



## Epidemiological, Immuno-virological and Evolutionary Profiles of Men who have Sex with Men with HIV/AIDS Followed in Niamey/Niger

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### Abstract

**Background:** Since the beginning of the HIV epidemic, MSM (Men Who Have Sex with Men) has been disproportionately affected. In Niger, data on MSM with HIV are not available. In order to strengthen preventive strategies, it would be essential to determine the profile of HIV-positive MSM patients.

**Objective:** The aim of this study was to determine the prevalence, the immunological and evolutionary profiles of MSM living with HIV followed in Niamey.

**Materials and Methods:** This is a retrospective cross-sectional study based on the use of files of HIV-positive MSM followed up in the 3 centers of Niamey (Cedav, ATC and NHN) over a period of 13 years, from 2007 to 2020; on 65 cases.

**Results:** We identified 4601 patients living with HIV at the time of our study, including 65 MSM cases, i.e. a prevalence of 1.41%. The average age of the patients was  $30.57 \pm 8.453$  with extremes of 18 to 66 years. The age range of 25 to 35 years represented 32 (49.2%) of our patients. Single people represented 49 (75.4%) of our patients. Thus, 21 (32.3%) of our patients had a higher level (32.3%) and 15 (23.1%) patients were bisexual. All the 65 (100%) patients were HIV-1 infected. The mean CD4 count at initiation was  $382.95 \pm 263.974$  and 34 (52.3%) of the patients had a CD4 count between 200 and 500/mm<sup>3</sup> at initiation. No patients had viral load testing at initiation. So, 56 (86.2%) patients had a favorable course.

**Conclusion:** MSM have been a highly vulnerable segment of the population to HIV infection since the 1980s. Behavioral change, regular screening and condom use are weapons to control the spread of this disease.

**Keywords:** Epidemiology; Immunovirology; MSM; HIV/AIDS; Niamey/Niger; West Africa

**Abbreviations**

ATC: Ambulatory Treatment Center; NHN: National Hospital of Niamey; NIAARV: Niger Initiative for Access to ARVs

**Background**

Since the outbreak of the epidemic, men who have sex with men (MSM) and transgender people have been disproportionately affected by HIV since the disproportionately affected by HIV, and their risk of infection remains today still high [1-3]. A meta-analysis of surveillance data from low- and middle-income countries found that MSM are 19.3 times more likely to be infected with HIV than people in the general population [4]. Recent studies in sub-Saharan Africa have found a prevalence of HIV infection among MSM ranging from 6% to 31%, and an incidence of 21.7 per 100 person-years in a small cohort of MSM (n = 156) in coastal Kenya [5-8]. To our knowledge, in Niger no specific study among MSM has been conducted to date. Thus, the aim of our study was to determine the prevalence, immunovirological profile and evolution of MSM living with HIV followed in Niamey.

**Materials and Methods**

**Study framework and type**

This was a retrospective cross-sectional multicenter study of MSM patients with HIV/AIDS followed in three centers in Niamey: ATC (Ambulatory Treatment Center), NHN (National Hospital of Niamey) and Cedav over a period of 13 years, from 2007 to 2020, involving 65 cases.

**Materials**

The data collection was based on a pre-established survey form and on the follow-up files within the framework of the INAARV (Niger Initiative for Access to ARVs), which provided information on the socio-demographic, immuno-virological and evolutionary aspects. Data entry and analysis were carried out using Microsoft Office 2019 and SPSS 26.0 software. Patients' anonymity was respected.

**Study population**

The patients included in our study were HIV-positive male patients who admitted having had sex with men.

Variables analyzed.

For each patient, the following variables were analyzed: sociodemographic (age, occupation, origin, marital status, educational level and sexual orientation) and immunovirological (type of HIV, CD4 count at treatment initiation, last CD4 count, most recent viral load). Progression was assessed according to the last CD4 count and viral load.

**Results**

We counted 4601 patients living with HIV at the time of our study, including 65 MSM cases, i.e. a prevalence of 1.41%, whose distribution according to the variables gives the following results:

- **Socio-demographically (Table 1):** The average age of the patients was 30.57 ± 8.453 with extremes of 18 to 66 years. The age group of 25 to 35 years represented 32 (49.2%) of our patients. The prevalence among those under 25 years of age was 0.48% while it was 0.93% among those over 25 years. Traders represented 18 (27.7%) patients, 61 (94%) of our patients were from urban areas. Single people represented 49 (75.4%) of our patients, 21 (32.3%) of our patients had a higher education level and 15 (23.1%) patients were bisexual.

Variables	N	%
Age group		
[18-25[	22	33,8
[25-35[	32	49,2
[35-45[	7	10,8
≥ 45	4	6,15
Prevalence		
< 25	22	0,48
≥25	43	0,93
Profession		
traders	18	27,7
pupil/student	16	24,6
unemployed	7	10,8
others*	24	36,9

Origin		
Urban	61	94
Rural	4	6
Marital Status		
singles	49	75,4
Married	15	23,1
Unprecised	1	1,5
Educational level		
higher	21	32,2
Secondary	17	26,2
Primary	19	29,2
Illiterate	8	12,4
Sexual Orientation		
Homosexual	49	75,4
Bisexual	15	23,1
Unprecised	1	1,5
CD4 rate at the initiation		
> 500	16	24,6
500-200	34	52,3
200-100	7	10,8
< 100	8	12,3
last CD4 rate		
> 500	26	40
500-200	30	46,1
200-100	7	10,8
< 100	2	3,1

**Table 1:** Socio-demographic and immuno-virological distribution of patients.

\*Others: launderer, singer, hairdresser, driver, dressmaker, cook, farmer, customs officer, manager, gas station attendant, pensioner, secretary.

- **Immunological status (Table 1):** All 65 (100%) patients were infected with HIV-1. The mean CD4 count at initiation was  $382.95 \pm 263.974$ , and 34 (52.3%) of the patients had a CD4 count between 200 and  $500/\text{mm}^3$  at initiation. No patients had viral load testing at initiation. The mean CD4 count at last check was  $500.55 \pm 316.26$ , and 30 (46.1%) of patients had a CD4 count between 200 and  $500/\text{mm}^3$  at last check. Thus, 37 patients had a last viral load assay and viral load was undetectable in 17 patients (48.6%).
- **In terms of evolution:** 56 (86.2%) patients had a favorable evolution, 9 (13.8%) were in therapeutic failure including 1 (1.5%) lost to follow-up and 1 (1.5%) died.

### Discussion

Our study was the first of its kind in Niger to determine the epidemiological, immunovirological and evolutionary profile of HIV infection among MSM. However, its retrospective nature remains a limitation. Indeed, information biases may have been linked to different record-keeping systems at different facilities, which account for some missing data. The majority of participants were young MSMs with a high school education or higher, and they were single. With respect to sexual orientation, many reported being homosexual and a relatively large proportion were bisexual. Other studies conducted in Africa have observed similar characteristics regarding youth, sexual orientation and education level of the participants [9-13]. The study showed that HIV prevalence among MSM in Niger was relatively high compared to the prevalence in the general population, which was 0.4%. Our study found a higher HIV prevalence among MSM in Niger compared to a 2011 study in Nigeria where HIV prevalence was 1.1% [14] among MSM but lower than a study in Burkina Faso where HIV prevalence among MSM was 1.7% [9]. The low HIV prevalence may be explained by the fact that the sample includes mainly young people who do not have significant cumulative risk [15]. In a recent systematic review, the authors estimated the prevalence to be 17.7% among MSM in Central and West Africa [16]. These high prevalence rates underscore the need for targeted actions in the response to the pandemic in sub-Saharan Africa. Many MSMs lack specific knowledge about the risk of HIV infection and sex between men. This is significant in several African countries where HIV awareness and prevention programs focus on heterosexual transmission and mother-to-child transmission of HIV. These programs have not included informa-

tion on male-to-male sexual transmission, which is still considered taboo and condemned by society [17,18], particularly in countries like Niger where 98% of the population is predominantly Muslim.

Immunologically, all patients were infected with HIV-1. HIV-1 is the most common type of HIV. HIV-2 is relatively rare. It is mainly concentrated in West Africa, where it is currently epidemic, although it has been reported in other parts of the world including France, Portugal, and countries with colonial vestiges due to immigration and close trade relations with West Africa [19]. The mean CD4 count at initiation was  $382.95 \pm 263.974$  with extremes between 6 and 1646. These results are higher than those of a 2015 study from Nigeria that found a mean CD4 count at  $334.6 \text{ cells/mm}^3$  [20]. This difference may be explained by our sample size. At initiation 50 (76.9%) of our patients had a CD4 count above  $200 \text{ Cell/mm}^3$ . These results are similar to those of a study performed in America in 2018 and Nigeria in 2015 where the majority of patients had a CD4 count  $\geq 200 \text{ Cell/mm}^3$  with 53% and 80.9% respectively [20,21]. None of our patients had received viral load testing at inclusion. And this, in accordance with the minimum package of tests offered by the Nigerian Antiretroviral Access Initiative (INAARV) at inclusion. This can also be explained by the fact that the means are not always available to perform viral load testing in developing countries. In addition, since 2015 the WHO has published updated guidelines that recommend testing and treatment without delay for viral load and CD4 count.

On the evolutionary level: 56 (86.2%) patients had a favorable evolution. Indeed, 56 (46.1%) patients had a CD4 count greater than  $200 \text{ Cell/mm}^3$  at last checkup in addition to the 37 patients who had a final viral load test: viral load was undetectable in 17 patients (48.6%).

## Conclusion

This study was the first in Niger and showed a high prevalence of HIV among MSM compared to the general population, thus highlighting the existence of this MSM population and the reality of HIV in this same population which must be part of the prevention program in order to better control the spread of this disease.

## Conflict of Interest

None.

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