



Clinical Profile of People Living with Human Immunodeficiency Virus Starting Treatment in Kinshasa, Democratic Republic of Congo

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Abstract

Context: For several decades, the introduction of AntiRetroViral (ARV) has allowed an improvement in the clinical signs of patients, a spectacular reduction in mortality and morbidity, an extension of life and an improvement in the quality of life of many People Living with HIV (PLHIV). **Objective:** The objective of this study was to determine the clinical profile of PLHIV starting ARV Treatment in Kinshasa in the era of Dolutegravir. **Methods:** This study is a descriptive cross-sectional study to determine the clinical profile of PLHIV starting ARV treatment in HIV Outpatient Treatment Centers (OTC) in Kinshasa. Thirteen OTC across the city of Kinshasa had been included in the study because of their expertise in the care of PLHIV and their accessibility after a random draw. Clinical data were recorded on worksheets previously tested by the study team. The parameters of interest for the present study were: the clinical state of the patient, the known medical history, and the previous morbidities. **Results:** 119 patients were included in this study. Sixty-seven patients, or 56.3%, are women, giving a sex ratio of 1.29 in favor of women. The mean age of the patients included is 39.87 ± 12.36 years. The most represented age group is that of 36 to 45 years with 37 patients (31.9%). The average temperature of the patients was $36.69^{\circ}\text{C} \pm 0.68^{\circ}\text{C}$. Forty-nine

patients (41.5%) were in clinical stage 3; 55 patients (47.0%) had a normal clinical condition. The most common known medical histories are dental caries and sleep disorders (30.2%). The most common known prior morbidities are malaria (35.3%), high blood pressure and heart disease (14.7%). **Conclusion:** The most affected age group is that of 25 to 45 years. The majority of our patients begin treatment at WHO stage 3 with good clinical condition. Dental caries and sleep disorder (30.2%) are the most found medical history. Malaria (35.3%) is the most common previous morbidity.

Subject Areas

Immunology

Keywords

Clinical Profile, PLHIV, ART Initiation, Kinshasa

1. Introduction

Human Immunodeficiency Virus (HIV) infection and Acquired Immunodeficiency Syndrome (AIDS) still remain a global public health problem throughout the world and especially in Sub-Saharan Africa (SSA). According to the United Nations Organization for the Fight against HIV/AIDS (UNAIDS), in 2020 there were an estimated 37.7 million [30.2 million - 45.1 million] the number of People Living with HIV/AIDS (PLHIV) and 1.5 million [1.0 million - 2.0 million] people were newly infected with HIV/AIDS in the same year [1]. Similarly, the World Health Organization (WHO) estimates that SSA remains the most affected region with 26 million PLHIV and accounts for 70% of all AIDS-related deaths worldwide [2].

For several decades, the introduction of AntiRetrovirals (ARVs) has led to an improvement in the clinical signs of patients, a spectacular reduction in mortality and morbidity, an extension of life and an improvement in the quality of life of many PLHIV [3]. But also the appearance of new antiretroviral molecules that are safer, more affordable and easier to handle, as well as the early initiation of treatment has improved care [4].

The Democratic Republic of Congo (DRC) has a declining generalized HIV epidemic and a prevalence of 1.2% in the general population [5]. According to UNAIDS in 2020 the country had approximately 520,000 PLHIV [1]. Despite major progress in the fight against HIV, the epidemic still causes serious harm to public health in all regions.

The clinic of HIV infection has been the subject of several publications in our community [6] [7] [8]. Nevertheless, there are few data on PLHIV starting ARV Treatment (ART) nor on their clinical profile in our environment for the last few years, especially since the introduction of Dolutegravir in 2019. Hence the main objective of this study was to determine the clinical profile of people living

with HIV. HIV starts AntiRetroViral treatment in Kinshasa in the era of Dolu-tegravir.

2. Methods

Study Design, Setting, Patients and Samples

The present study is a descriptive cross-sectional study to determine the clinical profile of People Living with HIV (PLHIV) starting ARV Treatment in HIV Outpatient Treatment Centers (OTC) in Kinshasa, Democratic Republic of Congo (DRC). The patient inclusion period was from October 04, 2021 to February 15, 2022, where all patients initiating ART in an HIV OTC were included. Sixteen (16) centers across the city of Kinshasa had been included in the study because of their expertise in the care of PLHIV and their accessibility after a random draw [9].

Clinical data were recorded on worksheets previously tested by the study team.

Study population

The source population of this study was adults over the age of 18 at inclusion, infected with HIV and starting ART in the OTC during the inclusion period (October 04, 2021 to February 15, 2022). The inclusion criteria were as follows: being at least 18 years old at inclusion, being ART-naive, and having freely agreed to participate in the study by signing an informed consent form.

Parameters of interest

The parameters of interest followed for the present study were: the clinical state of the patient, the known medical history, and the previous morbidities.

Operational definitions

The definitions used in this study are as follows:

- Clinical state: the clinical state was considered;
 - Normal if the patient's vital functions are normal, he is able to do everything without assistance.
 - Good if the patient's vital functions are almost normal, he is still able to walk, eat and take care of himself without assistance.
 - Bad if the vital functions of the patient are deteriorated, he is only able to walk, eat and take care of himself when assisted.
 - Pre-moribund if the patient is in very poor condition, he is totally bedridden and has an obsessed conscience, but he is able to eat when assisted.
 - Moribund if the patient is in very poor general condition, he is totally bedridden and is in a vigil or deep coma.
- Known medical history of the patient: all circumstances or facts prior to the disease in question, which concern the state of health of the subject examined, which it is necessary to know in order to better take care of the sick person.
- Previous morbidities known to the patient: all disabling illnesses or injuries in a given patient, or all the illnesses preceding the current pathology that

may influence its development.

- Clinical stage of patients: According to the WHO, HIV infection is divided into 4 clinical stages.
 - Stage 1: Asymptomatic patient, generalized persistent lymphadenopathy;
 - Stage 2: Weight loss < 10% of body weight, Shingles, Minor mucocutaneous manifestations, Recurrent infections of the upper airways;
 - Stage 3: Weight loss greater than 10% of body weight, Unexplained chronic diarrhea > 1 month, Unexplained prolonged fever > 1 month, Persistent oral candidiasis (thrush), Oral hairy leukoplakia, Pulmonary tuberculosis within the previous year, Severe bacterial infection, Acute necrotizing ulcerated stomatitis, Persistent anemia (hb < 8 g/dL)/Chronic neutropenia < 500/mm³/Chronic thrombocytopenia < 50,000/mm³;
 - Stage 4: HIV wasting syndrome (>10% of body weight, associated with unexplained chronic diarrhea or unexplained chronic asthenia or prolonged fever), various and multiple opportunistic infections;

Ethical consideration

This study has been approved as a whole by the research ethics committee of the School of Public Health, Faculty of Medicine, University of Kinshasa (ESP/CE/115/2021). Authorization to access the OTC was obtained from each competent authority of the different institutions included. Prior to inclusion, fully informed consent was obtained from each patient.

Statistical analyzes

The analyses were carried out using SPSS software version 26 (Statistical Package for Social Sciences, IBM). Only available data were analyzed, missing data were considered completely random. Continuous variables were presented as mean \pm standard deviation and compared using Student's t-test. The Pearson correlation test was used to search for possible existing correlations. Proportions and their respective 95% confidence intervals were calculated for categorical data.

3. Results

One hundred and nineteen (119) patients were included in this study in accordance with the inclusion criteria. Sixty-seven (67) patients, or 56.3%, are women while 52 (43.7%) are men, giving a sex ratio of 1.29 in favor of women (**Figure 1**).

The average age of the patients included is 39.87 ± 12.36 years with extremities of 18 to 69 years. The most represented age group is that of 36 to 45 years with 37 patients (31.9%) followed by that of 26 to 35 years with 24 patients (20.7%), that of 46 to 55 years with 22 patients (19.0%) and that of 18 to 25 years with 19 patients (16.4%) (**Figure 2**).

Table 1 presents the data mentioned.

The mean temperature of the patients at inclusion was $36.69^\circ\text{C} \pm 0.68^\circ\text{C}$ with extremities of 36.0°C to 38.70°C .

Forty-nine patients (49), or 41.5%, were at clinical stage 3; followed by 40 patients (33.9%) who were at clinical stage 1, 18 patients (15.3%) at clinical stage 2 and 11 patients (9.3%) at clinical stage 4 (**Table 2**).

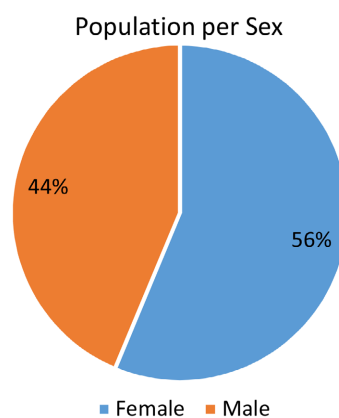


Figure 1. Population per gender.

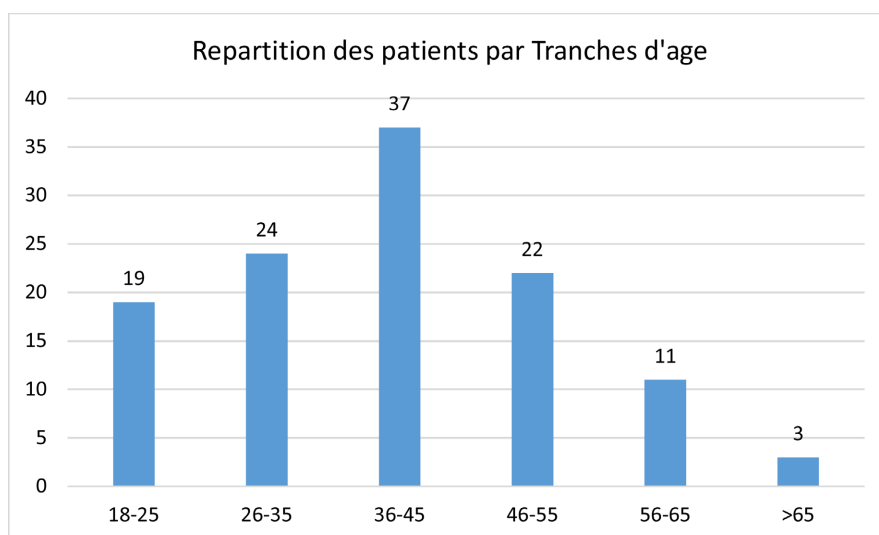


Figure 2. Population's age groups.

Table 1. Distribution of the population by gender and age groups.

| Parameters | Patients | |
|--------------------------------------|----------|------------|
| | Values | Percentage |
| Sex (N = 119) | | |
| Female | 67 | 56.3 |
| Male | 52 | 43.7 |
| Age groups (N = 116) in years | | |
| 18 - 25 | 19 | 16.4 |
| 26 - 35 | 24 | 20.7 |
| 36 - 45 | 37 | 31.9 |
| 46 - 55 | 22 | 19.0 |
| 56 - 65 | 11 | 9.5 |
| >65 | 3 | 2.5 |

Fifty-five (55) patients, or 47.0%, had a normal clinical condition; followed by 39 patients (33.3%) who had a good clinical condition, 22 patients (18.8%) a poor clinical condition and 1 patient (0.9%) a pre-moribund clinical condition (**Table 3**).

The most common known medical antecedents are: tooth decay and sleep disorder (30.2%), alcoholism and tuberculosis (28.4%), appetite disorder (26.1%), neuro-peripheral disorders (17.9%), smoking, arterial hypertension and hypotension (17.2%). These data are comprehensively presented in **Table 4**.

The most common known prior morbidities are: malaria (35.3%), high blood pressure and heart disease (14.7%), drug abuse and tuberculosis (12.2%), and smoking (9.5%). These data are presented more fully in **Table 5**.

Table 2. WHO Clinical stage at the inclusion.

| WHO Clinical Stage (N = 118) | Frequencies | Percentage |
|------------------------------|-------------|------------|
| Stage 1 | 40 | 33.9 |
| Stage 2 | 18 | 15.3 |
| Stage 3 | 49 | 41.5 |
| Stage 4 | 11 | 9.3 |

Table 3. Clinical Status at the inclusion.

| Patient Clinical Status (N = 117) | Frequencies | Percentage |
|-----------------------------------|-------------|------------|
| Normal | 55 | 47.0 |
| Good | 39 | 33.3 |
| Bad | 22 | 18.8 |
| Pre-moribund | 1 | 0.9 |
| Moribund | 0 | 0 |

Table 4. Known medical history of patients at inclusion.

| Known Medical history (N = 116) | Frequencies | Percentage |
|---------------------------------|-------------|------------|
| Sleep disorder | 35 | 30.2 |
| Sexual disorder | 6 | 5.2 |
| Neuro-peripheral disorder | 21 | 17.9 |
| Smoking | 20 | 17.2 |
| Meningitis | 0 | 0 |
| Epilepsy | 3 | 2.6 |
| Tooth decay | 35 | 30.2 |
| Paralysis | 3 | 2.6 |
| Suicidal ideation | 7 | 6.0 |
| Appetite disorder | 30 | 26.1 |

Continued

| | | |
|------------------|----|------|
| Behavior trouble | 6 | 5.2 |
| Alcoholism | 33 | 28.4 |
| Tuberculosis | 33 | 28.4 |
| Stroke | 4 | 3.5 |
| Otitis | 7 | 6.0 |
| Rheumatism | 11 | 9.5 |
| Hypertension | 20 | 17.2 |
| Nervousness | 12 | 10.4 |
| Hypotension | 20 | 17.2 |

Table 5. Prior morbidities known to patients on inclusion.

| Prior Morbidities known (N = 116) | Frequencies | Percentage |
|-----------------------------------|-------------|------------|
| Epilepsy | 4 | 3.5 |
| Encephalopathy | 3 | 2.6 |
| Malaria | 41 | 35.3 |
| Malnutrition | 10 | 8.8 |
| Diabetes | 2 | 1.7 |
| High Blood Pressure | 17 | 14.7 |
| Alcoholism | 9 | 7.8 |
| heart disease | 17 | 14.7 |
| sickle cell disease | 0 | 0 |
| Meningitis | 2 | 1.7 |
| Anemia | 2 | 1.7 |
| Sleep Deprivation | 10 | 8.6 |
| Drug Abuse | 14 | 12.2 |
| Head trauma | 1 | 0.9 |
| Tuberculosis | 14 | 12.2 |
| Sepsis | 3 | 2.6 |
| Depression | 2 | 1.7 |
| stroke | 4 | 3.4 |
| Smoking | 11 | 9.5 |

When using the Pearson Correlation test, there is a significant correlation at the 0.01 level (bilateral) between the clinical stage and the clinical status ($p < 0.000$) of the patients as presented in **Table 6** and **Figure 3**.

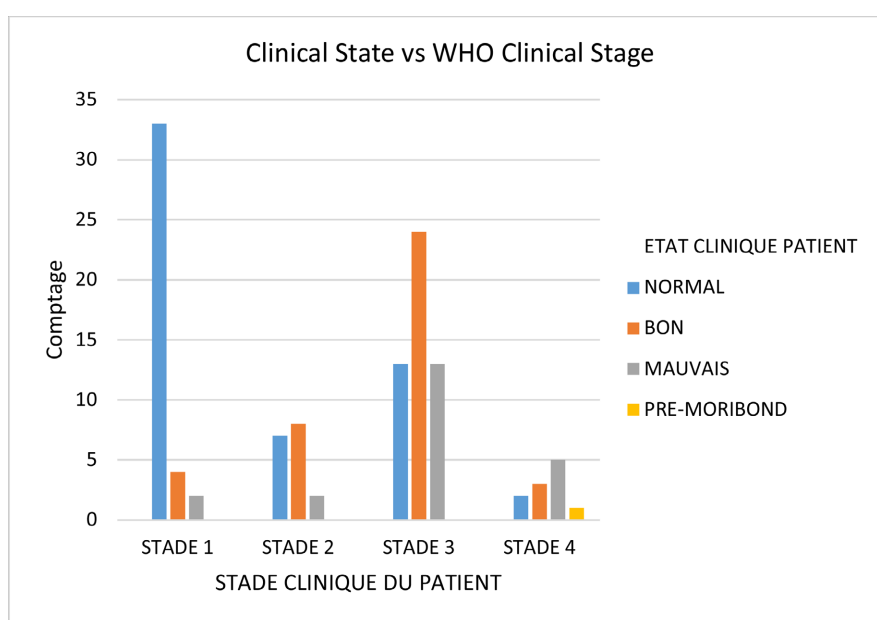
4. Discussion

The main objective of this study was to determine the clinical profile of People Living with HIV (PLHIV) starting AntiRetroViral Treatment (ART) in Kinshasa

Table 6. Table of “clinical state vs. clinical stage” correlations.

| | | Clinical State of Patient | WHO Clinical Stage of Patient |
|---------------------------|---------------------|---------------------------|-------------------------------|
| ETAT CLINIQUE PATIENT | Pearson Correlation | 1 | 0.524** |
| | Sig. (two-sided) | | 0.000 |
| | N | 117 | 117 |
| STADE CLINIQUE DU PATIENT | Pearson Correlation | 0.524** | 1 |
| | Sig. (two-sided) | 0.000 | |
| | N | 117 | 118 |

** . The correlation is significant at the 0.01 level (two-sided).

**Figure 3.** Cross table of “clinical state vs. WHO clinical stage” values.

during the Dolutegravir era. One hundred and nineteen (119) PLHIV were included for this work starting treatment in 13 Outpatient Treatment Centers scattered in the four districts of Kinshasa, Democratic Republic of Congo.

Sixty-seven (67) patients, or 56.3%, are women while 52 (43.7%) are men, giving a sex ratio of 1.29 in favor of women. These data corroborate those of the literature for the city of Kinshasa and even the country where the female sex is generally more represented in the population of PLHIV [6]-[14]. This predominance of the female sex could be explained by the social and economic characteristics of African society, the biological vulnerability of women as well as the occurrence of vaginal lesions during sexual intercourse [15]. It can also be explained by frequenting the hospital services of Prenatal Consultations (CPN) where screening for HIV infection is compulsory according to the recommendations [16]. In 2019, the UNAIDS report speaks of the feminization of the HIV/AIDS epidemic in Sub-Saharan Africa where approximately 160 young

women aged 15 to 24 are infected with HIV per day in the region [17].

The average age of the patients included is 39.87 ± 12.36 years with extremities of 18 to 69 years. The most represented age group is that of 36 to 45 years with 37 patients (31.9%) followed by that of 26 to 35 years with 24 patients (20.7%), that of 46 to 55 years with 22 patients (19.0%) and that of 18 to 25 years with 19 patients (16.4%). These results correspond to those published by various authors in our community who presented a similar average age in the population of PLHIV and the dominant age group of 25 to 45 years [10] [11] [12] [13] [14] [18]. This segment is recognized as being the one in which the population is more sexually active.

The mean temperature of the patients at inclusion was $36.69^\circ\text{C} \pm 0.68^\circ\text{C}$ with extremities of 36.0°C to 38.70°C . Fever is one of the major clinical symptoms of HIV infection and AIDS [19]. It often has a chronic appearance in PLHIV and a complex etiology which quickly becomes a factor in the development of the infection.

Forty-nine patients (49), or 41.5%, were in clinical stage 3; followed by 40 patients (33.9%) who were in clinical stage 1, 18 patients (15.3%) in clinical stage 2 and 11 patients (9.3%) in clinical stage 4. More than half (50, 8%) of patients start ART late at high stages when clinical signs start to deteriorate. This observation has also been made by various authors [10] [11] [12] [13] [14] [18]. This delay in diagnosing patients has an impact on their care and the prognosis for monitoring PLHIV.

Fifty-five (55) patients, or 47.0%, had a normal clinical condition; followed by 39 patients (33.3%) who had a good clinical condition, 22 patients (18.8%) a poor clinical condition and 1 patient (0.9%) a pre-moribund clinical condition. More than half of the patients have non-incapacitating clinical signs at the start of ART, allowing them to manage themselves without difficulty. Nevertheless, this apparent asymptomatic state is only an illusion because the clinical stages recommended by the WHO take into account more than the visual. The correlation between the clinical stage and the clinical state of the patient is highly significant ($p < 0.000$).

The best-known medical histories are: tooth decay and sleep disorder (30.2%), alcoholism and tuberculosis (28.4%), appetite disorder (26.1%), neuro-peripheral (17.9%), smoking, hypertension and arterial hypotension (17.2%). These data are similar to those of the literature in our environment where tuberculosis, oral candidiasis and shingles are presented as the most common antecedents [7] [19] [20].

The most common known prior morbidities are: malaria (35.3%), high blood pressure and heart disease (14.7%), drug abuse and tuberculosis (12.2%), and smoking (9.5%). These data correspond to those of the literature in our environment where arterial hypertension, malaria and tuberculosis are retained as frequent morbidities among PLHIV in Kinshasa [7] [19] [20] [21].

5. Conclusion

The HIV epidemic maintains its tendency to feminize in our environment. The

age group most affected is that of 25 to 45 years. The majority of our patients begin treatment at WHO stage 3 with good clinical condition. Dental caries and sleep disorder (30.2%) are the most found medical history. Malaria (35.3%) is the most common previous morbidity.

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Contribution of the Authors

EKN, BBI: design of the research project. **GBM, MTS:** reading and amendment of the research project. **BBI, GBM, SSM, TNK, LLO, NDM, JNE, CKA:** data collection and analysis. **EKN, BKO, GBM, MTS:** analysis and interpretation of data. **EKN, GBI, SSM:** writing of the first manuscript. **BBI, GBM, MTS, BKO, EKN:** critical review of the final version of the article. All authors have read, corrected and approved the final version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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List of Abbreviations and Acronyms

| | |
|-------|---|
| ARV | AntiRetroViral |
| ART | AntiRetroViral Treatment |
| DRC | Democratic Republic of the Congo |
| DTG | Dolutegravir |
| HIV | Human Immunodeficiency Virus |
| OTC | Outpatient Treatment Center |
| PLHIV | Person Living with Human Immunodeficiency Virus |
| RST | Rapid Screening Test |
| SSA | Sub-Saharan Africa |