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(RESEARCH ARTICLE)

# A scientometric analysis of HIV/AIDS research in the Democratic Republic of the Congo

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## Abstract

**Objective**: This is a scientometric study based on the analysis of the evolution of the literature on Human Immunodeficiency Virus (HIV/AIDS) in all its aspects in the specific context of the Democratic Republic of Congo (DRC) from 2007 to 2022.

**Methodology**: This is a scientometric study. The data analyzed as part of this study are articles published on HIV/AIDS in the period from 2007 to 2022 in the context of the Democratic Republic of Congo. The following parameters were analyzed: years of publication, authors and their relationships, affiliations, journals of publications, the language of publications, keywords, association of publishing institutions, countries of publication and their relationship. Excel software and VOSViewer were used for data processing.

**Results:** The study involved 56 articles published in several journals worldwide. The University of Kinshasa, the University of Lubumbashi and the National Multisectoral HIV/AIDS Program are the most important institutions in term of the number of articles. Five journals published more than one article. Some authors were identified as relevant because they were mentioned in more than one article, including Mandina, Mukuku, Situakibanza, Luboya and Amaele, while Situakibanza, followed by Mandina and Mukuku are those who have published more than other authors. In terms of contry's contributions, two contries were identified as more productive: the DR Cong in first place, followed by the United Stateds of America (USA). The keywords that were more mentioned are HIV/AIDS and DR Congo. **Conclusion:** In the last ten years, a development in HIV/AIDS research in DR Congo can be observed.

**Motivation of the study:** It is essential to evaluate the evolution of research on HIV / AIDS (a formidable disease that is an endemic of international renown) in the specific context of the Democratic Republic of Congo. Main results: Several publications on HIV/AIDS were identified with strong collaboration between authors, countries and authors' affiliations. The DR Congo and the USA were the countries that participated most in the publications identified. Implication: This study will give future researchers an overview of existing research and emerging themes in HIV/AIDS in the Democratic Republic of Congo.

Keywords: HIV/AIDS; Scientometric Analysis; HIV/AIDS Publication; Democratic Republic of Congo.

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#### 1. Introduction

Human Immunodeficiency Virus (HIV/AIDS) has become one of the most serious health problems in the world. Young women (aged 15-24) are particularly susceptible to HIV. Infection rates are twice as high as for young men and account for 22% of all new HIV infections and 31% of new cases in sub-Saharan Africa [1]. For 2019, UNAIDS estimates the number of people living with HIV worldwide at 38 million. Annual HIV infections and deaths were estimated at 1.7 million and 690,000 respectively [2]. HIV/AIDS infection makes no distinction between race, gender, age or social status. According to UNAIDS, the 3.9 million people infected are mainly women and men between the ages of 20 and [3, 4]. In the countries most affected by HIV/AIDS, the consequences of this epidemic go beyond the health sector and affect socio-economic development, food security, and nutrition. Nevertheless, South Asia and sub-Saharan Africa remain the regions of the planet with the highest rates hunger [5]. In low-income countries, the prevalence of HIV/AIDS infection among blood donors is between 1% and 12% [6]. In Africa, considerable efforts are being made in Africa to reduce the global hunger index, including the fight against malaria and AIDS, but the prevalence of HIV/AIDS remains just as high on this African continent [5].

In sub-Saharan Africa, tuberculosis (TB) and HIV co-infection are associated with high morbidity and mortality rates among people living with HIV/AIDS. According to the World Health Organization (WHO), Africa has the highest rate of TB/HIV co-infections [7, 8]. In 2019, approximately 84 % of the 251,000 HIV-associated TB deaths occurred in sub-Saharan Africa [9].

The surface antigen (HBsAg) of the hepatitis B virus is a marker for chronic infection, which affects three hundred million people worldwide, particularly in resource- poor countries affected by political and security instability [10]. Antiretroviral therapy (ART) aims to achieve an undetectable viral load (CV) (<50 copies/ml) within six months of starting treatment [11].

In Africa, women become infected with HIV at least 5 to 7 years earlier than men, often during their first sexual intercourse. According to UNAIDS, HIV prevalence among young women in Nigeria and the D.R.C-was estimated at 1.3% and 0.5% in 2013, compared to 0.7% and 0.3% for young men Please note that HPV infection is the most common STI [12, 13]. According to Masouda et al. [14], in their study of HPV infections and cervical lesions in at risk-women, including 32 HIV infected women, the prevalence in this population was estimated at 41.4%. Persistent infection with HPVHR types is the cause of 40% of vulvar carcinomas and 85% of stage 2 or 3 vulvar intraepithelial neoplasia. The literature review reports thirty cases of invasive vulvar carcinomas in WLHIV. In cases of immunosuppression, these tumors are detected at a younger age [15]. The viral clearance rate is higher and persistence beyond 30 years is higher than in the general population [16-18]. Progression to invasive carcinoma is very slow and its incidence is estimated at 2 to 4% [19].

In conflict situations, women are particularly vulnerable to an increased risk of sexual violence, leading to additional morbidity [20] including psychological trauma, unwanted pregnancies, sexually transmitted infections (STI.s), and HIV infection [21]. We argue that women's empowerment alone is not enough to change the behavior of young men, some which is fueling the HIV epidemic [22].

In Democratic Republic of Congo (DRC), HIV prevalence in 2014 ranged from 1% to 7% in the general population [23]. Among young people aged 15 to 24, HIV prevalence was around 4 %, according to the 2010 UNGASS national report [24]. These rates may be uncertain due to the armed conflict, which makes it difficult to collect accurate data on HIV infection. HIV [23].

The DRC was one of the first countries to record HIV infections. The first cases of AIDS were described in 1983 HIV prevalence in the DRC is estimated at 0.8 % among adults aged 15 to 49. About 450,000 people are living with HIV, 57 % are receiving antiretroviral (ARV) treatment [25].

According to the report published on Wednesday, January 12, 2021, at 7:07 pm on Okapi-RDC radio, more than 94,000 people will be affected by AIDS in 2021, according to the NMPCA (PNMLS/DR Congo). The DRC has started introducing HIV self-testing to strengthen the first 95 UNAIDS targets 95-95-95 by 2025 [26].

In DRC, as in other sub-Saharan African countries, the implementation of research protocols on HIV/AIDS is experiencing undeniable growth [27, 28]. Only 9% of adults in the DRC knew their HIV status, due in part to the limited availability of HIV counseling and testing services [29]. Despite the proven efficacy of the triple therapy (TDF + 3TC + D.T.G.) of tenofovir, lamivudine and raltegravir, predicting resistance and adverse events in patients using this regimen is a necessity to monitor virologic failure (VF) [30]. Certain factors also carry the risk of HIV infection

A study conducted in South-Kivu proves that young people do not start sexual activity very early, but have multiple sexual partners [31]. According to the study, 56% of young people had the shortest sex life with more than two partners, usually without protection [31].

The development of an effective preventive vaccine against HIV is a priority for African countries [32, 33]. However, it is clear that, HIV infection remains a significant public health problem despite the discovery of treatment options [34, 35]. HPV DNA detection tests, mainly HPVHR tests, allow early detection of HPV-related intraepithelial lesions and can be used in combination with cervical cytology as a screening tool to improve the management of HIV- infected patients [36].

The present scientometric study is a quantitative study that reviews and analyzes the literature in the field of HIV-AIDS and serves as an essential basis for the definition and discussion of a future research plan in DRC. An important indicator of scientific progress is the distribution of publications over a given period, the contribution of each country, and the model of national and international collaboration between scientists. [37].

Therefore, the main objective of this study is to analyze the scientific contribution to research over the last 16 years (from 2007 to 2023) in the production of publications on HIV-AIDS in DRC. Specifically, this study aims to (1) measure the productivity of research; (2) examine the contribution of national and foreign institutions (universities, research centers); (3) determine which country has contributed to the study of HIV in the DRC; (4) find out in which journals studies have been published; (5) and see which language is mainly used in the publications.

# 2. Methodology

This scientometric study focuses on articles dealing with the HIV-AIDS pandemic in DRC. This study used online database, such as PubMed, scorpus, Google Scholar, web of science, to extract data on HIV/AIDS research in DRC. We considered all available peer-reviewed articles published in the 16 years (2007-2022) for our analysis. Books, reviews articles, reports and articles that miss some information were excluded from the analyze (Figure 1). The study therefore considered all publications on HIV/AIDS in its various orientations in any of the 26 provinces of DRC.

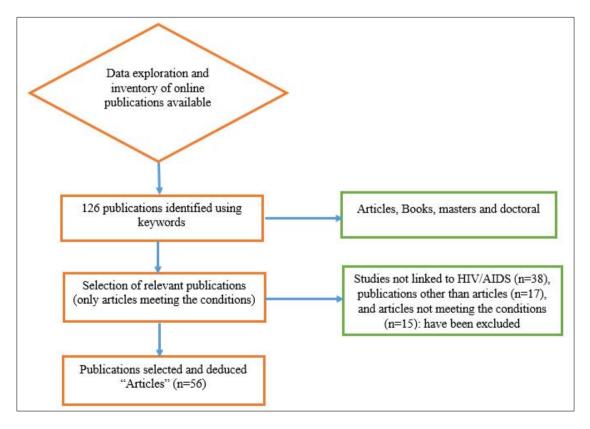


Figure 1 Flowchart of the major steps for the selection of relevant publications

A set of specific HIV/AIDS-related keywords was created using various sources. As suggested by Onyancha and Ocholla [38], these keywords were used to conduct a search for data on AIDS/HIV in DRC. The keywords used were: "AIDS: acquired immunodeficiency syndrome; HIV/AIDS in DRC, HIV: human immunodeficiency virus; AIDS in DRC ".

An advanced search strategy was used to search and download data using the title, abstract and keywords. The parameters analyzed were article details, including title, authors, institutions, year of publication, keyword competition network, names of journals in which the articles were published, countries, language of publication, authors, relationships between affiliations, and relationships between countries and publications by year.

To find out how far HIV/AIDS research goes, we checked which institutions are working in this field, who is interested and whether there has been collaboration within institutions or accross institutions or countries. The degree of author collaboration was determined using Subramanyam [39]'s formula, which states that the degree of collaboration is the ratio of the number of multi- authored articles to the number of multi- authored articles plus the number of single-authored articles. Excel software and VOSViewer were used for data processing. The preliminary results were exported to Microsoft Excel 2016 and then used for scientometric analysis in VOSViewer.

## 3. Results and discussion

This study is scientometric, it is based on the assessment of the progress of publications on HIV/AIDS in the unique context of the DRC. In total, the initial search yielded 126 publications. Sorting based on the selection criteria led us to 56 articles published in 40 journals (Figure 1, Table 1).

As mentioned, the study focused on 56 original articles published between 2007 and 2022, i.e., in 16 years (**Appendix 1**). All articles were published by at least two co-authors. Of these, only two were published by one author each [40, 41]. The 56 articles analyzed represent 305 co-authors, with an average of is 6.91 per article.

In this study, the languages of publications are shared. A slight majority of the articles analyzed are written in English, corresponding to 51% (29/59), and the articles written in French represent 49% (27/59).

During the analysis, 149 keywords were cited by more than one author.

**Table 1** General Information about Recovered Data

Description	Results
Main Information About Data	
Timespan	2007:2022
Sources (Journals)	40
Documents	56
Annual Growth Rate %	12,69
Document Average Age	6,32
Language	
French	27
English	29
Document Contents	
Author's Keywords (DE)	149
Authors	·
Authors	305
Authors of single-authored docs	2
Authors Collaboration	

Single-authored docs	2	
Co-Authors per Doc	6,91	
Document Types		
	56	

#### 3.1. Countries that have participated in publications and their collaboration.

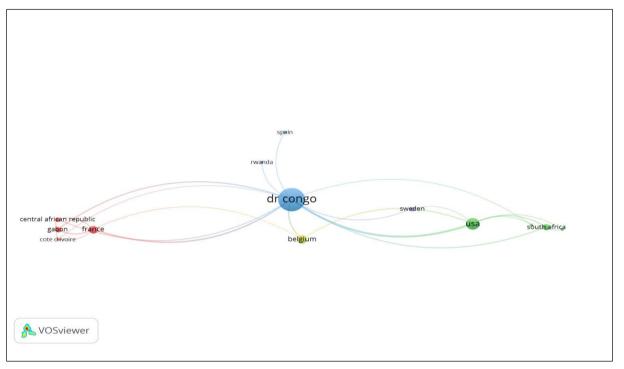


Figure 2 Relationship between Countries (node size is proportional to quoted time).

Of the countries involved in the publications, 15 countries were represented in this study. The 5 countries with the most publications are the DRC, the USA, Belgium, France and Gabon (Figure 2).

It is obvious that researchers from the DRC are more interested in this topic and that they seek more collaboration with other researchers in the world, not only because it concerns their own country, but also to try to share their experiences with countries that have almost the same difficulties in managing and controlling the HIV/AIDS pandemic.

On the other hand, any non-Congolese researcher who wants to work on HIV/AIDS in the DRC can rely on the collaboration of a Congolese researcher so that together they can better understand the issue. As a result, the DRC is the country that has collaborated with almost all the producer countries of the article that is the subject of our study (Figure 2).

#### 3.2. Collaboration between institutions

Between 2016 and 2022, strong cooperation between the institutions (Figure 3) can be observed. The three main institutions that have collaborated more with others are the University of Kinshasa, the University of Lubumbashi, and the National Multisectoral HIV/AIDS Program. Before 2012, there was no cooperation between the institutions. It was only in 2012 that relations between the institutions began to emerge. Some institutions, including the National University of Rwanda and Free University of Brussels, started this collaboration in 2012.

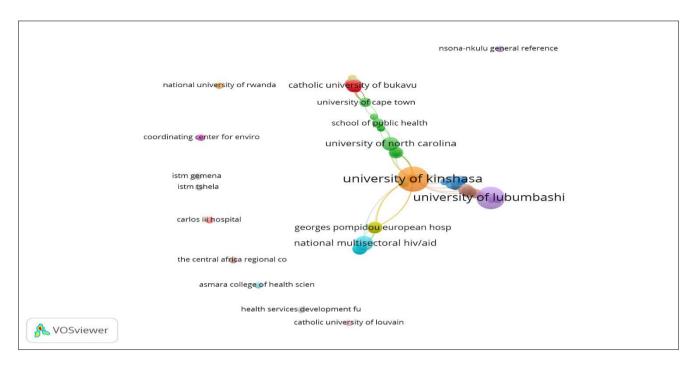


Figure 3 Networks of institutional collaborations (the node's size is proportional to the time quoted).

#### 3.3. The dynamics of the most relevant sources

Journals are not homogeneous academic institutions in terms of audience, visibility, importance, and readership [42]. In all research fields, journals with higher status and perceived productivity that attract a large international audience from the scientific community are considered very important. The conditions for publication in these journals are often strict, and the review procedures are particularly demanding [42]. In this study, 40 journals published at least one article on HIV/AIDS in the context of DR Congo (Table 1). The number of publications per journal ranges from 1 to 9, although only five journals published more than one article (2 to 9). In the first place is Pan African Medical Journal with 19.6% of the analyzed articles, i.e., 11/56 publications alone; International Journal of Innovation and Applied Studies with 7.1% or 4/56 publications; Bulletin of the Exotic Pathology Society with 5.3%, i.e., 3/59 publications, International Journal of Environmental Research and Public Health with 5%, i.e., 4/56 publications and finally Annals of Health Sciences with 3%, i.e., 2/56 publications (Figure 4).

From this we can conclude that Pan African Medical Journal is a leader in this field and is recognized by researchers. The daily practice of scientific research shows that scientists who carry out high-quality research strive to publish in the best journals, especially in the natural, biomedical, and medical sciences [43].

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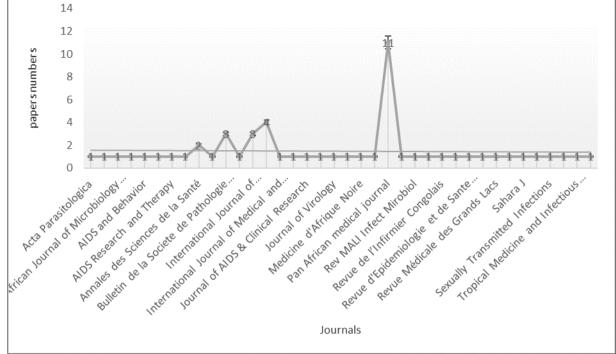


Figure 4 Sources with at least two published documents

# 3.4. The number of articles per year

From 2007 to 2022, new publications on HIV/AIDS were added every day. In the years 2013 to 2015 and 2017 to 2022, the flow of publications is even more remarkable (Figure 5). The last two periods were linked by a relapse phase in 2016, during which only two publications on this topic were identified [44, 45].

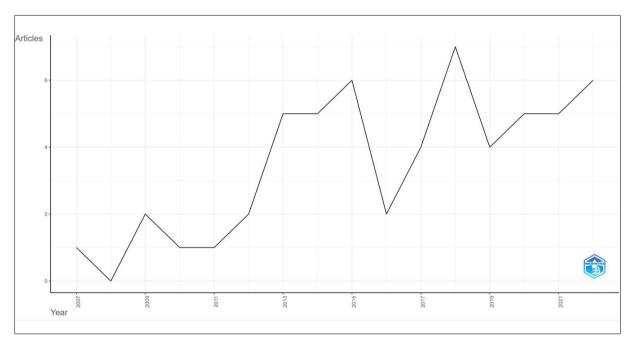


Figure 5 Annual Scientific production, from 2007-2022

# 3.5. Production and Relationship between authors

In Figures 6 and 7, the author analysis identifies five authors with the most important contribution to HIV/AIDS research in the DRC context. Based on the production of the best authors over time (2007-2022), we found the most prominent

and relevant researchers were Mandina, Mukuku, Situakibanza with 5 publications each, followed by Luboya and Amaele with 4 publications each. The purpose of analyzing the co-authors in this study is to examine the social relationships between the authors in the development of the research field [46]. When determining that the minimum number of documents for an author was one document, there were some authors with the largest amount of associated authors. Three main authors collaborated most favorably with others. Situakibanza ranked first, followed by Mandina and Mukuku (Figure 8.).

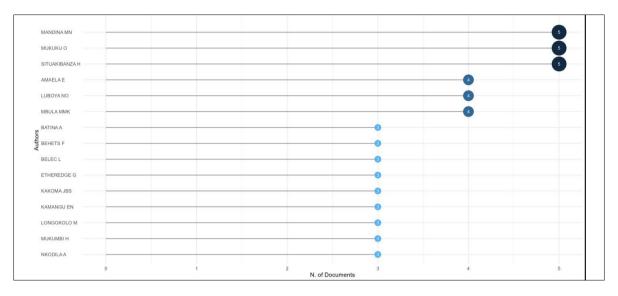


Figure 6 The most relevant authors

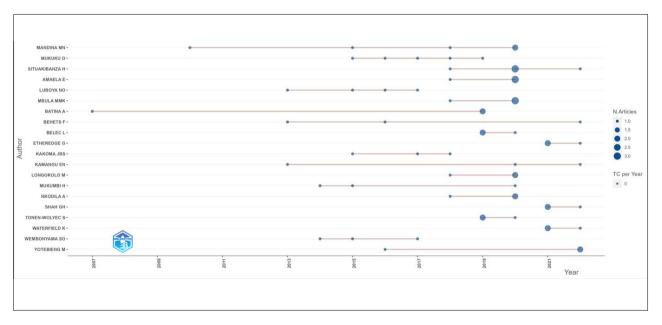


Figure 7 Authors' Production over Time

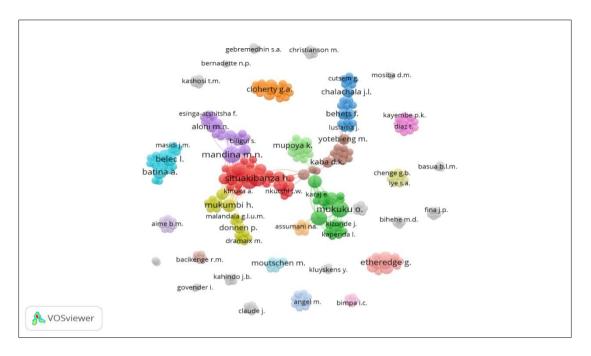


Figure 8 Networks of authors and co-authors (node size is proportional to cited time).

#### 3.6. Production of Institutions

IN total, of the 56 documents in this study, 121 institutions were cited at least once each in an article (Table 1). The three most important affiliations are listed in Figure 9. The latter shows that most of the productive institutions are located in the DRC. The University of Kinshasa (14 publications, i.e., 25%), the University of Lubumbashi (11 publications, i.e., 19.6%) and the National Multisectoral HIV/AIDS Program (5 publications, i.e., 9%). These institutions are also the most frequently cited in several articles from 2015 to 2020-

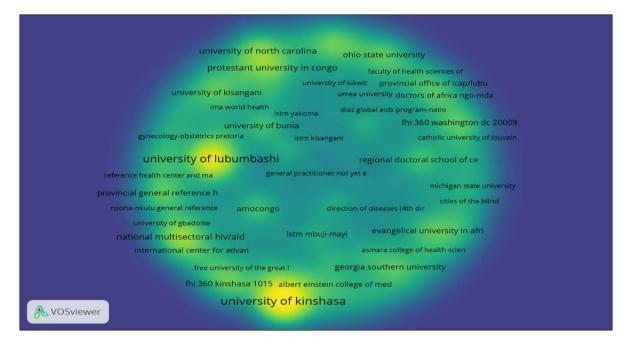


Figure 9 Institutional contribution

#### 3.7. Keywords co-occurrences

In this study, we identified the predominant thems by analyzing the network of keyword co-occurrence. Figure 13 shows that some new terms appearing in publications in 2018-2022, such as "antiretroviral therapy, hematology, pregnant women, hepatit C, armed conflict, clinical signs, HIV/ AIDS, DRC. Meanwhile, some of the old terms such as clinical trial, prevention, risky sexual behavior, serological status, and HIV screening center appear. Some of these words were mentioned with high frequency, testifying to their strong influence and usefulness. The most frequently mentioned words that broke the record are, HIV/AIDS and DR Congo. (Figure 10).

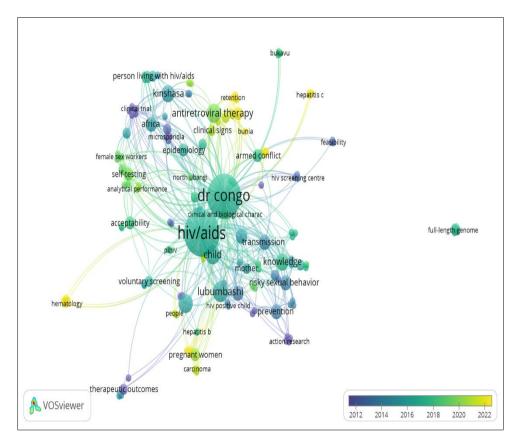


Figure 10 Keyword Competition Network. The node size is proportional to the quoted time

# 4. Conclusion

The objective of this study aimed to carry out an in-depth assessment of the published literature on HIV/AIDS in the context of the Democratic Republic of Congo from 2007 to 2022. Through this analysis, a knowledge map was created which shows the growing evolution of publications in this field. This article, which analyzed the published literature on HIV/AIDS in the DRC, will undoubtedly allow other researchers to gain insight into existing research and emerging issues in the field of HIV/AIDS in the Democratic Republic of Congo.

This being said, it is important today to urge Congolese medical researchers to continue research on different themes of HIV with a view to contributing to its total eradication.

# **Compliance with ethical standards**

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#### Disclosure of conflict of interest

The authors declare no conflict of interest.

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The study was self-funded.

#### Author contributions

- The conception of the subject, collection and compilation of data, writing of the work: Derrick Bushobole Akiba
- Text correction: Esther Dina Katibula, Augustin Rugoso Kapingu, Saili Stay Mushobekwa, Angèle Gendusa Butoto, Floribert Makama Loni and Henriette Mwavita Ruboneka
- Research supervision and style correction: Nicolas Mihuhi Rusati.

All authors have read and approved the final version of this manuscript.

#### References

- [1] Gebremedhin SA, Youjie W, Tesfamariam EH.(2017). Aids & Clinical Research Predictors of HIV / AIDS Knowledge and Attitude among Young Women of Nigeria and the Democratic Republic of Congo : Cross-Sectional Study. 8(3). <u>https://doi.org/10.4172/2155-6113.1000677</u>.
- [2] Mbula M, Situakibanza H, Mananga L, Longokolo M, Mandina N, Mayasi N, et al.(2020). Clinical and biological profile of people living with HIV / AIDS followed in the Infectious Diseases Service of the University Hospital of Kinshasa (Democratic Republic of the Congo) Arti. Rev MALI Infect Microbiol. 15, 21–29.
- [3] Bimpa IC, Muana TF, Tshilonda BJ, Ngoyi KJ, Kandolo TF, Tshilonda JB.(2018). Knowledge, Attitudes, Practices and Beliefs about HIV / AIDS among diamond diggers in Tshishimbi H. Annales Des Sciences de La Santé. 20, 2421–8936.
- [4] Ka'e AC, Nka AD, Yagai B, et al. (2023). The mother-to-child transmission of HIV-1 and profile of viral reservoirs in a pediatric population: a systematic review with meta-analysis of the Cameroonian studies. PLoS One. 18:1– 19.
- [5] Von-Grebmer K, Headey D, Olofinbiyi T, Wiesmann D, Fritschel H, Yin S, et al. (2013). Indice de la faim dans le monde: Le défi de la faim: construire la résilience pour une sécurité alimentaire et nutritionnelle durable. Bonn / Washington, DC / Dublin / Paris / Milan / Prague 2013; 66.
- [6] Kashosi TM, Mutendela JK, Mwenebitu DL, Maotela JK, Mubagwa K.(2018). Assessment of virological quality of transfused blood in Bukavu, South Kivu, Democratic Republic of Congo. Pan African Medical Journal. 30, 1–9. <u>https://doi.org/10.11604/pamj.2018.30.193.13457</u>
- [7] Rausch JW, Le Grice SFJ.(2020). Characterizing the latent HIV-1 reservoir in patients with Viremia suppressed on cART: progress, challenges, and opportunities. CHR. 18:99–113.
- [8] Obregon-Perko V, Bricker KM, Mensah G, et al. (2020). Simian-human immunodeficiency virus SHIV.C.CH505 persistence in ARTsuppressed infant macaques is characterized by elevated SHIV RNA in the gut and a high abundance of intact SHIV DNA in naive Cd4 + T cells. J Virol.95:1–15.
- [9] Shah GH, Ewetola R, Etheredge G, Maluantesa L, Waterfield K.(2021). Risk Factors for TB / HIV Co-infection and Consequences for Patient Outcomes: Evidence from 241 Clinics in the Democratic Republic of Congo. International Journal of Environmental Research and Public Health. 5165 (18), 1-13
- [10] Mbendi-Nlombi C, Longo-Mbenza B, Mbendi-Nsukini S, Muyembe-Tamfum JJ, Situakibanza-Nanituma H, Vangu-Ngoma D.(2001). Prevalence of HIV and H.B.s antigen in blood donors. Residual risk of contamination in blood recipients in East Kinshasa, Democratic Republic of the Congo. [French]\rPrevalence du VIH et de l'antigene HBs chez les donneurs du sang. Risque residuel de contam. Med Trop. 61(2), 139–142. http://ovidsp.ovid.com/ovidweb.cgi?t=js&csc=y&news=n&page=fulltext&d=emed5&an=11582869
- [11] Rhee SY, Grant PM, Tzou PL, Barrow G, Harrigan PR, Ioannidis JPA., et al.(2019). A systematic review of the genetic mechanisms of dolutegravir resistance. Journal of Antimicrobial Chemotherapy. 74(11), 3135–3149. https://doi.org/10.1093/jac/dkz256.
- [12] Morshed, K. (2014) et al., Human Papillomavirus (HPV) structure, epidemiology and pathogenesis, Otolaryngol Pol. 68 (5): p, 213-9.

- [13] Findik S. et al.(2019). Human papillomavirus (HPV) subtypes and their relationships with cervical smear results in cervical cancer screening: a community-based study from the central Anatolia region of Turkey, International Journal of Clinical and Experimental Pathology. 3 (**12**), 1391-1398.
- [14] Masouda, N, et al.(2017). Characteristics of HPV infection in women at risk in Western Algeria, Med Mal Infect, 2017, **47**(1): p, 38-41.
- [15] Azaïs, H., et al. (2019). Update regarding managing vulvar cancer: recommendations from Assistance publique– Paris hospitals, Bulletin du Cancer.**106** (4): p, 371-378.
- [16] Amourak, S, and F,F, Alaoui. (2014). Neo of the vulva in an HIV seropositive patient: report of a case history, The Pan African medical journal. 18: p, 33-33,
- [17] Keller M.J. et al. (2015). Cervical Precancer Risk in HIV-Infected Women Who Test Positive for Oncogenic Human Papillomavirus Despite a Normal Pap Test, Clin Infect Dis, 2015, 61 (10): p, 1573-81.
- [18] Blitz S, et al. (2013). Evaluation of HIV and highly active antiretroviral therapy on the natural history of human papillomavirus infection and cervical cytopathologic findings in HIV-positive and high-risk HIV-negative women, J Infect Dis. 208 (3): p, 454-62.
- [19] Barbarin, C, and E,H, Wierzbicka. (2017). Metastatic evolution and Bowen disease, Annales de Dermatologie et de Vénéréologie. **144** (12, Supplement): p, S121.
- [20] Bachmann N, von Siebenthal C, Vongrad V, et al. (2019). Determinants of HIV-1 reservoir size and long-term Dynamics during suppressive A.R.T. Nat Commun. 10:3193.
- [21] Kim AA, Malele ÆF, Kaiser ER, Mama EN, Michelle JM, Hawkins K, et al.(2009). HIV Infection Among Internally Displaced Women and Women Residing in River Populations Along the Congo River, Democratic Republic of Congo HIV Infection Among Internally Displaced Women and Women Residing in River Populations Along the Congo River. AIDS Behav. 13:914-20. https://doi.org/10.1007/s10461-009-9536-z
- [22] Taylor M, Dlamini SB, Meyer-Weitz A. (2010). Sathiparsad R, Jinabhai CC, Esterhuizen T. Changing sexual behavior to reduce HIV transmission–a multi-faceted approach to HIV prevention and treatment in a rural South African setting. AIDS care. 22(11), 1395–1402.
- [23] Edin E, Sebastian MS, Christianson M, Dahlgren L. (2014). Journal of Social Aspects of HIV / AIDS : An Open Access Journal Conflicting discourses of church youths on masculinity and sexuality in the context of HIV in Kinshasa, Democratic Republic of Congo. SAHARA-J. 37–41. <u>https://doi.org/10.1080/17290376.2014.930695</u>.
- [24] Carlos S, Martínez-gonzález MA., Burgueño E, López-del BC, Ruíz-canel AM, Ndarabu A. et al .(2015). Misconceptions about HIV infection in Kinshasa (Democratic Republic of Congo): a Case-control Study on knowledge, attitudes and practices. Sexually transmitted infections. 91(5):334-7. https://doi.org/10.1136/sexstrans-2014-051734.
- [25] Gupta RK, Peppa D, Hill AL, et al.(2020). Evidence for HIV-1 cure after Ccr5Δ32/Δ32 allogeneic Haemopoietic stem-cell transplantation 30 months post Analytical treatment interruption: a case report. Lancet HIV 7:e340–7.
- [26] Tonen-wolyec S, Masidi JM, Ferdinand L, Lukusa K, Dikumbwa GN, Sarassoro A.(2020). Analytical Performance of the Exacto Test HIV Self-Test : A Cross-Sectional Field Study in the Democratic Republic of the Congo. Infectious Diseases Society of America (IDSA). 1(3). <u>https://doi.org/10.1093/ofid/ofaa554</u>
- [27] Lubangi MM, Moutschen M. (2012). Perceptions of the practice of clinical trials on HIV/AIDS by doctors prescribing approved antiretroviral drugs in Kinshasa (DR Congo). Bulletin de La Societe de Pathologie Exotique. 105(5), 406–411. <u>https://doi.org/10.1007/s13149-012-0263-8</u>.
- [28] Fokam J, Mpouel Bala ML, Santoro M-M, et al. (2022). Archiving of mutations in HIV-1 cellular reservoirs among vertically infected adolescents is contingent on clinical stages and plasma viral load: evidence from the EDCTP-READY study. HIV Med. 23:629–38.
- [29] Pour M, James L, Singh K, Mampunza S, Baer F, Scott J, et al. (2020). Increased HIV in Greater Kinshasa Urban Health Zones: Democratic Republic of Congo (2017 – 2018). AIDS Research and Therapy. 1–6. https://doi.org/10.1186/s12981-020-00322-y
- [30] Punekar YS, Parks D, Joshi M, Kaur S, Evitt L, Chounta V, et al.(2021). Effectiveness and safety of dolutegravir twodrug regimens in virologically suppressed people living with HIV: a systematic literature review and metaanalysis of real-world evidence. HIV Medicine. 22(6), 423–433. <u>https://doi.org/10.1111/hiv.13050</u>

- [31] Bushobole AD, Mihuhi RN.(2022). Sexual behavior and unwanted pregnancies in schools: the case of the Nuru and Zawadi ya Rais institutes in Uvira. Revue Congolaise des Sciences & Technologies. 01(01), 55–63. https://doi.org/10.5757161/zenedo.022.v1.i1.07
- [32] Mazou, G. H., (2014). «Risky sexual behavior of young schoolchildren: An analysis of the social determinants of non-use of condoms among students of the Lycée Moderne II of Bouaké » *in European Scientific Journal*. Edition vol.10, N°2.
- [33] Olin J, Kokolamami J, Lepira BF, Mupenda B, Ndongala ML, Maman S, et al.(2006). Community Preparedness for HIV Vaccine Trials in the Democratic Republic of Congo Culture, Santé & Sexuality. 8(6): 529-44. https://doi.org/10.1080/13691050600888434.
- [34] Buju RT, Akilimali PZ, Kamangu EN, Mesia GK, Kayembe JMN, Situakibanza HN.(2022). Predictors of Viral Non-Suppression among Patients Living with HIV under Dolutegravir in Bunia, Democratic Republic of Congo : A Prospective Cohort Study. International Journal of Environmental Research and Public Health. 19(3):1085
- [35] Endalamaw A, Demsie A, Eshetie S, et al.(2018). A systematic review and meta-analysis of vertical transmission route of HIV in Ethiopia. BMC Infect Dis. 18:283.
- [36] Munro, A. et al. (2015). Using co-testing (human papillomavirus DNA testing and cervical cytology) after treatment of CIN: a survey of GPs' awareness and knowledge, Australian Family Physician. 44 (5): p, 64–68.
- [37] Rusaati NT, Rusaati BI, Kiza Rusati P.(2021). Scientometric analysis of landslides research in the western branch of East African Rift (DR Congo). International Journal of Advances in Scientific Research and Engineering.07(11), 38–47. https://doi.org/10.31695/ijasre.2021.34105
- [38] Onyancha OB, Ocholla DN.(2009). Is AIDS/HIV in Africa distinct? What can we learnfrom an analysis of the literature? Scientometrics. Vol. 79(2), pp. 277–96.
- [39] Subramanian K.(1986). Bibliometric Studies of Research Collaboration: A Review. Journal of Information Science. 6 (1), 33-38.
- [40] Bernadette NP.(2021).Frequency of anguillulosis in people living with HIV / AIDS: Case of the Pandji General Reference Hospital of Tshela, Tshela Territory, Kongo Central Province in the Democratic Republic of Congo. Frequency of anguillulosis. 34(4), 9324.
- [41] Mosiba DM.(2022). Prevalence of viral hepatitis B and HIV / AIDS among presumed blood donors in the laboratory of the General Reference Hospital of Zongo, DR Congo. International Journal of Innovation and Applied Studies. 36(4):956-62.
- [42] Rosas SR, Kagan JM, Schouten JT, Slack PA, Trochim WMK.(2021). Evaluating Research and Its Impact: A Bibliometric Analysis of NIH/NIAID Networks HIV/AIDS Clinical Trials Research. Plos One. 6(3): e17428. doi: 10.1371/journal.pone.0017428.
- [43] Van-Raan AFJ.(2005). Mesure de l'aspect central de la recherche scientifique : performance, interdisciplinarité, structure. Mesure. 3 : 1–19.
- [44] Kimbala J, Mukuku O, Kalala C.T., Kapend L, Luboya O.N., Muteba F. et al. (2016). Prevention of mother-to-child transmission of HIV (PMTCT) in Lubumbashi in the Democratic Republic of Congo Results of 6 years of practice in 5 reference maternities. Medicine d'Afrique noire. Vol.63, N°2, pp 105-114.
- [45] Yotebieng M, Edmonds A, Lelo P, Kipula LW, Tshishikani NP, Lusiama J, et al.(2016). High completion of Isoniazid Preventive Therapy among HIV- infected children and adults in Kinshasa, Democratic Republic of Congo. HHS Public Access. 29(15), 2055–2057. <u>https://doi.org/10.1097/QAD.000000000000791.High</u>.
- [46] Donthu N, Kumar S, Mukherjee D, Pandey N, Lim WM. (2012). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research.2012; Vol133.pp258-296.Doi : 10.1016/j.jbusres.04070

## Appendix 1: List of papers

Authors	Title	Year	Newspaper
Koy T., Mukumbi H., Malandala GLUM, Donnen P., Wilmet-Dramaix M.	Comparative and evolutionary profile of people infected with HIV on antiretroviral therapy in Kinshasa, Democratic Republic of Congo	2014	Pan African Medical Journal
Mapera E., Fina JP, Mabiala JB, Ngwala LP, Nzaumvila D.	Clinico -epidemiological profile of children living with HIV/AIDS managed at Heal Africa Hospital, Goma, DR Congo	2022	African Health Sciences
Gebremedhin SA, Youjie W., Tesfamariam EH	Predictors of HIV/AIDS Knowledge and Attitude among Young Women of Nigeria and Democratic Republic of Congo: Cross- Sectional Study	2017	Journal of AIDS & Clinical Research
Mupendwa BPK, Ntokamunda JLK	Level of adherence and inherent problems among HIV/AIDS patients receiving ARV treatment: Case of the "MSF/Hollande" clinic in Kadutu (Democratic Republic of Congo)	2009	Health Notebooks
Parker L., Maman S., Pettifor A., Chalachala JL, Edmonds A., Golin CE, Maracco K., Behets F.	Feasibility analysis of an evidence-based Positive Prevention intervention for youth living with HIV/AIDS in Kinshasa, DR Congo	2013	AIDS Education and Prevention
Akilimali PZ, Tshilumbu JMK, Mavila AK, Kaba dk .	Therapeutic outcomes of anti-tuberculosis treatment in the context of HIV-tuberculosis co-infection : Cohort from the Kabinda center in Kinshasa, Democratic Republic of Congo	2015	Journal of Epidemiology and Public Health
Lubangi MM, Moutschen M.	Perceptions of the practice of clinical trials on HIV/AIDS by doctors prescribing approved antiretroviral drugs in Kinshasa (DR Congo)	2012	Bulletin of the Exotic Pathology Society
Kautako-kiambi M., Aloni MN, Pululu P., Luyinduladio L., Esinga-Atshitsha F., Lema -Landu P., Ekila MB	HIV counseling and voluntary screening center in rural areas in the province of Bas-Congo (DR Congo) 2006-2011	2013	Bulletin of the Exotic Pathology Society
Tawi JM, Kaki MK, Bal B., Musung JM, Luboya EK, Mukuku o.	Providers' knowledge and perception of palliative care in the management of HIV-infected patients	2019	Congolese Nurse Review
Wumba rd ., Zanga J., Mbanzulu KM, Mandina mn ., Kahindo AK, Aloni MN, Ekila MB	Cryptosporidium identification in HIV-Infected Humans. Experience from Kinshasa, the Democratic Republic of Congo	2015	Acta Parasitologica
Masoda M., Govender I.	Knowledge and attitudes about and practices of condom use for reducing HIV infection among Goma University students in the Democratic Republic of Congo	2013	Southern African Journal of Epidemiology and Infection
Ngalula MT, Mukuku O., Kitenge FM, Kakoma Jbs .	Hepatitis B virus infection in patients with chronic hepatitis C.	2018	Congolese nurse review

Kapiteni W., Kahindo JB, Mitangala P., Karemere H.	Assessment of the Knowledge of Women of Childbearing Age on the Prevention of Mother-to-Child Transmission of HIV In The Area Afia Health -Sake In Republic Democratic Republic of Congo [Knowledge Assessment of Women on Mother-Child Transmission Prevention of Hiv in the Afia -Sake Health Area in the Democratic Republic of Congo]	2018	International Journal of Innovation and Applied Studies
Namuzirhu FM, Kachelewa BK, Tsongo R., Bacikenge RM, Cikubirha S.	Exploration of the reasons of disruption of the transaminases in people living with HIV-AIDS (PLHIV) at the general reference hospital (HGR) of FOMULAC-KATANA in DR Congo [Exploration of the reasons of disruption of the transaminases at	2018	International Journal of Innovation and Applied Studies
Shah GH, Ewetola R., Etheredge G., Maluantesa L., Waterfield K., Engetele E., Kilundu A.	Risk factors for TB/HIV co-infection and consequences for patient outcomes: Evidence from 241 clinics in the Democratic Republic of Congo	2021	International Journal of Environmental Research and Public Health
Ewetola R., Shah GH, Maluantesa L., Etheredge G., Waterfield K., Mulenga A., Kilundu A.	Article disparities in HIV clinical stages progression of patients at outpatient clinics in Democratic Republic of Congo	2021	International Journal of Environmental Research and Public Health
Baju RT, Akilimali PZ, Kamangu in ., Mesia GK, Kayembe jm ., Situakibanza H.	Incidence and Predictors of Loss to Follow Up among Patients Living with HIV under Dolutegravir in Bunia, Democratic Republic of Congo: A Prospective Cohort Study	2022	International Journal of Environmental Research and Public Health
Zotova N., Familiar I., Kawende B., Kasindi FL, Ravelomanana N., Parcesepe AM, Adedimeji A., Lancaster KE, Kaba dk ., Babakazo P., Yotebieng M.	HIV disclosure and depressive symptoms among pregnant women living with HIV: a cross-sectional study in the Democratic Republic of Congo	2022	Journal of the International AIDS Society
Rodgers MA, Wilkinson E., Vallari A., Mcarthur cp ., Sthreshley L., Brennan CA, Cloherty ga ., Oliveira T.	Sensitive Next-Generation Sequencing Method Reveals Deep Genetic Diversity of HIV-1 in the DR Congo	2017	Journal of Virology
Kim AA, Malele F., Kaiser R., Mama N., Kinkela T., Mantshumba JC, Hynes M., Jesus S., Musema G., Kayembe PK, Hawkins K., Diaz T.	HIV infection among internally displaced women and women residing in river populations along the Congo River, democratic republic of Congo	2009	AIDS and Behavior
Mafuta EM, Ntambwe AM, Bwira EM, Kamwina JK, Mudipanu AN, Mukumbi H., Kamiantako MA, Munyanga SM	Determinants of the success of Income Generating Activities carried out by a person living with HIV in Kinshasa in the Democratic Republic of Congo: an overview of the experience	2015	Ann. Afr . Med.
Batina A., Kabemba S., Malengela R.	Infectious markers in blood donors in the Democratic Republic of Congo (DR Congo)	2007	Brussels Medical Review
Tonen- Wolyec S., Batina A., Longo JD, Mboumba RS, Belec L., Zhang C.	Insufficient education is a key factor of incorrect interpretation of HIV self-test results by female sex workers in DR Congo: A multicenter cross-sectional study	2019	Medicine (United States)

Carlos S., Angel M., Burgueno E., Burgo CLD, Ruiz- Canela M., Ndarabu A., Tshilolo L., Tshiswaka P., Labarga P., Irala J.	Misconceptions about HIV infection in Kinshasa (Democratic Republic of Congo): A case-control study on knowledge, attitudes and practices	2015	Sexually Transmitted Infections
Yotebieng M., Edmonds A., Lelo P., Wenzi LK, Ndjibu PT, Lusiama J., Kabuayi JP, Behets F.	High completion of Isoniazid Preventive Therapy among HIV- infected children and adults in Kinshasa, Democratic Republic of Congo	2016	Aids
Mukeba-Tshialala D., Nachega JB, Mutombo M., Arendit V., Gilson G., Moutschen M.	Obesity, high blood pressure, hypercholesterolemia and untreated diabetes among adults with or without HIV infection in Mbuji- Mayi (Democratic Republic of Congo)	2017	Bulletin of the Exotic Pathology Society
Tonen-Wolyec S., Masidi JM, Lukusa LFK, Dikumbwa GN, Sarassoro A., Belec L.	Analytical Performance of the Exacto Test HIV Self-Test: A Cross- Sectional Field Study in the DR Congo	2020	Open Forum Infectious Diseases
Tonen-Wolyec S., Mbopi-Keou FX, Batina A., Kalla GCM, Noubom M., Bouassa RSM, Longo JD, Muwonga J., Belec L.	Acceptability of HIV self-testing in African students: A cross- sectional survey in the Democratic Republic of Congo	2019	Pan African Medical Journal
Zono B., Kamangu in ., Situakibanza H., Amaela E., Bepouka B., Mbula mmk ., Kayembe JM, Mvumbi G., Hayette MP	Epidemiological, clinical and biological profile of leptomeningeal cryptococcosis among people living with HIV in Kinshasa, Democratic Republic of Congo	2020	Pan African Medical Journal
Wumba rd ., Longo MB, Mandina mn ., Odio WT, Biligui S., Sala J., Breton J., Thellier M.	Intestinal parasite infections in hospitalized aid patients in Kinshasa, Democratic Republic Of Congo	2010	Parasite
Kanteng AW, Assumani NA., Shongo PM, Yansenda MP, Mutoke NG, Ilunga MP, Luboya NO	Case of the PMTCT center of the University Clinics of Lubumbashi	2013	Great Lakes Medical Review
Kimbala J., Mukuku O., Kalala CT, Kapenda L., Luboya no ., Muteba F., Mande J., Ngoy FK, Lufwa D., Matembo P., Kizonde J.	Black African Medicine Prevention of mother-to - child transmission of HIV (PMTCT) in Lubumbashi in the Democratic Republic of Congo Results of 6 years of practice in 5 reference maternity hospitals	2016	Black African Medicine
Mbula mmK ., Situakibanza H., Mananga LG, Longokolo m., Mandina mn ., Mayasi nm, Bepouka B., Amaela E., Tshilumba BN, Odio O., Nkodila A., Longo MB	Clinical and biological profiles of HIV in Kinshasa Clinical and biological profile of people living with HIV / AIDS followed in the Infectious Diseases Service of the University Hospital of Kinshasa (DR Congo) Arti	2020	Rev MALI Infect Microbiol
Kivuto JM, Mashupe S., Bihehe MD, Mitima KT	HIV screening among patients followed for cryptococcal meningitis in developing countries: Data from Bukavu in the Democratic Republic of Congo	2014	African Journal of Microbiology Research
Basua BLM, Botbol BM, Closon MC	Strengthening the capabilities of street children	2011	Third World Magazine

Sumbi EM, Venables E., Harrison R., Garcia M., Lakovidi K., Cutsem G., Chalachala JL	"It is a secret between us": a qualitative study on children and caregivers experiences of HIV disclosure in Kinshasa, Democratic Republic of Congo	2021	BMC Public Health
Mohammad P., James L., Singh K., Mampunza S., Baer F., Scott JA, Berg MG, Rodgers MA, Cloherty ga ., Hackett J., Mcarthur cp .	Increased HIV in Greater Kinshasa Urban Health Zones: Democratic Republic of Congo (2017–2018)	2020	AIDS Research and Therapy
Thompson P., Mpody C., Sayre W., Rigney C., Tabala M. , Ravelomanana NLR, Malongo F., Kawende B., Behets F., Okitolonda E., Yotebieng M., Aitikalema G., Alisho A. , Bayayana E., Bumwana F., Dianzenza P., Dinanga JC, Kihuma G., Lukumu W., Lumande F., Masevo Z., Matadi F., Mushiya R., Mwela MT, Nlandu J., Tenatena P., Tshibuabua M.	Hepatitis C prevalence and quality of health services among HIV- positive mothers in the DR Congo	2022	Scientific Reports
Kamangu in ., Nyima KV, Kingombe AM, Nkutshi TW, Mesia gk.	Monitoring of HIV-positive patients treated with traditional medicine in Kinshasa_Retrospective.pdf	2013	Congolese Science Review
Patrick DMCK, Friedrich T., Andre NHB, Tonya ME, Aime BM, Pierre PML, Dieudonne MB, Jean BN	Tropical Med Int Health - 2018 - Katoto - Prevalence and risk factors of metabolic syndrome in HIV-infected adults at three.pdf	2018	Tropical Medicine and International Health
Shah GH, Etheredge G., Nkuta LM, Waterfield K., Ikhile O., Ditekemena J., Bernard BNB	Factors Associated with Retention of HIV Patients on Antiretroviral Therapy in Care: Evidence from Outpatient Clinics in Two Provinces of DR Congo (DRC)	2022	Tropical Medicine and Infectious Disease
Zogbia FY, Nzemu G., Claude J., Mbembo B., Masengo CA	Epidemiological and clinical profile of tuberculosis and Tb/ Hiv co- infection in north-Ubangi, DR Congo Epidemiological and clinical profile of tuberculosis and Tb/ Hiv co-infection in north-Ubangi,	2019	International Journal of Medical and Health Research
Bernadette NP	Frequency of anguillulosis in people living with HIV/AIDS: Case of the Pandji General Reference Hospital of Tshela , Tshela Territory , Kongo Central Province in the Democratic Republic of Congo [ Frequency of anguillulosis in p	2021	International Journal of Innovation and Applied Studies
Mosiba DM	Zongo General Reference Hospital , DR Congo [ Prevalence of viral hepatitis B and HIV/AIDS among presumed blood donors in the laboratory of the G	2022	International Journal of Innovation and Applied Studies
Shako MN, Kluyskens Y., Kokolomami J.	Risky sexual behavior in Lodja , a city with a high prevalence of HIV/AIDS in the Democratic Republic of Congo Risky sexual behaviors in a high HIV/AIDS prevalence city, Lodja case (DRC)	2015	Annals of Health Sciences
Bimpa IC, Muana TF, Tshilonda jcb ., Ngoyi KJF, Kandolo TF, Tshilonda JCB	Knowledge, Attitudes, Practices and Beliefs on HIV/AIDS among diamond diggers in the Tshishimbi health zone in Kasai Orienral	2018	Annals of Health Sciences

	/DR Congo Knowledge , Attitudes, Practices and Beliefs about HIV / AIDS among diamond diggers in Tshishimbi Health Zone, Kasai Oriental / DR Congo		
Kintadi GL, Iye SA, Twite FB, Mbayo HNI, Kashal MK, Numbi MN, Kyabu C., Mbuyi MS, Chenge GB	Conjunctival squamous cell carcinoma in an HIV-positive pregnant woman: report of a case	2021	Journal of the Moroccan Society of Ophthalmology
Mwembo-Tambwe ANA, Kalenga PMK, Donnen P., Chenge MF, Humblet P., Dramaix M., Buekens P.	Women giving birth with unknown HIV serological status in Lubumbashi, DR Congo: proportion and determinants	2012	Pan African Medical Journal
Lusey H., Sebastian SM, Christianson M., Dahlgren L., Edin KE	Conflicting discourses of church youths on masculinity and sexuality in the context of HIV in Kinshasa, Democratic Republic of Congo	2014	Sahara J
Mwadianvita CK, Ilunga EK, Djouma J., Wembonyama CW, Mutomb FMA, Ekwalanga MB, Kabongo H., Mupoya K., Wembonyama SO, Mwenze PK, Nkoy AMTA	Study of anemia in HIV-positive children naive to antiretroviral treatment in Lubumbashi, Democratic Republic of Congo	2014	Pan African Medical Journal
Ngwej DT, Mukuku O., Mudekereza R., Karaj E., Odimba EBF, Luboya no ., Kakoma JBS, Wembonyama SO	Study of risk factors for mother-to-child transmission of HIV in the "option A" strategy in Lubumbashi, Democratic Republic of Congo	2015	Pan African Medical Journal
Mwadianvita CK, Kanyenze FN, Wembonyama CW, Mutomb FMA, Mupoya K., Nkoy AMTA, Mwenze PK	Nutritional status of children aged 6 to 59 months infected with HIV but not treated with ARVs in Lubumbashi	2014	Pan African Medical Journal
Ngwej DT, Mukuku o., Malonga FK, Luboya no ., Kakoma JBS, Wembonyama SO	Seroprevalence and factors associated with acceptance of HIV counseling and voluntary screening in children in Lubumbashi, Democratic Republic of Congo	2017	Pan African Medical Journal
Izizag BB, Situakibanza H., Mbutiwi T., Kiazayawoko F., Nkodila A., Mandina min ., Longokolo M., Amaela E., Mbula mmk .	Factors associated with acceptability of HIV self-testing (HIVS.T.) among university students in a Peri -Urban area of the DR Congo	2018	Pan African Medical Journal
Kashosi TM, Mutendela JK, Mwenebitu DL, Maotela JK, Mubagwa K.	Virological quality control of transfused blood in the town of Bukavu, South Kivu, Democratic Republic of Congo	2018	Pan African Medical Journal
Izizag BB, Situakibanza H., Kiazayawoko F., Nkodila A., Mafuta EM, Lukanu P., Mukumbi H., Longokolo M., Mandina min ., Mayasi nm, Kinuka A., Amaela E., Kazadi W., Mbula mmk .	Antiretroviral treatment in adults in Kinshasa	2020	Pan African Medical Journal