



Continuity of HIV-Related Care in the Central Districts of Senegal During the COVID-19 Pandemic Period Between March 2020 and February 2021

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Abstract: The HIV /AIDS pandemic is a major public health problem. COVID-19 infection has impacted the national health system. It was deemed necessary to study the continuity of HIV-related services in Senegal. An analytical cross-sectional study was conducted. The study populations were represented by all PLHIV who joined the active queue between March 2020 and February 2021. A multi-stage survey was conducted at the district level. Univariate and multivariate analyses were carried out using the SPSS version 2022 software. The mean age of patients was 43.38 years \pm 13.22. More than half of PLHIV were educated (53.13%) and married (55.47%) with a majority of the female sex 66.41%. Among the respondents, 66.13% were engaged in income-generating activities, of which 86.42% were in the informal sector. More than half of the respondents 67.50% had a monthly income of less than 55,000 FCFA. Television was the main source of information (51.56%). Almost all PLHIV (96.88%) had continued to seek counselling services. The majority (93.55%) had performed at least one follow-up para-clinical assessment with an average delay of 7.54 \pm 8.64 months. More than half (71.55%) of PLHIV were very satisfied with the follow-up consultation and assessment services offered. Among the 85 PLHIV surveyed, (9.41%) were pregnant or had given birth within the last 12 months. PLHIV for whom COVID-19 negatively impacted the continuity of services accounted for 16.41%. The discontinuity of HIV care services was higher in male subjects with an adjusted OR 4.61 [1.58-13.51]. Subjects who had no income-generating activity were at greater risk of experiencing care service discontinuity with an adjusted OR 3.13 [1.10-9.23]. The results of this work suggest to health authorities to reorganize the health system and adopt a policy based on the community approach and to populations to overcome the "fear of COVID-19".

Keywords: Continuity, Services, HIV Prevention, COVID-19, Senegal

1. Introduction

The HIV /AIDS pandemic is so far one of the major public health problems at the beginning of this 21st century. In 2019, 38 million people were living with HIV worldwide and new HIV infections were reported (1.7 million) [1].

In Senegal, the overall prevalence of HIV infection is 0.3% [2]. It is one of the countries in sub-Saharan Africa that committed itself very early in the fight against the HIV

pandemic through prevention and case management programs [3]. Thus, the Senegalese Antiretroviral Access Initiative (ISAARV), set up in 1998, allowed free therapeutic care for patients with this condition with good therapeutic compliance [4].

In this increased fight against the HIV/AIDS pandemic, the COVID-19 pandemic, declared a public health emergency by the WHO on 30 January 2020, has been added [8]. It has impacted the health system in general at global and national level, many difficulties have been noted to ensure an

effective and uninterrupted service [2].

Faced with this situation, it was deemed necessary to study the continuity of HIV-related services in Senegal during the COVID-19 pandemic.

2. Methodology

2.1. Type and Period of Study

It was a cross-sectional, descriptive, analytical study on the continuity of HIV-related care services in twenty districts of Senegal between March 2020 and February 2021.

2.2. Target Population

They were all PLHIV who joined the active queue during the study period.

Eligibility criteria

1) Included were:

Any PLHIV in the active queue followed in the health district under investigation and who did not travel outside the district for more than one month in 2020 or 2021.

2) Was not included:

Any PLHIV in the active queue monitored in the health district under investigation not found or inaccessible by telephone.

2.3. Variables to Be Studied

The continuity of services referred to four aspects related to the regular intake of ARVs, respected care, satisfactory management according to the patient and constant availability of inputs for assessments.

2.4. Hive Sampling Protocol

1) Survey Units

They consisted of PLHIV who joined the active queue during the study and who resided in the target districts.

2) Weight Sampling Method:

It was a stratified random survey with several degrees according to the five (05) axes of the Country (North, South-East, South, Central and West). Then in each axis, four (04) health districts were randomly selected by a simple (elementary) random survey. These were the districts of Keur Massar, Mbour, Thiès and Touba in the West. For the central axis, the districts of Kasnack, Kaffrine, Fatick and Guinguinéo were concerned. To the north, the districts of Kébémér, Richard Toll, Saint-Louis and Matam were drawn. In the south-east, the draw concerned the districts of Kédougou, Saraya, Koumpétoum and Tambacounda and finally in the south, the districts of Bignona, Ziguinchor, Sédhiou, and Kolda.

In each health district previously drawn at random, a systematic random survey was carried out.

3) Sample size calculation

Sample size was calculated using SCHWARTZ's formula

$$n = [\varepsilon^2 (p \times q)] / i^2 = [1.96^2 (0.5 \times 0.5)] / 0.05^2 = 384.16$$

To this is added 10% non-response and then rounded in excess.

$$n_{HIV} = 384.16 + 38.416 = 422.576 \text{ then } n_{HIV} = 500.$$

Based on the national database the central area was selected with 128 PLHIV distributed in 05 districts (Kasnack, Kaffrine, Fatick, Guinguinéo and Touba).

4) Data management and data analysis

The data was collected by direct interviews using a questionnaire configured on tablets in the humanitarian interface of the *Open Data Kit (ODK)*.

The analysis was done with the SPSS version 22 software.

5) Ethical considerations

Each study participant was asked for free and informed consent. The approval of the National Ethics Committee for Health Research (CNERS) of Senegal was obtained and the data collected anonymously.

3. Results

3.1. Description

A total of 128 PLHIV were surveyed. The mean age of patients was 43.38 years \pm 13.22. More than half of PLHIV were educated (53.13%) and married (55.47%). The female sex was in the majority 66.41%. Among the respondents, 66.13% were engaged in income-generating activities, of which 86.42% were in the informal sector. Among the 85 PLHIV women surveyed, (9.41%) were pregnant or had given birth in the past 12 months. More than half of the respondents 67.50% had a monthly income of less than 55,000 FCFA. Almost all PLHIV 89.84% had a phone in their home and spent 2.33 \pm 3.43 hours per day on social media.

Television 51.56% was the main source of information on COVID-19. The majority of respondents (91.41%) had received information on the fight against the novel coronavirus. Almost all (99.15%) found this information useful. Only 39.06% had received community support since the beginning of the pandemic. All respondents adhered to the awareness sessions and (98.08%) relayed the recommendations to their relatives and ensured their implementation. Almost all PLHIV (96.88%) had continued to request follow-up consultation services for their health assessment. The majority (93.55%) had performed at least one follow-up paraclinical assessment with an average delay of 7.54 \pm 8.64 months. CD4 testing was requested in 18.97% of cases and viral load in (78.45%) of cases.

More than half (71.55%) of PLHIV were very satisfied with the quality of care. They followed appointments with respect, were regular with the intake of ARVs and the assessments offered. Of the 85 women living with HIV surveyed, 9.41% were pregnant or had given birth in the past 12 months. All had received ARV treatment within 3.57 \pm 2.15 months.

PLHIV for whom COVID-19 negatively impacted the continuity of services accounted for 16.41% (n=21). The

latter have not continued to request follow-up consultation services and/or have not carried out a follow-up para-clinical assessment during the last 12 months.

3.2. Analytics

Gender was significantly associated with the impact of COVID-19 on the continuity of HIV-related services. The

discontinuity of HIV care services was 4.61 [1.58-13.51] times higher in male PLHIV.

Professional activity was significantly associated with the impact of COVID-19 on the continuity of HIV-related services. Indeed, the discontinuity of HIV care services was 3.13 [1.10-9.23] times higher among PLHIV who are not professionally active. The table below is an illustration:

Table 1. Factors associated with discontinuity of HIV services during COVID-19.

Factors	Final Template		
	Discontinuity of HIV services during COVID-19		
	Frequency n (%)	Adjusted OR [IC at 95%]	P-value
Sex			0.005*
Male	12 (27.91)	4.61 [1.58-13.51]	
Female	9 (10.59)	1	
Income Generating Activity			0.039
No	8 (19.05)	3.13 [1.10-9.23]	
Yes	11 (13.41)	1	

P value=0.992

4. Discussions

In our study, there was a predominance of women (66.41%). Mbaye M. Ng [4] and Ly. A [5] had found the same results with 66.94% and 70.7% respectively. This female predominance can be explained by a greater susceptibility of women to HIV/AIDS infection related to biological and socio-economic factors [7, 10]. In addition, HIV-positive women of childbearing age have more opportunities for screening and management through prevention of mother-to-child transmission programs [8, 9].

The discontinuity of HIV care services was 4.61 [1.58-13.51] times higher in male PLHIV [11, 12]. This could be explained by the lack of time related to professional activities, travel restrictions, and especially the increased financial difficulties with the slowdown in economic activities [18].

The mean age of patients was 43.38 ± 13.22 years. The 40-50 age group was the most represented (32.81%). These results can be superimposed on those conventionally described in the literature with older men in general [13] with a more loaded health history in terms of STIs [14].

The older PLHIV get, the more COVID-19 is associated with the discontinuity of their care. Indeed, during the pandemic, elderly subjects were more likely to develop fear of the virus than young people. In his study in the United States, Zhang found that the deaths in his cohort of SARS-COV 2 infected subjects were the oldest subjects [21]. Similarly, the mortality rate in China 2020 was proportional to the age of those infected according to the Statista Research Department group [22]. In the same dynamic, Verity had found in its study in China a higher case fatality rate in the elderly: 32% in the under 60s compared to 6.4% in the over 60s up to 13.4% in the over 80s [23].

More than half of the respondents 55.47% were married. This predominance was found in Ly's study. A [5] with 57.1% married. This observation was shared by others, including that

of Mbaye. M. Ng [4], Coulibaly JC [6] and DJIKOLDINGAN D. [16] which found 61.90%, 55.53% and 58.5% of married couples respectively. These results are consistent with the data found in the literature, which reports that for most developing countries, particularly in Africa, HIV transmission is essentially heterosexual and is mainly from spouse to spouse [17].

In our study, more than $\frac{3}{4}$ of the PLHIV surveyed 86.42% worked in the informal sector and 67.50% had a monthly income of less than 55,000 FCFA. These results can be superimposed on the national data of the ANSD which claim that the informal sector employs more than half of the employed labour force and the average monthly wage of the worker amounts to 42,150 FCFA [19]. In the study, PLHIV in the informal sector were not further impacted by COVID-19 despite the financial difficulties noted in this sector. This could be explained by the fact that several HIV-related services ranging from testing to treatment are free of charge [15].

The discontinuity of HIV care services was 3.13 [1.10-9.23] times higher among PLHIV who were not in employment. This could be explained by financial difficulties related to the slowdown in economic activities, restrictions related to travel to the health structure and the lack of time related to the search for an income-generating activity [26].

The average time to last follow-up para-clinical assessment was 7.54 ± 8.64 months. Half of the respondents had carried out the last assessment at less than 6 months, the 39.66% between 6-12 months and 10.34% at more than 12 months. PLHIV for whom COVID-19 negatively impacted the continuity of services accounted for 16.41%.

In our study, 81.25% of PLHIV had benefited from awareness-raising about the coronavirus. Television (38.46%) and radio (26.92%) were the main sources. These data can be superimposed on those of Mbaye M. Ng [4] who found that 75.15% of respondents had benefited from awareness raising about the new coronavirus. On the Dakar population Diaw. M [20], found 91.30%. This can be explained by the fact that the Senegalese Ministry of Health has been relaying information

related to COVID-19 on a daily basis on the media and social networks since the first imported case.

In this same study, we note that the longer the journey time to get to the health facility, the more the continuity of care for the PLHIV is negatively impacted by COVID-19, not in the results [25]. This could be explained by the fact that the fear of contacting the virus increases with the time spent outside, hence the “stay at home” barrier measure. Cenné [24] finds in his study, in Liège, that state restrictions such as the curfew and limitations on inter-regional transport could lead to a discontinuity both in care at the structure level health and the intake of ARVs.

5. Conclusions and Recommendations

The HIV/AIDS pandemic is a major public health problem in Senegal. It is of concentrated type with a low prevalence of 0.3% in the general population in 2020 (2). Despite considerable progress in the fight against HIV/AIDS, progress is still needed to achieve the ambitious goals of eliminating the HIV/AIDS epidemic by 2025.

Against this background of increased fight against HIV/AIDS, the current coronavirus (COVID-19) pandemic has thrown the world into an unprecedented global crisis. Health systems around the world have been faced with a huge challenge, to provide the necessary care to patients. As a result, care for non-COVID patients has been drastically affected.

It is in this context that we have set ourselves the objective of studying the continuity of HIV-related services in the central districts of Senegal during the COVID-19 pandemic. More specifically, the aim was to describe the socio-demographic and socio-economic characteristics of PLHIV, to determine the quality of the support received, the existence of a demand for care and the availability of care provision. Finally, it was a question of identifying the factors associated with the continuity of services.

The discontinuity of HIV care services was higher in male subjects with an adjusted OR of 4.61 [1.58-13.51]. Subjects who had no income-generating activity were at greater risk of experiencing service discontinuity for their management with an adjusted OR of 3.13 [1.10-9.23]. At the end of this work the following recommendations have been formulated:

- 1) For the populations to put into practice all the information received during awareness-raising campaigns;
- 2) For patients to ensure good adherence to treatment by respecting appointments and barrier measures;
- 3) For health districts, to set up a system of home distribution of ARV drugs and to ensure the availability of products necessary for the monitoring of PLHIV.

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