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INTRODUCTION

Studies that address barriers and/or facilitators of HIV testing in migrant populations remain scarce in Europe (1,2) . The specific risk of late testing in immigrants in France has been regularly mentioned, particularly in people of African origin, but remains poorly documented (3–5). While the focus has been put mostly on people originating from Sub-Saharan countries, the situation of Maghrebi people (the main non-European immigration group in France) has been seldom studied (6). Moreover, studies that look at French people born to immigrants are even scarcer (7). In this context, the objective of our study was to estimate and compare recourse to HIV testing according to migration origin and particularly those of Maghrebi people.

METHODS

This study is based on a cross-sectional analysis of data collected in 2010 in the SIRS cohort study among a representative sample of French-speaking adults in the Paris metropolitan area (Paris and its suburbs, a region with a population of 6.5 million). At inclusion, in 2005, a 3-level random sample was constituted. First, 50 census blocks (with about 2,000 inhabitants each) were randomly selected, using a stratification based on their socioeconomic type and their labelling (or not) as “underprivileged areas” by public urban policies. Next, 60 households were randomly chosen from a complete list of households within each selected census block. Lastly, one adult was randomly selected from each household by the birthday method (8,9). In 2010, 47% of the respondents were reinterviewed (2.6% were deceased, 1.8% were too sick to answer our questions, 2.7% were absent during the survey period, 13.9% had moved out of the 50 surveyed census blocks, 18.4% declined to participate, and 13.4% were lost to follow-up). Their sex ratio and mean age were similar to those who were not reinterviewed. The individuals lost to follow up were younger and wealthier than the others, but neither their health status nor the type

of their census block were different. Those absent during the survey period had a lower socioeconomic status and were mostly immigrants. In every census block, individuals who were not reinterviewed in 2010 were replaced by a random procedure similar to the one used in 2005, up to a final sample size of 60 adults interviewed per census block. The refusal rate among the newly contacted people was 29% (the same as in 2005).

The outcome variables were having had an HIV test and the circumstances for having been tested (voluntary testing or not), both during the individual's lifetime. Of the 3006 individuals interviewed, 1840 (61.2%) indicated that they had been tested for HIV and 839 (27.9%) had ever performed a voluntary HIV testing.

Migration origin was categorized by distinguishing between French born to two French parents, French born to at least one foreign parent, and foreigners. All the nationalities were the ones at the time of the survey (or at the parent's death); they were divided into large geographic groups according to characteristics of immigration in France. For people with double nationality including French, the person was classified as French. If both parents where from different nationalities excluding French, priority was given to the father's nationality. Even if, for instance, the foreign-born migrants which had then acquired French nationality were counted as French, these categories reflect roughly French of French extraction, French descendants of immigrants and immigrants, respectively. Then origin was broken down to: French with French parents, French of Sub-Saharan origin, Sub-Saharan foreigner, French of Maghrebi origin, Maghrebi foreigner, French of European origin, European foreigner, French of other origin, other foreigner (the term origin referring to parent nationality).

All the proportions presented were weighted to account for the complex sample design and for the poststratification adjustment for age and sex according to the general population 2006 census data. Multivariate logistic regression were performed separately for men and women with adjustment on age (into five groups: 18-29, 30-44, 45-59, 60-74 and 75 years and older) and socio-professional groups (derived from the French bureau of statistic: worker, employee, craftsmen/shopkeepers, executive/management, intermediary position, and never employed and/or students – retired or unemployed people being classified according to their last job).

RESULTS

We observed, for both genders, significant differences in recourse to HIV testing during lifetime according to the country group. Among French with French parents, 56.2% of men and 64.6% of women have been tested for HIV during lifetime (respectively 32.7% and 27.0% had performed voluntary testing). The highest proportion of individuals who indicated that they had been tested for HIV during their lifetime was found to be among those of sub-Saharan African nationality: 77.6% for men and 91.2% for women. Sub-Saharan foreigners have also declared more voluntary HIV testing: 51.2% for men and 38.0% for women. On the other hand, men of Maghrebi nationality or origin reported less often having had ever been tested.

After adjustment on age and socio-professional group, Sub-Saharan foreigners were still more likely to have been tested for HIV during lifetime than French with French parents for both men (ORa=2.73, $p<0.05$) and women (ORa=4.12, $p<0.05$). In men, being a Maghrebi foreigner or French of Maghrebi origin was statistically associated with a less recourse to HIV testing (respectively ORa=0.43, $p<0.01$ and ORa=0.47, $p<0.01$) and voluntary HIV testing

(ORa=0.45, p<0.05 and ORa=0.36, p<0.01) compared to French with French parents. In women, being a Maghrebi foreigner or French of Maghrebi origin was not associated with having had HIV test whereas it was statistically associated with a rare recourse to voluntary HIV testing (ORa=0.37, p<0.001 for French women with Maghrebi origin and ORa=0.18, p<0.01 for women with Maghrebi nationality).

DISCUSSIONS

Main limitations of our study lie in the cohort inclusion criteria. This survey was conducted among people living in "ordinary households", with the result that people living in collective dwellings (e.g. senior citizens' homes or immigrants' shelters) were not included. Also, only French-speaking people were interviewed. In a previous study, we observed that the individuals who indicated that they had difficulty reading and/or writing French were less likely to have been tested once during their lifetime, which suggests that non-French-speaking people are more likely not to avail themselves of the HIV test and that the difference we observed may be underestimated (8).

We found a significant difference in testing rates according to people's migration origin. It was already known that male immigrants from high HIV prevalence was high, such as certain sub-Saharan African countries, were more likely to get tested than French born individuals (10). The comparatively low HIV testing rate among Maghrebi foreigners and French of Maghrebi origin may be linked to the traditional and religious environment in that region, where strong taboos with consequent stigma are associated with HIV and AIDS and create barriers to accessing HIV prevention, testing and treatment (11,12). This hypothesis is supported by the fact that, within women, only voluntary HIV testing was negatively associated with Maghrebi nationality or origin, but not non-voluntary testing (which concerned mainly testing during pre-natal follow-up). Indeed, in France, HIV testing policy is based on the opt-in approach but is offered systematically by health professionals to some specific populations including pregnant women and so might be less stigmatised in this context. Here, the OR difference by gender observed among Maghrebi foreigners may be also related, more generally, to the subaltern status of women in these cultures.

France has recently adopted a new national strategy for the prevention and control of Aids for the years 2010-2014. It recommends the universal screening of the general population with specific targets to the most vulnerable populations, which are not only the ones at higher risk of infection, but also those who may stay away from the existing screening services. Even though (or because) Maghrebi do not constitute a high-risk HIV group per se in France, our results show that they are less tested compared to the rest of the general population. Therefore Maghrebi people (and also French of Maghrebi origin) may need specific testing strategies if one wants to achieve such a universal screening.

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Table 1. Weighted percentages and adjusted odd ratios of recourse to HIV testing and voluntary HIV testing according to migration origin

	HIV testing						Voluntary HIV testing			
	Men			Women			Men			
	%		ORa*	95%CI	%		ORa*	95%CI	%		ORa*	95%
French with Fr. parents (ref.)	56.17	(529)	Ref.		64.55	(668)	Ref.		32.70	(308)	Ref.	
French of Sub-Saharan origin	58.55	(34)	1.07	[0.57,1.99]	81.86	(45)	1.99	[0.92,4.31]	32.26	(19)	0.61	[0.3
Sub-Saharan foreigner	77.60	(35)	2.73	[1.17,6.36]	91.20	(45)	4.12	[1.36,12.50]	51.22	(23)	0.82	[0.3
French of Maghrebi origin	40.53	(36)	0.47	[0.28,0.79]	73.57	(82)	1.07	[0.62,1.82]	20.92	(19)	0.36	[0.1
Maghrebi foreigner	38.34	(18)	0.43	[0.23,0.80]	65.78	(27)	0.93	[0.45,1.91]	20.00	(9)	0.45	[0.2
French of European origin	65.76	(48)	1.33	[0.76,2.33]	62.56	(68)	1.14	[0.68,1.88]	47.94	(35)	1.34	[0.7
European foreigner	27.10	(17)	0.23	[0.11,0.47]	74.77	(45)	0.74	[0.39,1.42]	13.95	(9)	0.28	[0.1
French of other origin	51.13	(29)	0.79	[0.45,1.39]	66.77	(64)	1.27	[0.75,2.16]	31.38	(18)	0.85	[0.4
Other foreigner	43.95	(16)	0.42	[0.19,0.92]	85.53	(33)	1.45	[0.56,3.76]	19.13	(7)	0.3	[0.1

*Odd ratio adjusted on age and socio-professional status