donors in Mali	2019
Liu et al [21]	HIV prevalence in suspected Ebola cases during the 2014–2016 Ebola epidemic in Sierra Leone	2019
Traore et al [22]	The Prevalence of HIV in Cancer Patients at the Surgical Oncology Unit of Donka University Hospital of Conakry (Guinea)	2015
Ouedraogo et al [23]	Human immunodeficiency virus (HIV) among men who have sex with men: results of the first integrated biological and behavioral survey in Burkina Faso, West Africa	2019

Table 2. Summary of epidemiology (PR,İR) of HIV/AIDS in west African countries

Author (Ref)	Study design	Study period	Study location	Study population	Age of Samples (year)	Study Group	PR % in general population	PR % in Specific group of population	İR Per 100 person-years (special group
Hessou et al [11]	Cross-Sectional	2015	Urban	496	18 and above	İnmates	1.2 DHS (2011-2012)	1.4 Prisoners	N/A
Ouedraogo et al[12]	Cross-Sectional Baseline Survey	Feb 2013-May 2014	Urban (5 cities)	1073	18 and above	FSW	---------	(4.4-30.1)FSW**	N/A
Ali et al [13]	Secondary Data	2011-2016	Urban and Rural	------	All ages	General population	1.6UNAIDS(2019)	28 FSW&MSM	N/A
Keshinro et al [14]	Cohort prospective	2004-2017	Urban	16,102	6-88	MSM transgender women	---------	54.9(MSM, TGW***)	N/A
Awofala et al [15]	Secondary data	------	Urban et Rural	------	All ages	General Population	3.4 NARHS(2013)	---------	N/A
Hessou et al [16]	Prospective Cohort Study	30 month	Urban et Rural	358	14-80	MSM*	-------	------	5.9(MSM)
Gbeasor et al [17]	Cross-Sectional	Feb 2018-June 2019	Urban	619	50 and above	Hospitalized older adults	2.3(2018)	7.1 (older Adults)	N/A
Ogunbosi et al [18]	Prospective cross sectional study	July-Dec 2007	Urban	600	Less than 15	Pediatrics	------	10 (pediatrics)	N/A
Bouscaillou et al [19]	Descriptive analysis (Survey)	2014	Urban	450	18 and above	PWUD	3.7 DHS (2013)	9.5 PWUD****	N/A
Jary et al [20]	Cross-sectional	2018	Urban	8207	18-60	Blood donors	--------	2.16(blood donors)	N/A
Liu et al [21]	Cohort Study	Jan-Dec 2017	Urban and Rural	3808	15 and above	Suspected Ebola Cases	----------	17.6(suspected Ebola cases)	N/A
Traore et al [22]	Secondary data	May 2007 to Dec2012	Urban	3143	All age	Cancer Patients	1.5 UNAIDS (2012)	2.1(cancer patients)	N/A
Ouedraogo et al [23]	Cross-sectional	Jan-Aug 2013	urban	662	18 and above	MSM	1.0 DHS (2010)*****	3.6 MSM*	N/A

PR: Prevalence rate*; IR:* Incidence rate*;N/A:* Not available*;*
MSM:* Men who have sex with men*; **FSW:* Female sex workers*; * TGW:* Transgender women*;*
*****PWUD:* People who use Drugs ****** DHS: Demographic and Health Survey

Table 3. HIV prevalence and incidence in the selected countries according to UNAIDS report 2019

Country	PR% in Adult age15-49	PR% in women age 15-49	PR% in men age 15-49	İncidence per 1000 population all ages	incidence per 1000 population age 15-49
Benin	1.0	1.2	0.7	0.31	0.52
Burkina fasso	0.7	0.9	0.6	0.14	0.19
Ghana	1.7	2.4	1.1	0.70	1.1
Nigeria	1.3	1.6	1.0	0.52	0.78
Togo	2.2	2.9	1.5	0.59	0.90
Mali	1.2	1.6	0.9	_	_
İvory Coast	2.4	3.3	1.5	0.51	0.80
Sierra Leone	1.6	1.9	1.2	0.65	0.92
Guinea	1.6	1.9	0.9	0.65	0.92

Discussion

In this study, the clinical burden of HIV/AIDS differed somewhat between the West African countries. The majority of the research that were examined were focused on specific groups. Although there are disparities in sample sizes, there is little contrast. Regardless of the economic state of the countries under study in general, the analysis' findings show that crucial populations have the highest prevalence and incidence among the population. This could be due to a variety of circumstances, including their participation in high-risk behaviors, stigmatization, and discrimination, all of which affect their access to HIV testing, counseling, and treatment (9). It also found that females in this region have a higher disease burden than males. This could be due to the widespread belief that the majority of women in West Africa are subjected to sexual violence and abuse, including rape, making them vulnerable to STIs like HIV/AIDS. Poverty as a result of a lack of access to high-earning jobs, for example. Gender disparity has an impact on employment involving high-risk sex work.

In West Africa, a research was undertaken among significant communities (8). According to the findings, HIV prevalence among female sex workers ranged from 15.9% in The Gambia to 68 percent in Benin, while MSM prevalence ranged from 9.8% in The Gambia to 34.9 percent in Nigeria. Despite the fact that the current trend is declining (8). Moreover, in Sub-Saharan Africa, five out of every six new infections among adolescents aged 15–19 years are among girls, according to UNAIDS. Young women between the ages of 15 and 24 are twice as likely as men to have HIV. Many research on risky sex among youth have been published in various parts of the world (24) In Western and Central Africa, key populations and their sexual partners account for 69 percent of new HIV infections (25).

While the study's strength was that it included all available information on HIV prevalence and incidence rates in West African countries, there were some limitations: measuring HIV prevalence is difficult due to the non-specificity of the subjects; different countries used different methods, objectives, and tools; and the tools used had limited availability and accuracy of analysis. Of course, it is vital to conduct frequent and periodic research in order to assess variations in illness prevalence. Only a few items met our requirements. This could be a limitation as well.

Conclusion

The prevalence of HIV/AIDS was found to be high in West Africa, according to this study. In this region, the prevalence rates in the general population and important populations differed from country to country. The incidence rate did not differ significantly between the countries. In urban regions, disease prevalence is high. It also emphasizes that HIV/AIDS mostly affects critical groups and females in West Africa. A little incidence investigation has been carried out.

Many West African countries' weak economic conditions and insufficient resources have hampered the investment and effort required to address HIV/AIDS. There is a paucity of human resource capability and funding to support research that informs policymakers. Gender-based violence, sexual violence, and discrimination against key populations are all human rights issues. As a result, a major global coordinated effort to alleviate these problems is vital if the fight against the West African epidemic is to be successful. Human resource capacity building in research, health policy and management, and human rights advocacy are among these endeavors. More research should be done on pediatrics and pregnant women, as they are also at risk of contracting this terrible disease.

Conflict of interests: none.

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