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People Living with HIV's Worry That the COVID-19 Health Crisis Could Impact Long-Term HIV Care: Lessons From the French Context for Future Disease Epidemics

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Abstract

Background: In 2020, people living with HIV (PLHIV) in France were worried that the COVID-19 health crisis would lead to long-term changes in their HIV care. Using data from the anonymous, online, cross-sectional survey ACOVIH, which was completed by PLHIV between July and September 2020, this study explored factors associated with worry about long-term changes to HIV care after the end of the first lockdown (17 March-11 May 2020). **Methods:** Using multivariate logistic regression, we compared participants who declared they were worried about long-term changes with those who did not, in terms of their demographic, behavioral, and socioeconomic characteristics, as well as their experience of the COVID-19 crisis and access to care. **Results:** Among the 249 respondents, 61.5% (n = 153) declared having worries about long-term changes to HIV care. Specifically, after adjustment for gender and age, PLHIV born outside of France (adjusted odds ratios (aOR) [95%CI] = 2.57[1.44;6.76]), those whose financial situation deteriorated since the beginning of the pandemic (4.87[1.97;13.20]), those with a history of HIV opportunistic infections (3.27[1.53;7.32]), and respondents who took psychotropic drugs (3.21[1.50;7.22]) were all more likely to declare having worries. In terms of related determinants, a deterioration in communication with their HIV medical team (3.47[1.61;7.94]), having worries about COVID-19 (1.36[1.14;1.62]), and believing that HIV treatment increased the risk of COVID-19 infection (1.52[1.15;2.03]), were all significantly associated with having worries about long-term changes to HIV care. **Conclusion:** In the context of future disease epidemics, taking into account the profiles of individual PLHIV, and providing clearer, targeted information on HIV care, could help reduce worry in this population about the continuity of HIV care and could foster efficient communication with care providers.

Keywords

COVID-19, first lockdown, France, HIV care, people living with HIV

Plain Language Summary

People living with HIV's worry that the COVID-19 health crisis could impact long-term HIV care: lessons from the French context for future disease epidemics

During the first COVID-19 lockdown in France, people living with HIV were worried about the potential long-term changes to their HIV care. This study, based on data from the ACOVIH survey, found that experiencing financial difficulties since the beginning of the pandemic, a history of HIV opportunistic infections, and taking psychotropic drugs, were all associated with increased worry. Factors like a deterioration in communication with their HIV medical team and the belief that HIV treatment increased the risk of COVID-19 infection, also contributed to having worries. Addressing these factors and providing clear, targeted information could reduce worry about HIV care continuity in future epidemics.

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Introduction

During the 2020-2022 COVID-19 pandemic, national polls in several countries indicated an increase in fear, anxiety and worry in the general population and concluded that this increase was related to the fear of acquiring the disease and its consequences.[1–3] For example, in France, the CoviPrev survey, which tracked changes in mental health during the pandemic, found that mental health disorders (ie, anxiety, worry, depression, and sleeping problems) increased during the country's first lockdown (17 March-11 May 2020).[1] In a Belgian survey in early April 2020, 20% of respondents reported experiencing anxiety, while 16% reported depressive disorders.[3] These figures were higher than those (11% and 10%, respectively) in a previous Belgian survey conducted in 2018.[3] In Saudi Arabia, a survey conducted in June 2020 highlighted that a significant number of individuals with chronic illness experienced high levels of fear and anxiety during the COVID-19 outbreak. Specifically, 21.4% were defined as having anxiety, while 19.4% were classified as borderline anxiety cases.[4]

In France, the first three official cases of COVID-19 were recorded on 24 January 2020. On 6 March 2020, a pre-existing health emergency mechanism was triggered at the local authority level, whereby more personnel and beds were allocated in hospitals to manage the unfolding crisis. Because of this, some routine medical appointments, non-essential hospitalizations, and elective surgeries were canceled or postponed, leading to a disruption in care.[5] People living with HIV (PLHIV) started to worry that this disruption might negatively impact their HIV follow-up.[6] Moreover, some were worried that having HIV meant they had a greater chance of contracting a severe form of COVID-19.[7] Just as was observed in the general population, this worry was especially strong among older PLHIV with heart and lung problems.[8] In this context, the ACOVIH (Adaptation to COVID-19 for People Living with HIV) study was implemented in France after the end of the country's first lockdown. It aimed to identify processes of adaptation and perception in terms of COVID-19 in the PLHIV population.

There are approximately 190,000 PLHIV in France. According to the latest epidemiological report from *Santé Publique France* (the National Public Health Agency), 5500 people were newly diagnosed with the virus in 2023, of whom 40%–45% were born outside the country; a substantial proportion of the latter came from Sub-Saharan African countries.[9] Key at-risk groups include men who have sex with men, people who inject drugs, and heterosexuals from highly endemic countries. Geographically, the PLHIV population is mostly concentrated in urban areas, particularly the Greater Paris region, which has a substantial number of specialized HIV care facilities. HIV care in France is governed by a centralized healthcare framework established by the Ministry of Health and supported by agencies such as the ANRS (*Agence Nationale de Recherches sur le Sida et les Hépatites Virales*). However, HIV care policies are implemented at a decentralized level in regional hospitals, specialized HIV clinics, and local health centers. This dual-level approach ensures that while guidelines remain uniform, services can adapt to regional needs and capacities.[5]

Using data from ACOVIH, the present article explored factors associated with PLHIV's worry that the COVID-19 health crisis could impact long-term HIV follow-up in France.

Material and Methods

Study Design

ACOVIH is an anonymous, online, cross-sectional survey conducted among PLHIV in France from 8 July to 20 September 2020 (ie, 2 months after the end of the first lockdown). Eligibility criteria were as follows: 18 years old or over, living in metropolitan France, and diagnosed with HIV. All respondents confirmed they read and understood the online information explaining the nature and purpose of the study. The ad hoc 169-item questionnaire was developed by the study's researchers and members of AIDES, one the largest NGOs dedicated to fighting HIV/AIDS and hepatitis in France. The Health Belief Model[10,11] was used to develop the three questions in the COVID-19 risk and perceptions section.

The survey was promoted on French PLHIV and gay community websites and social media. AIDES was especially active in promoting the survey. In accordance with French legislation, the study was declared to the French data protection authority (CNIL). This study was approved by the Inserm Ethical Evaluation Committee no 20–712 on 7 July 2020.

Study Outcome

The study outcome for the present analysis was having worries that the COVID-19 health crisis would lead to long-term changes in HIV follow-up in France. To measure this, respondents were asked the following question in a dedicated section of the ACOVIH survey: "Are you worried that the COVID-19 crisis will lead to long-term changes in your HIV follow-up?". Answers were based on a 7-point Likert scale ranging from "Not at all" to "Absolutely." For the analysis, respondents were dichotomized into those who ticked "Not at all" and those who ticked any other answer. The former group were categorized as "not worried" about long-term changes to their HIV care, while the latter group were categorized as "worried."

Independent Variables

Data from the following dimensions from the ACOVIH survey questionnaire were used for the present analysis: (1) sociodemographic characteristics, (2) medical HIV history and morbidities, (3) current mental health, (4) psychotropic medication use, (5) COVID-19 infection and perceptions of the disease, and finally, (6) healthcare access during the first lockdown.

With regard to sociodemographic characteristics (1), the following data were used: age, gender, sexual orientation, country of birth, place of residence, educational level, and change in financial situation since the beginning of the pandemic. With respect to HIV medical history and current mental health (2, 3), the following data were used: opportunistic infections, being obliged to disclose one's HIV-positive status because of the lockdown restrictions (eg, PLHIV who had to change physician because their regular doctor was reassigned elsewhere), depressive feelings and sleeping disorders compared to the weeks the pandemic started ("In terms of sleeping disorders, would you say there is ….?" with the following answer options : "No change compared to the weeks before the pandemic started," "Fewer compared to the weeks before the pandemic started," and "More compared to the weeks before the pandemic started.). Also, we used data collected on current feelings of anxiety with respect to previous weeks ("in terms of anxiety, do you currently feel….?" with the following possible answers: "No change compared to the weeks before the pandemic started", "Less anxiety compared to the weeks before the pandemic started" and "More anxiety compared to the weeks before the pandemic started"). The use of psychotropic medications was evaluated with the following question "Are you currently undergoing treatment with psychotropic medications (anxiolytics, antidepressants, neuroleptics, hypnotics, mood stabilizers? (Yes/No). (4) Respondents' perceptions of the disease (5) were assessed with three variables: (i) worried about COVID-19 in general ("COVID-19 worries me," 7-point Likert scale from "Not at all" to "Yes, absolutely"), (ii) perceiving that HIV infection impacted the risk of COVID-19 infection ("In your opinion, is your risk of being infected by COVID-19 affected by the fact that you have HIV"?, 7-point Likert scale from "Yes, a much lower risk" to "Yes, a much higher risk"), and (iii) perceiving that treatment for HIV impacted the risk of COVID-19 infection ("In your opinion, is your risk of being infected by COVID-19 affected by the fact that you are taking HIV medication"?, 7-point Likert scale from "Yes, a much lower risk" to "Yes, a much higher risk").

Finally, several questionnaire items collected various data on healthcare access and use (6), One item examined PLHIV communication with and trust in their HIV follow-up medical team during the lockdown (7-point Likert scale from "Severe deterioration" to "Strong improvement"). Another item explored whether PLHIV had initiated remote medical monitoring during the lockdown and, for those who had, whether were willing to continue it. A third item inquired as to whether appointments for medical consultations, examinations, bioclincal analyses, and screening for sexually transmitted diseases (other than HIV) had been kept, canceled or postponed.

Statistical Analysis

We performed descriptive analyses of the sample variables, presenting categorical variables as counts (numbers and percentages) and quantitative variables as the median and interquartile range (IQR).

We conducted multivariate logistic regression to identify factors associated with having worries that the COVID-19 health crisis will lead to long-term changes in HIV follow-up in France. In order to select the variables to be included in the multivariate model, we performed bivariate tests (Fisher's exact test for categorical variables and the Wilcoxon-Mann-Whitney test for quantitative variables) between the outcome and the independent variables described above. Variables associated with our outcome at the 20% threshold (ie, $P < 0.20$) were included in initial logistic regression models. Subsequently, more parsimonious models were estimated using a combined sequence stepwise selection, with the significance level for the independent variables set at 5% (ie, $P < 0.05$). The model with the lowest Akaike information criterion was selected. Age, sexual orientation, and sleeping disorders at the time of survey were included in the final model as control variables. We tested for possible multicollinearity—defined as a variance inflation factor greater than 2.5[12]—in the second model. Multiple logistic regression coefficients were presented as adjusted odds ratios (aOR) with their 95% confidence intervals. To estimate the goodness of fit of the model, Mc Fadden's pseudo-R2 was calculated. Furthermore, to assess model discrimination, we determined the area under the ROC curve (Table 1).

Statistical analyses were conducted using R software (R Core Team, 2021[13]).

Results

Characteristics of the Study Population

Of the 249 participants in the ACOVIH study, 202 were men and 47 women. Median age was 47 IQR [36–55] years, and the majority (74%) self-identified as homosexual or bisexual. Most participants were born in France (85%), two-thirds had third-level education (69%), while a minority (39%) lived in the Greater Paris region. In terms of changes in financial situation since the beginning of the pandemic, most (72%) considered that their situation had not changed, while 21% declared it had deteriorated.

With regard to HIV infection, 30%, 31%, and 39% of the sample had been diagnosed more than 25 years, between 11 and 25 years, and less than or equal to 10 years before the survey, respectively. Almost all the respondents (96%) reported they had an undetectable viral load, and all were receiving antiretroviral therapy. Twenty-seven percent reported having had one or more opportunistic infections in their lifetime. Eleven percent reported that lockdown restrictions had obliged them to disclose their HIV status.

With regard to current mental health, 30% reported feeling more depressed than in the weeks preceding the COVID-19 crisis, 35% reported having more sleeping disorders, and 27% declared taking psychotropic medication at the time of the study. In terms of healthcare access and use, 33% and 24% reported, respectively, at least one cancelation of postponement of an HIV consultation, examination, bioclinical analysis, or screening for sexually transmitted diseases (other than HIV)

Table 1. Characteristics of the Study Sample—ACOVIH Study 2020.

Descriptive statistics	Frequency (%), N = 249
Age (years)	
18–34	52 (20.9)
35–44	50 (20.1)
45–54	81 (32.5)
55–78	66 (26.5)
Gender	
Man (cis and trans)	202 (81.1)
Woman (cis and trans)	47 (18.9)
Sexual orientation	
Homosexual or bisexual	183 (73.5)
Other	66 (26.5)
Country of birth	
France	211 (84.7)
Outside of France	38 (15.3)
Place of residence	
Not in the Paris region	153 (61.4)
Paris region (Île-de-France)	96 (38.6)
Educational level	
Third level	172 (69.1)
Upper secondary school diploma or lower	77 (30.9)
Change in financial situation since the beginning of the pandemic	
No change	179 (71.9)
Improvement	18 (7.2)
Deterioration	52 (20.9)
Lifetime HIV-related opportunistic infections	66 (26.5)
Obliged to disclose HIV status because of lockdown restrictions	28 (11.2)
Depressive feelings compared to the weeks before the pandemic started	
No change	144 (57.8)
Fewer	30 (12.0)
More	75 (30.1)
Current feeling of anxiety compared to the weeks before the pandemic started	
No change	135 (54.2)
Fewer	29 (11.6)
More	85 (34.1)
Current sleeping disorders compared to the weeks before the pandemic started	
No change	146 (58.6)
Fewer	16 (6.4)
More	87 (34.9)
Taking psychotropic medication at time of study	66 (26.5)
Worried about COVID-19	*5 [3–6]*[a]
Perceiving that HIV infection increased the risk of COVID-19 infection	*4 [4–5]*[a]
Perceiving that HIV treatment increased the risk of COVID-19 infection	*4 [3–4]*[a]
Worried about long-term changes to their HIV care during COVID-19 crisis	
Not worried	96 (38.6)
Worried	153 (61.4)
Communication with HIV medical team during the first lockdown compared with before the lockdown	
No change	157 (63.1)
Improved	17 (6.8)
Deteriorated	75 (30.1)
Trust in the relationship with HIV follow-up medical team during the first lockdown compared with before the lockdown	
No change	197 (79.1)
Improved	14 (5.6)
Deteriorated	38 (15.3)
Willingness to continue remote medical monitoring if already started during the first lockdown	
Not at all	64 (25.7)
Moderately	35 (14.1)
Absolutely	37 (14.9)

(continued)

Table 1. (continued)

Descriptive statistics	Frequency (%), N = 249
Not concerned	113 (45.4)
During the first lockdown, at least one appointment for an HIV medical consultation was:	
Kept (including remote telephone or teleconsultation)	91 (36.5)
Canceled	27 (10.8)
Postponed	55 (22.1)
Not concerned	76 (30.5)
During the first lockdown, at least one appointment for an HIV medical examination or analysis was:	
Kept	110 (44.2)
Canceled	9 (3.6)
Postponed	51 (20.5)
Not concerned	79 (31.7)
Tested for a sexually transmitted infection (ie, other than HIV) since the beginning of the first lockdown	78 (31.3)

[a]Median [IQR]; 1 not at all-7 absolutely. IQR, interquartile range.

since the beginning of the first lockdown. In terms of their communication with their HIV follow-up medical team since the beginning of the health crisis, 30% felt that it had deteriorated, while 15% reported less trust in the team.

With regard to the outcome of the present analysis, 153 respondents (62%) were classified as "worried" (Table 2).

Factors Associated with Having Worries That the COVID-19 Health Crisis Will Lead to Long-Term Changes in HIV Follow-up in France

After adjustment for sexual orientation and age, being born outside of France (aOR[95%CI] = 2.57 [1.04-6.76]), a poorer financial situation since the beginning of the pandemic (4.87[1.97-13.20]), having a history of HIV opportunistic infections (3.27[1.53-7.32]), taking psychotropic medication at the time of the study (3.21[1.50-7.22]), perceiving poorer communication with one's HIV follow-up medical team (3.47[1.61-7.94]), believing that HIV infection increased the risk of COVID-19 infection (1.36[1.14-1.62]), and believing that taking HIV treatment increased this risk (1.52[1.15-2.03]), were all independently associated with having worries about long-term changes to HIV care (Table 3). The goodness of fit of the model was acceptable, with a Mc Fadden's pseudo-R2 of 0.311 and an area under the ROC curve of 0.826.

Discussion

This study explored factors associated with having worries that the COVID-19 health crisis could impact long-term changes in HIV follow-up in the French context. We found that financial hardship since the beginning of the pandemic, a history of opportunistic infections, the use of psychotropic medications, a perceived deterioration in communication with medical team, and the belief that having HIV meant a greater risk of contracting COVID-19, were all associated with having worries about long-term changes to HIV care. These results highlight the multifaceted vulnerabilities of PLHIV during overlapping health crises, emphasizing the importance of targeted support systems. We discuss our various findings in detail below.

The association between increased financial hardship and worry about long-term changes to HIV care reflects findings from other studies which showed that economic instability can exacerbate health-related anxiety, especially in vulnerable populations.[14] For example, a 2021 study conducted in Thailand highlighted that financial stress was a significant factor contributing to mental health deterioration among PLHIV, negatively influencing their ability to access healthcare services and to adhere to treatment plans.[15] Our finding underscores the importance of addressing the economic impact of health crises on healthcare access and mental well-being.

The association between a history of opportunistic infections and greater vulnerability during health crises is well-documented.[16] Although we did not find other studies showing that PLHIV with a history of opportunistic infections experienced higher levels of anxiety during the beginning of the COVID-19 pandemic, we know that opportunistic infections were more prevalent in patients with severe COVID-19[17] and that a history of opportunistic infections can contribute to greater anxiety in PLHIV.[18] Our result suggests that similar fears may have contributed to PLHIV perceiving a greater risk to their health in the face of the double HIV and COVID-19 pandemic.

The use of psychotropic medications also emerged as a significant factor in our study. This could be due to the psychological distress caused by the pandemic, which has been shown to affect adherence to both mental health and HIV.[19] Moreover, disruption to routine healthcare visits during the first lockdown may have compounded the worry in participants with pre-existing mental health issues.[20]

Another key finding was that a perceived deterioration in communication with HIV care teams was associated with the outcome. This finding highlights the critical role of healthcare

Table 2. Characteristics of Respondents According to Their Level of Worry About Long-Term Changes to Their HIV Care—ACOVIH Study 2020.

Bivariate statistics	Not worried Frequency (%), N = 96	Worried Frequency (%), N = 153	P-value[a]
Age (years)			0.052
18–34	19 (19.8)	33 (21.6)	
35–44	12 (12.5)	38 (24.8)	
45–54	39 (40.6)	42 (27.5)	
55–78	26 (27.1)	40 (26.1)	
Gender			0.197
Man (cis and trans)	74 (77.1)	128 (83.7)	
Woman (cis and trans)	22 (22.9)	25 (16.3)	
Sexual orientation			0.053
Homosexual or bisexual	64 (66.7)	119 (77.8)	
Other	32 (33.3)	34 (22.2)	
Country of birth			0.092
France	86 (89.6)	125 (81.7)	
Outside France	10 (10.4)	28 (18.3)	
Place of residence			0.595
Not in the Greater Paris region (called Île-de-France)	57 (59.4)	96 (62.7)	
In the Greater Paris region	39 (40.6)	57 (37.3)	
Educational level			0.847
Third level	67 (69.8)	105 (68.6)	
Upper secondary school diploma or lower	29 (30.2)	48 (31.4)	
Change in financial situation since the beginning of the pandemic			0.002
No change	78 (81.3)	101 (66.0)	
Improvement	9 (9.4)	9 (5.9)	
Deterioration	9 (9.4)	43 (28.1)	
Lifetime HIV-related opportunistic infections	18 (18.8)	48 (31.4)	0.028
Obliged to disclose HIV status because of lockdown restrictions	5 (5.2)	23 (15.0)	0.017
Depressive feelings compared to the weeks the pandemic started			0.019
No change	64 (66.7)	80 (52.3)	
Fewer	13 (13.5)	17 (11.1)	
More	19 (19.8)	56 (36.6)	
Current feeling of anxiety compared to the weeks before the pandemic started			0.005
No change	63 (65.6)	72 (47.1)	
Fewer	12 (12.5)	17 (11.1)	
More	21 (21.9)	64 (41.8)	
Current sleeping disorders compared to the weeks before the pandemic started			0.020
No change	63 (65.6)	83 (54.2)	
Fewer	9 (9.4)	7 (4.6)	
More	24 (25.0)	63 (41.2)	
Taking psychotropic medication at the time of study	16 (16.7)	50 (32.7)	0.005
Worried about COVID-19	*4 [2–5]*[b]	*5 [4–7]*[b]	<0.001
Perceiving that HIV infection increased the risk of COVID-19 infection	*4 [4–5]*[b]	*4 [4–6]*[b]	0.013
Perceiving that HIV treatment increased the risk of COVID-19 infection	*4 [3–4]*[b]	*4 [3–4]*[b]	0.063
Communication with HIV medical team during first lockdown compared with before the lockdown			<0.001
No change	75 (78.1)	82 (53.6)	
Improved	7 (7.3)	10 (6.5)	
Deteriorated	14 (14.6)	61 (39.9)	
Trust in the relationship with HIV follow-up medical team during lockdown compared with before the lockdown			0.122
No change	81 (84.4)	116 (75.8)	
Improved	6 (6.3)	8 (5.2)	
Deteriorated	9 (9.4)	29 (19.0)	
Willingness to continue remote medical monitoring if already started during the first lockdown			0.051

(continued)

Table 2. (continued)

Bivariate statistics	Not worried Frequency (%), N = 96	Worried Frequency (%), N = 153	P-value[a]
Not at all	21 (21.9)	43 (28.1)	
Moderately	11 (11.5)	24 (15.7)	
Absolutely	10 (10.4)	27 (17.6)	
Not concerned	54 (56.3)	59 (38.6)	
During the first lockdown, at least one appointment for an HIV medical consultation was :			0.032
Kept (including remote telephone or teleconsultation)	38 (39.6)	53 (34.6)	
Canceled	5 (5.2)	22 (14.4)	
Postponed	17 (17.7)	38 (24.8)	
Not concerned	36 (37.5)	40 (26.1)	
During the first lockdown, at least one HIV medical exam or analysis was :			0.082
Kept	40 (41.7)	70 (45.8)	
Canceled	2 (2.1)	7 (4.6)	
Postponed	15 (15.6)	36 (23.5)	
Not concerned	39 (40.6)	40 (26.1)	
Tested for a sexually transmitted infection (ie, other than HIV) since the beginning of the first lockdown	25 (26.0)	53 (34.6)	0.154

[a]Wilcoxon-Mann-Whitney rank sum test; Fisher's exact test.
[b]Median [IQR]; 1 not at all-7 absolutely. IQR, interquartile range.

providers in ensuring that communication during a health crisis is clear and transparent.[20] The importance of trust in HIV care was also emphasized in a survey from the United States, where PLHIV reported feeling disconnected from their healthcare providers during the pandemic, leading to increased anxiety and fears about treatment continuity.[21] Our study and previous publications suggest that strengthening strong lines of communication, even remotely, is vital to alleviating concerns and ensuring that PLHIV feel supported during times of crisis.[22,23]

Furthermore, the belief that having HIV meant a greater risk of contracting COVID-19 were all associated with having worries about long-term changes to HIV care. According to global data compiled by the WHO from nearly 350,000 patients across 38 countries indicates that people living with HIV are at increased risk of contracting a severe form of COVID-19 and dying from it. According to this analysis, for this population, the risk of developing a severe or fatal form of COVID-19 is 38% higher than for HIV-negative individuals.[24] This suggests that for further pandemics, such as COVID-19, PLHIV have heightened vulnerability and required prioritized attention in public health strategies, including access to vaccines, tailored healthcare services, and targeted interventions to address their unique risks and challenges.

While being born outside of France was borderline significantly associated with the outcome, it did not play as central a role as other variables. It is important to note that the small number of participants born outside of France limits the generalizability of this finding. Previous studies have documented the vulnerability of migrant populations, who may face language difficulties, social isolation, and a lack of access to healthcare services.[25] In France, a survey conducted in 2020 found that follow-up for 19 (2.7%) of the 698 HIV-positive patients included was interrupted for at least 1 year during the COVID-19 pandemic.[26] Of these, 17 were born in Africa. Future research should aim to explore this subgroup in more detail, particularly in relation to their healthcare experiences during crises.

More generally, our results reflect findings in a study on Belgium and Brazil, whose authors suggested that lockdown measures could potentially result in sub-optimal care.[27] Specifically, they suggested that lockdown-related disruptions in the medical supply chain could impact adherence to antiretroviral therapy, and could lead to PLHIV foregoing scheduled follow-up visits because of anxiety about increased exposure to COVID-19 in healthcare facilities. This is reflected in South Africa, where the National Laboratory Service reported a 10% decline in viral load testing in the public sector in 2020.[28] This would confirm findings in the first report on COVID-19 risk on PLHIV in sub-Saharan Africa in June 2020, which suggested that a disruption in HIV care had indeed taken place.[29]

In the French context, the National Agency for Research on AIDS and Viral Hepatitis (ANRS) published a report in August 2021 on the impact of the COVID-19 crisis among PLHIV.[5] Based on a survey conducted in 22 hospitals (primarily in the Greater Paris region), the report collected data on various indicators for HIV care individuals already receiving treatment. It found that while institutional follow-up for PLHIV largely remained intact during the pandemic, patients were very likely to perceive a disruption in the care they received.[2] The report highlighted that during the first lockdown, between March and May 2020, services were interrupted or reduced, while teleconsultation was offered in some cases. This brief period was followed by a return to the pre-lockdown level of service. Despite several subsequent changes in the level of restrictions on movement from October 2020 onwards, the care offer (especially consultations) was minimally impacted in the hospitals participating in the survey.

Table 3. Factors Associated with Having Worries About Long-Term Changes to HIV Care—ACOVIH Study 2020.

	Worried %, N = 153	Multivariate model		
		aOR[a]	95% CI[a]	P-value
Age (years)				0.026
55–78	26.1	1.00	—	
18–34	21.6	1.40	0.53, 3.78	0.502
35–44	24.8	1.53	0.56, 4.38	0.413
45–54	27.5	0.46	0.21, 1.01	0.056
Sexual orientation				0.064
Homosexual or bisexual	77.8	1.00	—	
Other	22.2	0.50	0.24, 1.04	0.067
Country of birth				0.041
France	81.7	1.00	—	
Outside France	18.3	2.57	1.04, 6.76	0.046
Change in financial situation since the beginning of the pandemic				<0.001
No change	66.0	1.00	—	
Improvement	5.9	0.63	0.19, 2.02	0.439
Deterioration	28.1	4.87	1.97, 13.2	0.001
Lifetime HIV-related opportunistic infections	31.4	3.27	1.53, 7.32	0.003
Obliged to disclose HIV status disclosure because of lockdown restrictions	15.0	3.26	0.97, 12.6	0.068
Current sleeping disorders compared to the weeks before the pandemic started				0.119
No change	54.2	1.00	—	
Fewer	4.6	0.57	0.15, 2.07	0.397
More	41.2	1.88	0.92, 3.91	0.086
Taking psychotropic medication at time of study	32.7	3.21	1.50, 7.22	0.003
Worried about COVID-19	*5 [4–7]*[b]	1.36	1.14, 1.62	<0.001
Perceiving that HIV infection increased the risk of COVID-19 infection	*4 [3–4]*[b]	1.52	1.15, 2.03	0.003
Communication with HIV medical team during first lockdown compared with before the lockdown				0.002
No change	53.6	1.00	—	
Improvement	6.5	0.54	0.15, 2.02	0.351
Deterioration	39.9	3.47	1.61, 7.94	0.002

[a]OR = Adjusted odds ratio, CI = confidence interval.
[b]Median [IQR]; 1 not at all-7 absolutely. IQR, interquartile range.

Another study showed, of the 5496 telephone calls (7.25% of all calls received) received in 2020 by the French HIV/AIDS association Sida Info Service, which provides a HIV hotline service,[6] almost one in five individuals reported a COVID 19-related health issue. Of these, 12.2% of all callers reporting a related medical condition. This result would suggest that therapeutic care for PLHIV was indeed compromised by restrictions imposed during the first lockdown and by greater anxiety related to COVID-19. Some of those who contacted the hotline reported discontinuity in their follow-up care because they could not reach the designated healthcare services, while others refrained from attending consultations or going to pharmacies or hospitals to have their prescriptions filled. Moreover, a number of callers were worried about being infected with COVID-19.

It is important to underline that some individuals are more sensitive to health crises than others; accordingly, healthcare professionals must improve their skills in adapting to the worries and fears of the person they have in front of them.[30] This is especially true for the most fragile, exposed and worried individuals, who require special care and vigilance. Rapid identification, closer monitoring, and effective communication strategies are essential actions to alleviate the fears of vulnerable populations, and to ensure prompt access to accurate information.[7]

In terms of PLHIV, community associations play a crucial role in offering support and ensuring that reliable information is disseminated. Moreover, the systematic implementation of preventive measures and crisis monitoring systems, such as helplines, teleconsultations, personal emails, and remote support groups, can all help mitigate the psychosocial effects of crises.[31] As emerging epidemics become more frequent, healthcare providers and associations must adapt their communication approaches by ensuring that the literature shared with end-users is tailored to them, and by fostering effective communication to prevent any deterioration in psychosocial well-being during health crises.

This study has limitations. First, the fact that the survey was online likely excluded individuals with limited internet access, possibly affecting the generalizability of our findings to the broader PLHIV population in France. Second, the study focused primarily on the perceptions of PLHIV and did not explore the perspectives of healthcare professionals regarding long-term changes in HIV care. Future studies should involve

a wider range of stakeholders to provide a more comprehensive understanding of the impact of COVID-19 on HIV care continuity. Third, the survey was not pilot-tested. Despite these limitations, the ACOVIH survey was one of the first to explore the specific concerns of PLHIV in France after the onset of the COVID-19 pandemic, offering valuable insights into how health crises can affect HIV care

Conclusion

In the present online study, most participating PLHIV declared they were worried that the COVID-19 heath crisis could impact long-term changes to their HIV care. A deterioration in communication with their HIV follow-up medical team during the first lockdown and limited availability of healthcare teams during this period contributed to these concerns. In the context of future disease epidemics (ie, COVID-19 or another disease) and emergency health plans, ensuring tailored communication and monitoring for the most vulnerable PLHIV is crucial.

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Consent

All respondents confirmed they read and understood the online information explaining the nature and purpose of the study. In accordance with French legislation, the study was declared to the French data protection authority (CNIL).

Declaration of Conflicting Interests

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

The study protocol was approved by the Inserm Ethical Evaluation Committee (no 20-712 on 7 July 2020)

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References

1. Santé Publique France. CoviPrev; résultats détaillés des 1-15 (23 mars – 23 septembre 2020) vagues. Published November 27, 2020. Accessed October 28, 2024. https://www.santepubliquefrance.fr/etudes-et-enquetes/coviprev-une-enquete-pour-suivre-l-evolution-des-comportements-et-de-la-sante-mentale-pendant-l-epidemie-de-COVID-19/coviprev-resultats-detailles-des-vagues-1-a-15-23-mars-23-septembre-2020.
2. Mertens G, Gerritsen L, Duijndam S, Salemink E, Engelhard IM. Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *J Anxiety Disord*. 2020;74:102258. doi:10.1016/j.janxdis.2020.102258
3. Sciensano. Première enquête de santé COVID-19: résultats préliminaires. Published May 2020. Accessed December 8, 2024. https://www.sciensano.be/en/biblio/premiere-enquete-de-sante-covid-19-resultats-preliminaires.
4. Al-Rahimi JS, Nass NM, Hassoubah SA, Wazqar DY, Alamoudi SA. Levels and predictors of fear and health anxiety during the current outbreak of COVID-19 in immunocompromised and chronic disease patients in Saudi Arabia: A cross-sectional correlational study. *PLoS One*. 2020;16(4):e0250554. doi:10.1371/journal.pone.0250554
5. ANRS. Impact de la pandémie de COVID-19 sur l'épidémie de VIH en France: point d'information par des chercheurs en santé publique. Published August 20, 2021. Accessed December 1, 2021. https://anrs.fr/fr/actualites/actualites/impact-de-la-pandemie-de-covid-19-sur-lepidemie-de-vih-en-france-point-dinformation/.
6. Campal M, Courtial N, Djebbar R, Diarra A, Reymes-Mbodje A. People living with HIV (PLHIV) and COVID-19 on the SIS association helplines. *BEH Santé Publique*. 2021;(20-21):422–424. Accessed December 1, 2024. https://beh.santepubliquefrance.fr/beh/2021/20-21/2021_20-21_6.html.
7. Piton M, Della Vecchia C, Mabire R, et al. Facteurs associés à la crainte de l'infection par la COVID-19 chez des personnes vivant avec le VIH [factors associated with fear of COVID-19 infection in people living with HIV]. *Sante Publique*. 2022;34(6):771–781. doi:10.3917/spub.226.0771
8. UNAIDS. What People Living with HIV Need to Know About HIV and COVID-19. Published January 2022. Accessed January 4, 2022. https://www.unaids.org/en/COVID19.
9. Santé publique France. Bulletin VIH/Sida. Published November 2024. Accessed December 9, 2024. https://www.santepubliquefrance.fr/maladies-et-traumatismes/infections-sexuellement-transmissibles/vih-sida/donnees/.
10. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the health belief model. *Health Educ Q*. 1988;15(2):175–183.
11. Janz NK, Becker MH. The health belief model: A decade later. *Health Educ Q*. 1984;11(1):1–47.
12. Allison PD. *Multiple Regression: A Primer*. Pine Forge Press; 1999.
13. R-Project.org. The R Project for Statistical Computing. Published 2021. Accessed June 8, 2021. https://www.R-project.org.
14. Di Quirico R. Uncertainty, anxiety and the post-pandemic economic environment. *Clin Neuropsychiatry*. 2023;20(4):227–232. doi:10.36131/cnfioritieditore20230401
15. Nitpolprasert C, Anand T, Phanuphak N, et al. A qualitative study of the impact of coronavirus disease (COVID-19) on

psychological and financial wellbeing and engagement in care among men who have sex with men living with HIV in Thailand. *HIV Med*. 2022;23(3):227–236. doi:10.1111/hiv.13190
16. Kurra N, Woodard PI, Gandrakota N, et al. Opportunistic infections in COVID-19: A systematic review and meta-analysis. *Cureus*. 2022;14(3):e23687. doi:10.7759/cureus.23687
17. Montauk SL, Gebhardt B. Opportunistic infections and psychosocial stress in HIV. *Am Fam Physician*. 1997;56(1):87–96.
18. Hong C, Queiroz A, Hoskin J. The impact of the COVID-19 pandemic on mental health, associated factors, and coping strategies in people living with HIV: A scoping review. *J Int AIDS Soc*. 2023;26(3):e26060. doi:10.1002/jia2.26060
19. The impact of the COVID-19 pandemic on the HIV response in Europe and Central Asia - Monitoring implementation of the Dublin Declaration on partnership to fight HIV/AIDS in Europe and Central Asia. Accessed November 25, 2024. https://www.ecdc.europa.eu/en/publications-data/impact-covid-19-pandemic-hiv-response-europe-and-central-asia-monitoring.
20. Cascalheira CJ, Morrison C, D'Angelo AB, et al. The impact of the COVID-19 pandemic on HIV-positive men who have sex with men: (Dis)connection to social, sexual, and health networks. *Psychol Sex*. 2023;14(1):306–320. doi:10.1080/19419899.2022.2112745
21. Santos GM, Ackerman B, Rao A, et al. Economic, mental health, HIV prevention, and HIV treatment impacts of COVID-19 and the COVID-19 response on a global sample of cisgender gay men and other men who have sex with men. *AIDS Behav*. 2021;25(2):311–321. doi:10.1007/s10461-020-02969-0
22. Sanchez TH, Zlotorzynska M, Rai M, et al. Characterizing the impact of COVID-19 on men who have sex with men across the United States in April, 2020. *AIDS Behav*. 2020;24(7):2024–2032. doi:10.1007/s10461-020-02894-2
23. Zucman D, Rasnaama A, Majerholc C, Vallée A. The COVID-19 pandemic and the migrant population for HIV diagnosis and care follow-up: They are left behind. *Healthcare (Basel)*. 2022; 10(9):1607. doi:10.3390/healthcare10091607
24. World Health Organization (WHO). Coronavirus disease (COVID-19) and people living with HIV. Accessed December 8, 2024. https://www.who.int/fr/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-covid-19-and-people-living-with-hiv.
25. Gosselin A, Coulibaly K, Ravalihasy A, et al. Finding the missing link: When community-based outreach in public space is key to engage migrants in health prevention programmes in Paris, France. *J Epidemiol Community Health*. 2020;74:668–675.
26. Bocquier A, Costa M, Arquier V, et al. Des appels téléphoniques contre l'isolement social lors du confinement lié à la COVID-19. *Gérontologie et Société*. 2022;44(168):123–142. doi:10.3917/gs1.pr1.0007
27. Siewe Fodjo JN, Villela EF de M, Van Hees S, et al. Impact of the COVID-19 pandemic on the medical follow-up and psychosocial well-being of people living with HIV: A cross-sectional survey. *J Acquir Immune Defic Syndr*. 2020;85(3):257–262. doi:10.1097/QAI.0000000000002468
28. Aidsmap. People with HIV at greater risk of COVID-19 death in South African study. Published June 10, 2020. Accessed December 8, 2024. https://www.aidsmap.com/news/jun2020/people-hiv-greater-risk-COVID-19-death-south-african-study.
29. Jewell BL, Mudimu E, Stover J, et al. Potential effects of disruption to HIV programmes in sub-Saharan Africa caused by COVID-19: Results from multiple mathematical models. *Lancet HIV*. 2020;7(9):e629–e640. doi:10.1016/S2352-3018(20)30211-3
30. Ambrosioni J, Blanco JL, Reyes-Urueña JM, et al. Overview of SARS-CoV-2 infection in adults living with HIV. *Lancet HIV*. 2021;8(5):e294–e305. doi:10.1016/S2352-3018(21)00070-9
31. Haileamlak A. Pandemics will be more frequent. *Ethiop J Health Sci*. 2022;32(2):228. doi:10.4314/ejhs.v32i2.1