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Renunciation of health care by people living with HIV in France is still associated with discrimination in health care services and social insecurity – results from the ANRS VESPA2 survey

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Abstract

Background: This study aimed to estimate the frequency of renunciation of healthcare among people living with HIV (PLHIV) in France, including healthcare unrelated to HIV, and to characterize associated socioeconomic and psychosocial risk factors.

Methods: The cross-sectional ANRS-VESPA2 survey was conducted on adult PLHIV attending French hospitals in 2011. Correlates of healthcare renunciation in the 12 months before the survey were assessed through logistic modelling.

Results: Among the 3020 PLHIV included in the sample, 17% declared healthcare renunciation during the preceding year and 42% had a high level of social insecurity. During the previous two years, 8% and 11%, respectively, were discriminated against by medical staff and family. In multivariate analysis, positive associations were found between healthcare renunciation and a high level of social insecurity (aOR [95%CI] 3.44[2.54;4.65], p<0.001), having children (1.52[1.10;2.10], p=0.01), smoking tobacco (1.50[1.13;1.98], p=0.01), discrimination by medical staff (1.53[1.22;2.29], p=0.04) or family (2.48[1.75;3.52], p<0.001), major depressive episodes (1.46[1.02;2.09], p=0.04), past or current drug injection (1.54[1.03;2.30], p=0.04), and younger age (0.98[0.97;1.00], p=0.03). Healthcare renunciation was also negatively associated with HIV diagnosis after 1996 (1996-2002: 0.64[0.46; 0.90], p=0.01; ≥2003: 0.56[0.40; 0.77], p=0.001).

Conclusions: In spite of universal health insurance in France, barrier- and refusal-renunciation of healthcare by PLHIV remains frequent. Poor psychosocial outcomes and discrimination by families and healthcare providers compound the negative effect of social insecurity on healthcare seeking in this population. To ensure optimal medical care, strategies are needed to prevent discrimination against PLHIV in healthcare services. Special attention must be provided to patients experiencing social insecurity.

Running head: Renunciation of healthcare and associated determinants among French PLHIV

Introduction

HIV-positive individuals generally have a lower socioeconomic status than the general population [1–3]. Social insecurity and poverty are associated with reduced levels of health monitoring in the general population [4] and among people living with HIV (PLHIV) [5]. Furthermore, people with low socioeconomic status are more likely to renounce HIV therapy in both low-income [6,7] and high-income countries [8]. In some PLHIV subgroups in developed countries, despite few financial barriers to healthcare, retention in healthcare is low [9]. Social isolation is a further risk factor for low retention to HIV multi-therapy [5,6,10]. Stigma and discrimination against PLHIV are additional reasons why this population seeks healthcare less often. More specifically, stigmatization by families, social networks and healthcare providers, is a risk factor for abandoning or discontinuing ART and for non-adherence [6,10–14], especially among those with a low socioeconomic status [14].

The French healthcare system has been based based on universality and solidarity since the post-was period [15]. In 2000, the creation of a specific system of access to care for the poorest people in France the “CMU” (universal health coverage) accentuated further this redistribution process, with now access at the same time to public insurance (with no conditions other than residence) and free complementary health insurance. With out-of-pocket health expenditures averaging at only 8% (4% in the three lowest income deciles), the French social health system is one of the most beneficial [16].

Despite this, socioeconomic inequalities in healthcare access and use persist, with 15% of the general French population reporting healthcare renunciation for financial reasons. Most of these come from disadvantaged groups [4]. Although access to care and treatment for chronic diseases, including HIV, is free in France, the HIV-infected population still suffer from discrimination, this serophobia often intertwining with sexism, racism and homophobia [17,18].

The objective of the present article was to estimate the frequency of renunciation of healthcare for financial reasons among PLHIV, including healthcare unrelated to HIV, and to characterize the associated economic and psychosocial risk factors, in a context where access to care and HIV therapy are fully covered by the French healthcare system.

Methods

Design, settings and ethics

The cross-sectional ANRS-VESPA2 survey, conducted between April 2011 and January 2012, collected information about the living conditions of PLHIV followed up in French hospitals.

A nationally representative sample of 3022 adult PLHIV were recruited in 73 French hospital departments delivering HIV care (eligibility criteria: age ≥ 18 years, diagnosis of HIV ≥ 6 months, residence in France ≥ 6 months). A detailed description of the survey methodology can be found elsewhere [19].

Independent trained interviewers administered a face-to-face questionnaire to patients, in order to collect data about their socio-demographic, socioeconomic and clinical characteristics, as well as several aspects of their lives with HIV. Medical staff completed a short questionnaire about patients' health status, HIV history, and co-morbidities.

The ANRS-VESPA2 survey met the ethical requirements of the French National Commission for Computing and Liberties (approval number DR-2010-368) and received approval from the French Advisory Committee on Information Processing in Material Research in the Field of Health. All the participants provided written informed consent.

Variables

Outcome: Renunciation of care

A dichotomous variable was constructed according to a yes/no response to the question "Have you renounced healthcare for financial reasons in the past 12 months?"

Explanatory variables

A four-category socioepidemiologic variable classified participants according to their HIV transmission group as follows: men who have sex with men (MSM - self-identified as homosexual, bisexual or heterosexual men reporting at least one male sexual partner during the previous 12 months), former or active injecting drug users (IDU), Sub-Saharan African immigrants (migrants), and other heterosexual PLHIV (other) [19,20].

The EPICES score was used as a reference [21] and adapted to construct the social insecurity variable (socioeconomic and social isolation indicators) using variables available in the ANRS-VESPA2 database. The following variables were present in both the EPICES score and the ANRS-VESPA2 database: living in a couple (yes/no); owner of his/her house or flat (yes/no); having someone to rely on for material support apart from stable partner (yes/no); able to afford at least one week of holidays per year (yes/no). The following variables in the ANRS VESPA2 database were similar to some EPICES score variables: i) financial difficulties (yes/no); and ii) in contact with close family during the previous two weeks (yes/no). Some other ANRS VESPA2 variables, absent from the EPICES score, were considered as indicators of social insecurity: minimum social income (yes/no);

recipient of universal health insurance (yes/no); having someone to rely on for moral support (yes/no); able to afford to host friends at least once a month (yes/no); able to offer gifts to family or friends at least once a year (yes/no); feeling alone (yes/no). Multiple correspondence analysis (MCA) using all the above-mentioned variables indicated the presence of two levels of social insecurity (high/low) (see Figure in supplementary material), with the position of respondent coordinates on the first dimension of MCA (which explained 91% of inertia). A description of social insecurity levels according to the variables used is available in the Table in the supplementary material.

The following variables were examined as potential correlates of renunciation of care: i) Demographic and socioeconomic characteristics: age (continuous), gender, socioepidemiologic group, education level (primary school diploma / high-school attendance but no diploma / high-school diploma and higher), social insecurity (high/low), having at least one child (yes/no), having a steady sexual partner (yes/no); ii) Substance use: current tobacco smoking (yes/no), drugs consumption (yes/no, except cannabis and poppers); iii) Experience of discrimination in the previous 24 months by medical staff (yes/no), by family (yes/no); iv) Clinical characteristics: diagnosed major depressive episode(s) (yes/no), using the World Health Organization (WHO) composite international diagnostic interview short-form (CIDI-SF) [22]), time of HIV diagnosis (before 1996, 1996-2002, 2003 and after), undetectable viral load (yes/no), CD4 cell count/mm^3 (<200, 200-350, 350-500, >500), combined variable of undetectable viral load and CD4 > 500 (yes/no), history of AIDS-defining event (yes/no), hepatitis C diagnosis (yes/no), high blood pressure diagnosis (yes/no).

Study group

PLHIV enrolled in the ANRS-VESPA2 study with available data on renunciation of care were included in the study sample for statistical analysis (n=3020).

Statistical analysis

We performed univariate and multivariate analyses using logistic regression to identify the main characteristics of PLHIV independently associated with renunciation of care compared with no renunciation of care.

Data were weighted and calibrated to be representative of the population of PLHV followed up in French hospitals in 2011. The weighting procedure accounted for the sampling technique and the heterogeneous rates of both non-participation in the survey and non-response by participants to the questionnaire [19]. All analyses were performed on weighted and calibrated data using Stata/SE

12.1 software for Windows (StataCorp LP, USA).

Results

Characteristics of the study population

Of the 3022 people included in ANRS-VESPA2, 3020 were included in the present study, as two participants had missing data on renunciation of care. Table 1 shows the characteristics of the study

population. MSM represented the main socio-epidemiological group (39%) and 33% were women. Mean age was 47 years. A large proportion of those included had a high level of social insecurity (42%). Half of the participants had at least one child, and 62% had a steady sexual partner. Eight percent and 11%, respectively, experienced discrimination from medical staff and family during the 24 months prior to the survey.

Frequency of healthcare renunciation

Seventeen percent (95% confidence interval [15%-19%]) of the PLHIV participating in the study declared renunciation of care during the 12 months preceding the survey.

Characteristics of participants who renounced healthcare compared with others

Comparing PLHIV who renounced healthcare with those who did not, the proportion of MSM was lower (29% vs. 41%), but the proportion of IDU was higher (23% vs. 9%). Nineteen percent had a high- school diploma (vs. 32%), and almost twice as many had a high level of social insecurity (70% vs. 36%). Fifty-nine percent had at least one child 45% did not have a steady sexual partner, and 52% were current smokers (vs. 50%, 36% and 35%, respectively). Furthermore, 16% and 25%, respectively, had been discriminated against by medical staff and family (vs. 7% and 8%). The prevalence of major depressive episodes in those who renounced healthcare was 17% (vs. 10%). Fifty percent were diagnosed with HIV before 1996 (vs. 39%). Thirty-eight percent had both an undetectable viral load and a CD4 >500 (vs. 45%). Finally, 21% had chronic hepatitis C (vs. 10%).

Factors associated with renunciation of care

The final multivariate model (Table 1) showed that the following factors were significantly associated with renunciation of healthcare: a high level of social insecurity (aOR[95%CI] 3.44[2.54;4.65] p<0.001), having at least one child (1.52[1.10;2.10], p=0.01), smoking tobacco (1.50[1.13;1.98], p=0.01), being an IDU (1.54[1.003;2.30], p=0.04), discrimination by medical staff (1.53[1.22;2.29], p=0.04), discrimination by family (2.48[1.75;3.52) p<0.001] and major depressive episodes (1.46[1.02;2.09], p=0.04). The risk of renunciation of healthcare was significantly lower among participants who had been diagnosed with HIV after 1996 (1996-2002: 0.64[0.46; 0.90], p=0.01; ≥ 2003: 0.56[0.40;0.77], p=0.001). We found a trend towards a significant decrease in renunciation of healthcare per one year increase in age (0.98 [0.97;1.00], p=0.03).

The following sociodemographic and socioeconomic factors were significantly associated with renunciation of care only in the univariate analysis (Table 1): women were significantly more likely to renounce care than men (OR [95%CI] 1.54[1.21;1.96], p=0.001). MSM (0.75[0.57;1.00], p=0.05) were less likely to renounce care than other PLHIV groups. Having a high-school diploma was significantly associated with a lower risk of renunciation of healthcare than having only primary school education (0.42[0.30;0.60] p<0.001). The risk of renunciation of healthcare was lower among PLHIV who had a steady sexual partner (0.71[0.56;0.89], p=0.004). Higher CD4 counts (i.e., >200) (CD4 200-350: 0.48[0.27;0.87], p=0.02; CD4 350-500: 0.47[0.27;0.83], p=0.01; CD4 >500: 0.47[0.29;0.76], p=0.003) were significantly associated with renunciation of healthcare in the univariate model only. PLHIV who

had both an undetectable viral load and a CD4 count > 500 were significantly less likely to renounce healthcare (0.46[0.60;0.96], p=0.02). Renunciation of healthcare was significantly more frequent among participants affected by hepatitis C comorbidity (2.28[0.55;1.05], p<0.001).

Discussion

In the present analysis, almost one HIV positive individual in five declared renunciation of healthcare for financial reasons, which is a worrying finding, but comparable with figures for the French general population [4]. Not surprisingly, this was associated with elevated social insecurity, a variable that takes into account low socioeconomic status. The link between poor socioeconomic status and renunciation of healthcare has been consistently shown in PLHIV in both low-income [7] and high-income countries [10].

Recent socio-anthropological research conducted in the French general population showed that healthcare renunciation takes two forms [23]: “barrier-renunciation” and “refusal-renunciation”. The first is related to constraints, mostly financial in nature. When considering barrier-renunciation, our results suggest that even in a country which offers universal health insurance and widespread and free access to HIV care and treatment, economic obstacles persist for disadvantaged populations such as PLHIV, with social insecurity highly contributing to healthcare renunciation. Although the question asked in the current study was “have you renounced healthcare for financial reasons in the past 12 months?”, results showed that the renunciation of healthcare was compounded by other factors. The second form of renunciation of healthcare, “refusal-renunciation” may be related to a perception of medicine as unnecessary, in some cases because of poor psychosocial outcomes such as lack of ‘self-concern’ [23]. In the present study, PLHIV who suffered from a major depressive episode were at greater risk of healthcare renunciation. This is consistent with previous findings highlighting associations between depression and renunciation in the general population [24–26] and with renunciation of HIV-specific care [6,27,28]. In our study, depression was also related to poor socioeconomic outcomes such as unemployment and material deprivation (something which has been reported in the literature), and to discrimination [29]. Refusal-renunciation may also be an expression of autonomy with regard to medicine, sometimes arising from discrimination by healthcare providers [23]. In our study, almost one PLHIV in ten reported this. A similar association was reported in poor populations in French overseas areas [30] and in US PLHIV [5]. Other authors have reported that discrimination, expressed as outright or disguised refusal or discriminatory remarks to PLHIV seeking dental and gynecological care, is worryingly frequent in France [31]. The current study did not collect any specific details about the type of discrimination participants experienced from healthcare providers. However, for the general population living with social insecurity, the literature highlights that some providers illegally refuse to deliver medical care because the applicant is only covered by universal health insurance (i.e., does not have the financial means for private out-of-pocket medical expenses) [23]. Poor doctor-patient relationships are also highlighted in the literature, where some physicians decide not to explain or discuss related issues with the patient, as they assume the latter will not understand anything [23]. Discrimination reinforces low self-esteem, negative health behaviors

and defiance, especially in poor populations, and therefore contributes to the renunciation of healthcare. However, PLHIV participating in the ANRS-VESPA2 study were still actively included in HIV follow-up so they did not renounce all kind of healthcare. Indeed, while refusal-renunciation in some wealthier groups is more commonly related to the total and explicit refusal to seek conventional medicine because of legitimacy contestation, in disadvantaged groups it is more related to mistrust, or the perception of care as futile, or the fear of being labelled “sick” [23]. Determinants of refusal-renunciation do not necessarily mean a complete rupture with the healthcare system, yet they carry weight in the choices made in the face of financial constraints [23].

As previously reported elsewhere [17], in the ANRS VESPA2 survey, the main perceived reason for discrimination by healthcare providers was the fact that patients were HIV positive, reported by 7.2% of the study population. Worryingly, serophobia is a further criterion for discrimination against PLHIV already facing inequalities in healthcare arising from social insecurity. Financial difficulties and patient-perceived experience of rejection behaviors by medical staff were also independently associated with impaired physical and mental quality of life in the ANRS-VESPA2 survey [20].

Perceived discrimination by one’s family, mainly attributed to the fact that they were HIV positive and, to a lesser degree, to sexual orientation, reported by 6.2% and 4.1% of the study population, respectively [17], was also a risk factor for renouncing healthcare. There is abundant data in the literature showing the negative impact of familial and social discrimination experienced by PLHIV on ART adherence [11,32]. Unfortunately, this discrimination is often the inadvertent consequence of the PLHIV’s decision to share his/her status in order to overcome social isolation [32,33]. The results in this study suggest that social isolation and familial discrimination discourage PLHIV from seeking healthcare.

In the present study, IDU were more likely to renounce care. Previous research identified discrimination of HIV-infected IDU by healthcare workers as a risk factor for negative health behaviors in France [34], and as a barrier to healthcare worldwide [35–37]. Being an IDU and experiencing discrimination in healthcare services were independent risk factors for renunciation of healthcare in our study, which might indicate riskier individual health behaviors among IDU, as well as among tobacco smokers. In many settings, discrimination and stigma of PHLIV is gender-based as women are more frequently blamed for supposed promiscuity. Accordingly, women with HIV may be more discouraged from seeking healthcare [38,39]. This situation may be aggravated by the use of narcotics in HIV-infected women, especially in relation to pregnancy and motherhood [35]. These elements may explain why female gender was a risk factor for renunciation of healthcare in our univariate model, but unlike IDU and discrimination, disappeared in the multivariate analysis.

Diagnosis before 1996 (i.e., pre-HAART) and younger age were also risk factors for healthcare renunciation in the study population. This finding is in line with observations among PLHIV in French overseas areas where younger age and follow-up initiation before the advent of highly active antiretroviral therapy were risk factors for interrupting HIV follow-up, possibly because of higher instability, serostatus denial and fear of discrimination among young people, and better understanding

of the benefits of HIV follow-up, together with availability of HAART in PLHIV more recently diagnosed [40]).

In the current study, having at least one child was a risk factor for renunciation of healthcare, possibly because of financial or practical reasons related to raising children. Having children may force the individual to prioritize primary needs' expenses over health expenses or to privilege child healthcare over his/her own healthcare, as a coping strategy in the face of social insecurity [5,7]. The The renunciation of healthcare benefits for children by low-income mothers has been observed in other high-income countries [41]. In France, being a single parent is an additional risk factor for social insecurity [42], and healthcare renunciation is suspected to be more likely for people who decide to have children [43].

Strengths and Limitations of the study

One of the study's limitations is that the wording of the question about renunciation of healthcare used in the ANRS VESPA2 survey - which only specified renunciation for financial reasons - led to a possible overestimation of the proportion of the general population renouncing healthcare for financial reasons [44]. However, several non-economic independent risk factors were identified in the PLHIV study population. Moreover, the risk factors associated with renunciation of healthcare were similar to those highlighted in the French general population [4].

The study did not include PLHIV not attending HIV services, in which healthcare renunciation is assumed to be more important. Therefore, the study is not representative of all adult PLHIV in France. However, the study population is representative of PLHIV attending French hospital departments delivering HIV care. The fact that we explored a multitude of factors associated with healthcare renunciation is a major strength of the study.

Recommendations

Despite the large progress made in the last 15 years with respect to decreasing discrimination against people infected with HIV, it is still frequent and efforts to reduce it further must be continued [45]. The present results highlight that discrimination of PHLIV by healthcare workers persisted in 2011 and that it has negative consequences on PLHIV seeking healthcare.

The guidelines to improve HIV prevention and therapy of WHO in 2004 did not include specific recommendations to prevent discrimination perpetrated by healthcare providers [46]. However in 2016, the consolidated guidelines of WHO highlighted the importance of changing healthcare providers' behaviors using appropriate resources and training, in order to reduce discrimination against HIV-infected people, especially homosexuals, transsexuals, sex workers and drug users [47]. Beyrer *et al*. extended this recommendation to all non-medical staff working in healthcare structures, such as security guards and intake clerks, who can be agents of stigma and discrimination to at-risk populations such as MSM and IDU [37]. More research in interventions to decrease HIV-associated stigma and discrimination has also been recommended [25].

Conclusion

Besides the considerable long-term challenge of reducing social and economic inequalities in the general society, in the short term, discrimination and social stigma related to serophobia can and should be addressed in order to encourage more PLHIV to seek healthcare.

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Disclosure statement

The authors declare no conflict of interest

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Table 1. Factors associated with renunciation of healthcare, ANRS-VESPA 2 survey, n=3020

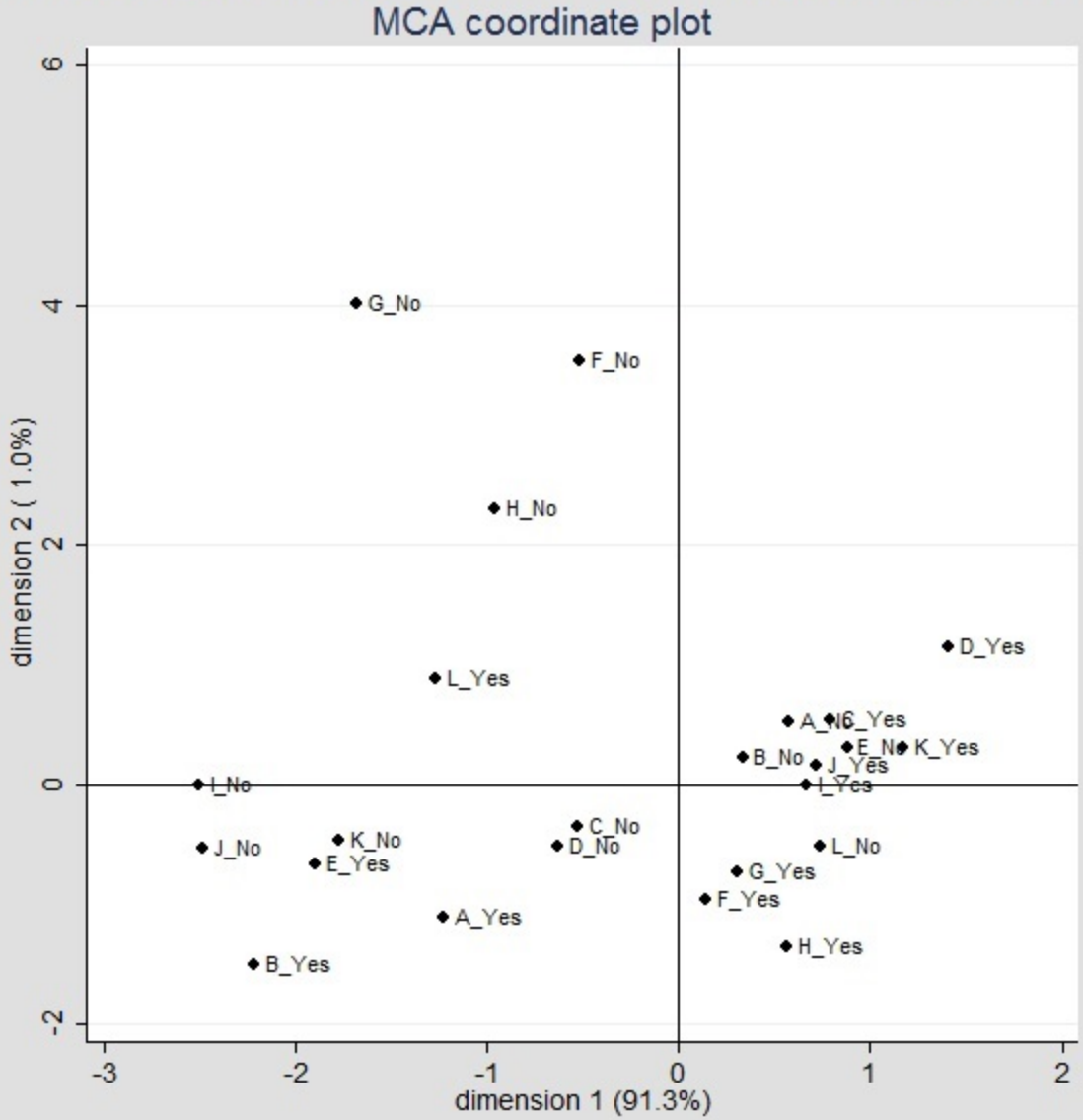
	Total (n=3020)	Renunciation of healthcare [a, b]		Proportion of renunciation of healthcare among groups (%)	Univariate analysis (n=3020)		Multivariate analysis (n=2976[c])	
		No	**Yes**					
	N (%) or mean (SE)	N (%) or mean (SE)	N (%) or mean (SE)		OR [95%CI]	p-value	aOR [95%CI]	p-value
All	3020 (100)	2512 (100)	508 (100)	17.0				
Demographics and socioeconomics								
Age (year)	47.4 (0.25)*	47.7 (0.28)*	46.1 (0.51)*		0.99 [0.98;1.00][e]	0.01	**0.98 [0.97;1.00][e]**	0.03
Gender								
Male	2076 (66.7)	1763 (68.4)	313 (58.4)	14.9	Ref			
Female	944 (33.3)	749 (31.6)	195 (41.6)	21.2	**1.54 [1.21;1.96]**	0.001		
Socioepidemiologic group								
MSM	1336 (39.1)	1154 (41.1)	182 (29.1)	12.6	0.75 [0.57;1.00]	0.05	1.03 [0.73;1.46]	0.86
IDU	323 (11.0)	216 (8.5)	107 (23.3)	36.0	**2.93 [2.04;4.20]**	< 0.001	**1.54 [1.03;2.30]**	0.04
Migrant	601 (23.7)	513 (23.9)	88 (22.7)	16.3	1.01 [0.70;1.46]	0.95	0.78 [0.50;1.20]	0.25
Other	760 (26.2)	629 (26.5)	131 (24.9)	16.1	Ref		Ref	
Educational level								
Primary School Diploma	563 (19.3)	454 (18.1)	109 (24.7)	21.7	Ref			
High School –No diploma	1575 (50.5)	1281 (49.3)	294 (56.6)	19.0	0.84 [0.62;1.14]	0.27		
High school - Diploma	876 (30.2)	773 (32.6)	103 (18.7)	10.5	**0.42 [0.30;0.60]**	< 0.001		
Social Insecurity								
Low	1732 (58.2)	1580 (64.1)	152 (29.5)	8.6	Ref		Ref	
High	1288 (41.8)	932 (35.9)	356 (70.5)	28.6	**4.25 [3.31;5.45]**	< 0.001	**3.44 [2.54;4.65]**	< 0.001
Children								
No	1593 (48.9)	1354 (50.5)	239 (41.1)	14.2	Ref		Ref	
Yes	1427 (51.1)	1158 (49.5)	269 (58.9)	19.6	**1.47 [1.16;1.86]**	0.002	1.52 [1.10;2.10]	0.01
Steady sexual partner								
No	1187 (37.9)	948 (36.4)	239 (44.9)	20.2	Ref			
Yes	1807 (62.1)	1542 (63.6)	265 (55.1)	15.1	**0.70 [0.56;0.89]**	0.004		
Substance use								
Current tobacco smoker								
No	1783 (62.4)	1564 (65.4)	219 (48.0)	13.0	Ref		Ref	
Yes	1236 (37.6)	948 (34.6)	288 (52.0)	23.5	**2.04 [1.62;2.58]**	< 0.001	**1.50 [1.13;1.98]**	0.01

Drugs consumption (except cannabis and poppers)								
No	2927 (97.4)	2441 (97.6)	486 (96.0)	16.8	Ref			
Yes	90 (2.6)	68 (2.4)	22 (4.0)	25.8	1.73 [0.97;3.08]	0.06		
Experience of discrimination								
Discrimination by medical staff[d]								
No	2748 (91.6)	2328 (93.1)	420 (84.2)	15.6	Ref		Ref	
Yes	272 (8.4)	184 (6.9)	88 (15.8)	31.9	**2.54 [1.79;3.59]**	< 0.001	**1.53 [1.22;2.29]**	0.04
Discrimination by family[d]								
No	2650 (89.1)	2272 (92.0)	378 (74.9)	14.3	Ref		Ref	
Yes	350 (10.9)	223 (8.0)	127 (25.1)	39.1	**3.86 [2.83;5.27]**	< 0.001	**2.48 [1.75;3.52]**	< 0.001
Clinical characteristics								
Major depressive episodes								
No	2605 (88.5)	2202 (89.7)	403 (82.6)	15.7	Ref		Ref	
Yes	372 (11.5)	278 (10.3)	94 (17.4)	25.3	**1.83 [1.34;2.49]**	< 0.001	**1.46 [1.02;2.09]**	0.04
Time of diagnosis								
< 1996	1217 (40.7)	963 (38.7)	254 (50.1)	20.9	Ref		Ref	
1996-2002	709 (24.6)	598 (25.3)	111 (21.4)	14.7	**0.65 [0.49;0.88]**	0.01	**0.64 [0.46;0.90]**	0.01
≥ 2003	1094 (34.7)	951 (36.0)	143 (28.5)	13.9	**0.61 [0.46;0.81]**	0.001	**0.56 [0.40;0.77]**	0.001
Undetectable viral load								
No	797 (24.2)	638 (23.4)	159 (28.3)	19.6	Ref			
Yes	2179 (75.8)	1842 (76.6)	337 (71.7)	15.9	**0.77 [0.59;1.02]**	0.07		
CD4 level (cells/µL)								
< 200	171 (4.8)	129 (4.1)	42 (8.3)	29.1	Ref			
200-350	433 (14.9)	359 (15.0)	74 (14.7)	16.5	**0.48 [0.27;0.87]**	0.02		
350-500	644 (23.4)	551 (23.6)	93 (22.6)	16.3	**0.47 [0.27;0.83]**	0.01		
> 500	1755 (56.9)	1463 (57.3)	292 (54.4)	16.1	**0.47 [0.29;0.76]**	0.003		
Undetectable viral load, CD4 > 500								
No	1696 (56.4)	1392 (55.3)	304 (62.0)	18.6	Ref			
Yes	1324 (43.6)	1120 (44.7)	204 (38.0)	14.8	**0.46 [0.60;0.96]**	0.02		
AIDS-defining event during life								
No	2202 (72.9)	1856 (73.5)	346 (69.7)	16.2	Ref			
Yes	793 (27.1)	637 (26.5)	156 (30.3)	18.9	1.20 [0.92;1.57]	0.17		

Chronic hepatitis C						
No	2611 (88.1)	2211 (89.8)	400 (79.5)	15.3	Ref	
Yes	364 (11.9)	265 (10.2)	99 (20.5)	29.2	**2.28 [1.63;3.21]**	< 0.001
High blood pressure						
No	2522 (84.4)	2084 (83.9)	438 (87.3)	17.8	Ref	
Yes	424 (15.6)	361 (16.1)	63 (12.7)	14.1	0.76 [0.55;1.05]	0.09

[a] During the 12 months prior to the survey
[b] A total lower than 3020 is due to missing data
[c] 44 missing data in explanatory variables
[d] During the 24 months prior to the survey
[e] Per one year older
CI: Confidence Interval
* mean (SE)

Supplementary figure : Multiple correspondance analysis (MCA) to construct the social insecurity variable



- A Recipient of minimum social income
- B Recipient of universal health insurance
- C Living in a couple
- D Owner of his/her house or flat
- E Financial difficulties
- F In contact with close family during the previous two weeks
- G Having someone to rely on for moral support
- H Having someone to rely on for material support
- I Able to afford to host friends at least once a month
- J Able to offer gifts to family or friends at least once a year
- K Able to afford at least one week of holidays per year
- L Feeling alone

coordinates in standard normalization

Supplementary table: Level of precariousness according to construction variables of precariousness. ANRS-VESPA 2 study, n=3022

	Low precariousness Weighted percent (N)	High precariousness Weighted percent (N)	Total (n=3022)*
Minimal social income recipient			
No	85.0 (1434)	48.9 (610)	69.9 (2044)
Yes	15.0 (282)	51.1 (670)	30.1 (952)
Universal health insurance recipient			
No	98.1 (1680)	70.3 (904)	13.4 (2584)
Yes	1.9 (43)	29.7 (366)	86.6 (409)
Living in a couple			
No	48.0 (847)	75.1 (979)	59.4 (1826)
Yes	52.0 (885)	24.9 (311)	40.6 (1196)
Owner of housing			
No	52.1 (920)	91.7 (1187)	68.7 (2107)
Yes	47.9 (812)	8.3 (103)	31.3 (915)
Financial difficulties			
No	93.2 (1604)	33.7 (445)	68.5 (2049)
Yes	6.8 (127)	66.3 (831)	31.5 (958)
Contacts with family (except children and parents)			
No	16.4 (308)	26.5 (349)	20.6 (657)
Yes	83.6 (1423)	73.5 (933)	79.4 (2356)
Having someone to rely on for moral support			
No	6.7 (114)	30.2 (371)	16.5 (485)
Yes	93.3 (1610)	69.8 (906)	83.5 (2516)
Having someone to rely on for material support			
No	26.0 (434)	58.5 (718)	39.6 (1152)
Yes	74.0 (1298)	41.5 (572)	60.4 (1870)
Can afford to host friends at least once a month			
No	1.4 (24)	49.2 (617)	21.3 (641)
Yes	98.6 (1700)	50.8 (647)	78.7 (2347)
Can afford to offer gifts at least once a year			
No	1.0 (18)	50.5 (673)	21.6 (691)
Yes	99.0 (1709)	49.5 (602)	78.4 (2311)
Can afford at least one week of holidays per year			
No	8.2 (156)	83.0 (1053)	39.4 (1209)
Yes	91.8 (1567)	17.0 (225)	60.6 (1792)
Feeling alone			
No	81.4 (1383)	41.3 (504)	64.7 (1887)
Yes	18.6 (346)	58.7 (777)	35.3 (1123)

* Total lower than 3022 due to missing data.

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