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Targeted rapid HIV testing in public primary care services in Madrid. Are we reaching the vulnerable populations?

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SUMMARY

Objectives: To describe the population targeted for the rapid HIV testing program delivered via socio-culturally adapted services in primary care centers and to assess factors associated with uptake of first-time testing.
Methods: This was a descriptive cross-sectional study. We analyzed consultations between April 29, 2010 and May 31, 2012. We assessed the differences in age, origin, education, and sexual history between men who have sex with men (MSM), heterosexual men (HM), and women, using a two-sided independent *t*-test and Chi-square statistics. Factors associated with first-time testing were analyzed by logistic regression.
Results: Of 1940 consultations, 45.1% were HM, 25.4% MSM, and 29.5% women; 35.4% were immigrants, 2.5% were or had been sex workers, and 15.4% had visited one. The test was reactive in 2.1%. Up to 44.2% had never been tested. The probability of being tested for the first time increased in HM, women, populations from the Indian Subcontinent, those with no casual sexual partners, those whose partner's serostatus was unknown, and those with no history of other sexually transmitted infections.
Conclusions: This program managed to reach a high proportion of vulnerable people. First time HIV testing rates were high.

1. Introduction

HIV continues to be a major global public health issue, having claimed more than 25 million lives over the past three decades.[1,2] In Spain, the rate of new HIV diagnoses in 2010 was similar to that in other Western European countries, although above average for the whole European Union.[3] In our country, HIV is spread primarily through sexual contact (79.2% of new diagnoses), and infection among men who have sex with men (MSM) has been rising sharply (46.1%). Certain immigrant populations also account for these new diagnosis rates (38.4%).[3] Estimates indicate that in Spain one in three people infected with HIV is undiagnosed.[4] In 2010, a delayed diagnosis was observed in half of the new cases of HIV.[3,4]

Between 2007 and January 2012, 3703 new diagnoses of HIV infection were reported in the Madrid Autonomous Region.[5] They were mainly found in men (84.1%), and 68.1% were aged between 20 and 39 years. Almost half (48.4%) were born outside of Spain. Thus, the incidence rate of diagnosis in 2010 was 9.2 per 100 000 in the autochthonous population and 33.2 per 100 000 in the foreign-born population. Delayed diagnosis was higher among immigrants.[6] The main mode of transmission was unprotected sex. Among the autochthonous population, the main source of infection was through unprotected sex between men (73.4% of men with a new diagnosis), followed by unprotected sex between men and women (8.8% of men and 72.2% of women) and injecting drug users (IDUs). In immigrant women and in men from Sub-Saharan Africa, the main source of infection was unprotected sex, while in men from Latin America and Western Europe it was also through unprotected sex but mainly in MSM.[6]

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Although the risk for each individual depends on their behavior, certain populations are more at risk of HIV infection. MSM, immigrants, and sex workers and their clients require targeted preventive interventions.[4] Epidemics in MSM are re-emerging in many high-income countries.[7] Migrants are at high risk of HIV infection and its consequences, and they have a higher frequency of delayed HIV diagnosis and are more vulnerable to the negative effects of HIV status disclosure.[8] For migrants from countries where HIV prevalence is low, their socio-economic vulnerability puts them at risk of acquiring HIV in destination countries.[8]

Two key prevention policies aimed at reducing the incidence of new infections are: reducing the number of people living with HIV who do not know their serologic status and reducing the time between infection and diagnosis.[4] Immediate treatment with antiretroviral therapy reduces HIV transmission and the risk of AIDS-defining events. This could have a major effect on HIV/AIDS epidemics, reducing HIV incidence, prevalence, and mortality.[9–12] High-risk sexual behavior may be reduced after testing.[13,14] An important innovation is the ability to provide rapid diagnostic tests,[15,16] which significantly increases the receipt of results.[17,18] The overarching goals of the wide implementation of rapid HIV tests are to increase the number of individuals who are aware of their serostatus, to improve the uptake of prevention and care services for people living with HIV, and to prevent further transmission.[19] Rapid HIV testing is particularly applicable in specific clinical and non-clinical settings.[19] Furthermore it is acceptable to patients and test counselors and reduces the total time and number of visits.[15] Rapid tests are ideal for community settings in which clients may not have ongoing relationships with HIV test providers and may be unlikely to return for counseling.[20] They may also facilitate testing for many patients who do not perceive themselves as at risk or who do not otherwise access medical care.[21]

Since December 2009 the public health authorities in the Madrid Autonomous Region have been promoting the development of a program of prevention and early diagnosis of HIV, set in several primary care centers. These services provide counseling and rapid HIV tests. They are particularly aimed at vulnerable populations. More details regarding the program are provided elsewhere.[22]

The objectives of the present study were to describe the population targeted for the rapid HIV testing program delivered via socio-culturally adapted services located in selected primary care centers and to assess test results and factors associated with uptake of first-time testing.

2. Methods

This was a descriptive cross-sectional study. We analyzed data from consultations that took place between April 29, 2010 and May 31, 2012. These consultations were part of a program offering counseling and rapid HIV testing in seven public primary care centers in Madrid. These primary care centers were chosen for the program due to their location in areas of new HIV diagnoses and a higher immigrant population. The primary objectives of this program include: increasing knowledge of HIV serostatus among people who belong to groups disproportionately affected by HIV or those who are at a higher risk of contracting HIV, or those who may have more difficulties accessing health care. Although these centers are open to all people, they have been adapted to be more accessible to people who are part of more vulnerable groups such as economic migrants, sex workers, and MSM. These centers have cultural mediators who target immigrants and promote the effectiveness of counseling. These services were promoted through a variety of targeted and general approaches including: street level outreach work by cultural mediators, adverts in the mass media and on the Internet, distribution of information brochures, via the Red Cross telephone information service and by non-governmental organizations. Access to the service was completely free and anonymous. After a user requested an appointment, a date was given for an interview; counseling and HIV testing were provided when needed. Consultations could be carried out in 10 different languages. A questionnaire was designed to include the following variables: socio-demographic characteristics (sex, age, country of birth – grouped into large geographical areas, and level of education achieved), previous HIV test, rapid HIV test result, sexual history, and risk behavior. Risk behavior was assessed by looking at the following: steady partner, casual sexual partners, number of sexual partners in the last year, serology of sexual partner (if known), sex worker, visits to sex workers, length of time since they were last at risk of infection, history of sexually transmitted infections (STI), and sexual intercourse under the influence of drugs.

After a risk assessment was carried out by specially trained mediators, a rapid HIV test was performed by nurses from the center, and the result was communicated to the individual and recorded. HIV testing was performed with the Determine™ HIV 1/2 Ag/Ab Combo rapid test, a fourth-generation in vitro immunoassay of visual interpretation for the qualitative detection of HIV p24 antigen and antibodies to HIV 1 and HIV 2 in serum, plasma, or whole blood. The result is available within 20 min. Those with a reactive or indeterminate test were informed and referred for a confirmatory test and medical follow-up in the public health system.

2.1. Statistical analysis

A descriptive analysis of the population attending the service was performed and stratified into three groups: MSM, heterosexual men (HM), and women. We described and compared the distribution of the study variables in these three groups. In order to assess the differences between and within each group, we used the two-sided independent *t*-test for continuous variables and the Chi-square statistic for categorical variables.

Odds ratios (OR) and 95% confidence intervals (95% CI) are reported as measures of the effect size for the relationship between each independent variable and being tested for HIV for the first time, for those who underwent the rapid HIV testing. Factors that were significant in bivariate analysis ($p < 0.05$) were entered into a multivariable logistic model. The level of significance was set at 0.05. Analyses were performed with SPSS 18.0 software (SPSS Inc., Chicago, IL, USA).

Data confidentiality was maintained at all times, in accordance with Spanish legislation. It is not possible to identify patients at the individual level, either in this paper or in the database. Given the mandatory anonymous nature of the dataset, informed consent was not required.

3. Results

3.1. Assisted population characteristics

Over a 2-year period, from April 29, 2010 to May 31, 2012, 1940 consultations were registered (Table 1). Of these, 493 (25.4%) were by MSM, 874 (45.1%) were by HM, and 573 (29.5%) were by women. The mean age for all groups was 32.9 years and it was higher in HM (34.4 ± 10.8, $p < 0.001$). By country of birth, 35.4% of the consultations were with the immigrant population. Latin America was the most frequent region of origin for immigrants (18.3% of the total), followed by Western Europe (6.5%). The proportion of immigrants was significantly lower among MSM: 27.2% vs. 36.8% and 40.3% in HM and women, respectively. In general, education levels were high, especially among MSM (62.9% had some college education). Up to 44.2% of people attending the service had never

Table 1
Socio-demographic characteristics of the population assisted ($N = 1940$), performance of previous HIV tests, and results of the rapid HIV test; Madrid Autonomous Region, April 29, 2010 to May 31, 2012.

	Total		MSM		*p*-Value MSM vs. HM	HM		*p*-Value HM vs. women	Women		*p*-Value women vs. MSM
	n	%	*n*	%		*n*	%		*n*	%	
Total	1940		493	25.4		874	45.1		573	29.5	
Age, years											
<25	349	18.0	93	18.9	0.004	124	14.2	<0.000	132	23.0	0.208
25–34	904	46.6	236	47.9		394	45.1		274	47.8	
35–44	455	23.5	111	22.5		227	26.0		117	20.4	
45–54	146	7.5	36	7.3		75	8.6		35	6.1	
55–64	50	2.6	11	2.2		30	3.4		9	1.6	
≥65	26	1.3	3	0.6		21	2.4		2	0.3	
Unknown	10	0.5	3	0.6		3	0.3		4	0.7	
Mean age in years (SD)	32.9 (10.0)		32.3 (9.2)		<0.000	34.4 (10.8)		<0.000	31.2 (9.0)		0.042
Origin											
Spain	1233	63.6	358	72.6	<0.000	538	61.6	0.223	337	58.8	<0.000
Immigrant	687	35.4	134	27.2		322	36.8		231	40.3	
Latin America	355	18.3	73	14.8	<0.000	142	16.2	<0.000	140	24.4	<0.000
Western Europe	126	6.5	40	8.1		41	4.7		45	7.9	
Eastern Europe	44	2.3	7	1.4		22	2.5		15	2.6	
Maghreb	54	2.8	4	0.8		34	3.9		16	2.8	
Sub-Saharan Africa	51	2.6	0	0.0		45	5.1		6	1.0	
North America	8	0.4	3	0.6		3	0.3		2	0.3	
Central Asia	8	0.4	2	0.4		5	0.6		1	0.2	
Middle East	7	0.4	2	0.4		3	0.3		2	0.3	
Indian Subcontinent	32	1.6	2	0.4		27	3.1		3	0.5	
Other	2	0.1	1	0.2		0	0.0		1	0.2	
Level of studies											
University	1045	53.9	310	62.9	<0.000	407	46.6	<0.000	328	57.2	<0.017
Secondary	723	37.3	165	33.5		359	41.1		199	34.7	
No studies/primary	148	7.6	17	3.4		91	10.4		40	7.0	
Previous HIV test											
No	857	44.2	105	21.3	<0.000	449	51.4	0.795	303	52.9	<0.000
Yes	1029	53.0	381	77.3		398	45.5		250	43.6	
Rapid HIV test											
Reactive	41	2.1	31	6.3	<0.000	6	0.7	0.953	4	0.7	<0.000
Indeterminate	5	0.3	1	0.2		2	0.2		2	0.3	
Non-reactive	1780	91.8	431	87.4		813	93.0		536	93.5	
Total	1826	94.1	463	93.9		821	93.9		542	94.6	

MSM, men who have sex with men; HM, heterosexual men; SD, standard deviation.

been tested for HIV. The group with the highest levels of previous HIV testing was MSM (77.3%). Out of the total consultations, 1826 patients were tested for HIV (94.1%), with a reactive result in 41 cases (2.1%). The reactive test appeared mostly in MSM (6.3% vs. 0.7% in HM and women). The test was not performed for patients with a previous HIV diagnosis who were seeking information, people who were being tested regularly, and people who were in the window period and had had a recent HIV test.

Regarding sexual practices and risk factors, 55.8% of people in the study had a steady partner, with no differences seen between the groups (Table 2). Among MSM, 85.2% had casual sexual partners and a mean number of 12.8 sexual partners in the last year. Condom use was not consistent in 16.7% of the population studied. Condom use was less frequent in women: 24.1% did not regularly use a condom, compared to 14.9% of HM and 11.4% of MSM. As a group, MSM were the most aware of a partner's serology and they had a higher percentage of HIV-positive partners (7.5%). Two and a half percent of the study population were or had been involved in sex work, and 15.4% declared having visited a sex worker. Being a sex worker was more common among women (4.5%). HM (28.6%) were the most common client group visiting sex workers. Risk behavior was more frequent in women (92.8%) and it had taken place more recently (52.7% in the previous 3 months). A history of STIs was present in 18.5% of the population. They were more common among MSM, especially gonorrhea (11.4%) and syphilis (6.3%). Sexual intercourse under the influence of drugs was more common among HM (39.2%), with a significant difference in the case of alcohol consumption in HM (31.9%) and women (21.8%) and the use of poppers in MSM (2.2%).

3.2. Factors associated with being tested for HIV for the first time

Out of the study population who needed a rapid HIV test, 45.3% were being tested for HIV for the first time (Table 3). This was observed in more than half of the HM and women. The proportion of the study population being tested for the first time was higher at the outer edges of the cohort age range, in some groups of immigrants (especially from the Indian Subcontinent and North Africa), and in those with lower educational levels. The test was performed for the first time more frequently among those who: did not have casual sexual partners (56.0%), did not regularly use condoms (54.2%), were unaware of a partner's serostatus (54.6%), did not have a history of STIs (49.2%), and used drugs during sexual intercourse (47.7%).

In the multivariate analysis, after adjusting for the remaining variables, being HM or a woman increased the probability of being tested for HIV for the first time (adjusted OR (aOR) 3.41, 95% CI 2.30–5.05, and aOR 3.41, 95% CI 2.30–5.05, respectively) (Table 3). The probability of being tested for the first time also increased in populations from the Indian Subcontinent (aOR 16.42, 95% CI 2.08–129.88), in those with no casual sexual partners (aOR 1.49, 95% CI 1.10–2.01), when the partner's serostatus was unknown (aOR 1.69, 95% CI 1.24–2.31), and when there was no history of other STIs (aOR 1.93, 95% CI 1.29–2.87). The probability decreased for those

Table 2
Sexual history and risk factors of the population assisted ($N = 1940$); Madrid Autonomous Region, April 29, 2010 to May 31, 2012.

	Total		MSM		p-Value MSM vs. HM	HM		p-Value HM vs. women	Women		p-Value women vs. MSM
	n	%	n	%		n	%		n	%	
Total	1940		493	25.4		874	45.1		573	29.5	
Steady partner											
Yes	1083	55.8	270	54.8	0.277	493	56.4	0.783	320	55.8	0.493
No	816	42.1	221	44.8		356	40.7		239	41.7	
Casual sexual partners											
Yes	1413	72.8	420	85.2	<0.000	637	72.9	<0.000	356	62.1	<0.000
No	445	22.9	63	12.8		188	21.5		194	33.9	
Number of sexual partners (SD)	7.4 (46.3)		12.8 (32.8)		<0.000	4.6 (8.0)		0.503	6.9 (79.0)		0.111
Using condoms regularly											
Yes	1567	80.8	435	88.2	0.041	710	81.2	<0.000	422	73.6	<0.000
No	324	16.7	56	11.4		130	14.9		138	24.1	
Sexual partner serology											
HIV-positive	61	3.1	37	7.5	<0.000	10	1.1	0.015	14	2.4	<0.000
HIV-negative	345	17.8	112	22.7		156	17.8		77	13.4	
Unknown	677	34.9	121	24.5		326	37.3		230	40.1	
Sex worker	48	2.5	11	2.2	0.265	11	1.3	<0.000	26	4.5	0.043
Prostitution client	299	15.4	37	7.5	<0.000	250	28.6	<0.000	12	2.1	<0.000
Time from last risk practice											
<3 months	937	48.3	215	43.6	0.330	420	48.1	0.047	302	52.7	0.001
>3 months	819	42.2	226	45.8		363	41.5		230	40.1	
No risk practice	98	5.1	31	6.3		50	5.7		17	3.0	
Sexually transmitted infections											
Never	1582	81.5	350	71.0	<0.000	745	85.2	0.006	487	85.0	<0.000
Syphilis	68	3.5	31	6.3		23	2.6		14	2.4	
Herpes	19	1.0	7	1.4		6	0.7		6	1.0	
Gonorrhea	83	4.3	56	11.4		23	2.6		4	0.7	
Chlamydia	18	0.9	5	1.0		9	1.0		4	0.7	
Human papillomavirus	58	3.0	13	2.6		16	1.8		29	5.1	
Other	57	2.9	19	3.9		25	2.9		13	2.3	
Several	17	0.9	8	1.6		7	0.8		2	0.3	
Unknown	11	0.6	2	0.4		6	0.7		3	0.5	
Sexual intercourse under influence of drugs											
Yes	687	35.4	173	35.1	0.172	343	39.2	<0.000	171	29.8	0.053
No	1139	58.7	287	58.2		482	55.1		370	64.6	
Alcohol	538	27.7	134	27.2	0.075	279	31.9	0.000	125	21.8	0.045
Hashish/marijuana	86	4.4	12	2.4	0.016	45	5.1	1	29	5.1	0.037
Heroine	10	0.5	0	0.0	0.017	10	1.1	0.008	0	0.0	-
Cocaine	69	3.6	17	3.4	0.475	38	4.3	0.061	14	2.4	0.364
Poppers	12	0.6	11	2.2	0.000	0	0.0	0.396	1	0.2	0.002
Others	18	0.9	10	2.0	0.001	2	0.2	0.064	6	1.0	0.214

MSM, men who have sex with men; HM, heterosexual men; SD, standard deviation.

aged 35 to 54 years, among people from countries of Western Europe, and when the last incident of risky behavior was more than 3 months before the visit.

4. Discussion

To our knowledge, the implementation of a program of prevention and early diagnosis of HIV in public primary care centers aimed at vulnerable groups is a pioneering intervention in Spain.

This study shows that the service was used by a large percentage of MSM and immigrants. The utilization of the services by sex workers and clients of sex workers was important. Uptake of the service by people from North Africa and men from Sub-Saharan Africa and the Indian Subcontinent highlights the importance of the work done by the cultural mediators. The program also reached a high percentage of people who had never had an HIV test before, especially women and HM, people younger than 25 years or older than 55 years, immigrants from certain origins, and people with no knowledge of their partner's serostatus.

There is published evidence of multiple strategies to implement new models for diagnosing HIV infections using rapid HIV tests. A pilot program of early detection offered at pharmacies was developed between 2009 and 2010 in one region of Spain.[23] This program tested mainly men (70.7%), with a mean age of 36.2 years, who were heterosexual, which are characteristics similar to our study population. In contrast, most of the risk behavior seen in this study was carried out by women (60.6% vs. 45.1% in our population), had taken place in the last 3 months in only 19.3% of the cases (48.3% in our study), and the most frequent scenario was not using a condom.[23] Other programs have used outreach workers offering rapid HIV testing in mobile units. A multicity program developed in Spain in 2006–2007 used a mobile unit in some commercial city center streets (in Madrid near a gay neighborhood), testing primarily men (60.6%), under 30 years of age (51.6%), with almost half having a university education.[24] This program reached a lower proportion of MSM (36.0%) and immigrants (26.2%) than ours. When the mobile units were located in university campuses, the population tested was even younger and predominantly female (73.3% were under 25 years of age and 55.7% were women), with a small proportion of MSM (15.7%) and immigrants (8.5%).[25] During 2004–2006, the Centers for Disease Control and Prevention (CDC) funded a pilot project to provide rapid HIV testing and referral to medical care, targeted at ethnic minority populations and others at high risk, via outreach work and in community settings (public parks, sex work settings,

Table 3
Factors associated with a first HIV test: univariate and multivariate analysis; Madrid Autonomous Region, April 29, 2010 to May 31, 2012.

	HIV test for first time		cOR	95% CI		aOR	95% CI	
	n	%		Lower	Upper		Lower	Upper
Total	827	45.3						
MSM	103	22.4	1	-	-	1	-	-
HM	434	53.8	4.03[a]	3.11[a]	5.23[a]	3.41[a]	2.30[a]	5.05[a]
Women	290	54.2	4.10[a]	3.11[a]	5.41[a]	2.96[a]	1.95[a]	4.48[a]
Age, years								
<25	183	57.0	1	-	-	1	-	-
25–34	379	44.7	0.61[a]	0.47[a]	0.79[a]	0.67	0.45	1.02
35–44	170	39.7	0.50[a]	0.37[a]	0.67[a]	0.50[a]	0.32[a]	0.79[a]
45–54	53	42.1	0.55[a]	0.36[a]	0.83[a]	0.52[a]	0.27[a]	0.98[a]
55–64	26	54.2	0.89	0.48	1.64	1.32	0.50	3.46
≥65	13	54.2	0.89	0.39	2.05	0.50	0.16	1.58
Origin								
Spain	522	45.5	1	-	-			
Immigrant	296	46.3	1.03	0.85	1.25			
Latin America	138	41.2	0.84	0.65	1.07	0.82	0.58	1.17
Western Europe	41	34.5	0.63[a]	0.42[a]	0.93[a]	0.50[a]	0.27[a]	0.91[a]
Eastern Europe	23	56.1	1.53	0.82	2.86	1.20	0.46	3.13
Maghreb	34	70.8	2.90[a]	1.54[a]	5.47[a]	1.75	0.76	4.02
Sub-Saharan Africa	25	56.8	1.57	0.86	2.89	0.63	0.28	1.38
North America	3	42.9	0.90	0.20	4.02	1.89	0.28	12.89
Central Asia	4	50.0	1.20	0.30	4.80	.	.	.
Middle East	2	28.6	0.48	0.09	2.47	0.24	0.02	2.55
Indian Subcontinent	24	82.8	5.74[a]	2.17[a]	15.14[a]	16.42[a]	2.08[a]	129.88[a]
Other	2	100.0	-	-	-	-	-	-
Level of studies								
University	401	41.0	1	-	-			
Secondary	339	50.0	1.44[a]	1.18[a]	1.75[a]			
No studies/primary	82	61.7	2.31[a]	1.59[a]	3.36[a]			
Steady partner								
Yes	479	47.1	1	-	-			
No	340	44.2	0.89	0.73	1.07			
Casual sexual partners								
Yes	572	42.7	1	-	-	1	-	-
No	229	56.0	1.71[a]	1.37[a]	2.14[a]	1.49[a]	1.10[a]	2.01[a]
Mean number of sexual partners (SD)	4.4 (8.9)		0.98[a]	0.97[a]	0.99[a]			
Using condoms regularly								
Yes	656	44.1	1	-	-			
No	161	54.2	1.50[a]	1.17[a]	1.92[a]			
Sexual partner serology								
HIV-negative	117	36.4	1	-	-	1	-	-
HIV-positive	18	30.5	0.77	0.42	1.39	1.09	0.56	2.13
Unknown	347	54.6	2.09[a]	1.59[a]	2.76[a]	1.69[a]	1.24[a]	2.31[a]
Sex worker								
Yes	15	34.1	1	-	-			
No	799	46.1	1.66	0.88	3.11			
Prostitution client								
Yes	140	49.1	1	-	-			
No	668	45.1	0.85	0.66	1.10			
Time from last risk practice								
<3 months	433	49.1	1	-	-	1	-	-
>3 months	326	41.4	0.73[a]	0.60[a]	0.89[a]	0.73[a]	0.55[a]	0.98[a]
No risk practice	47	56.6	1.35	0.86	2.13	1.70	0.85	3.41
Sexually transmitted infections								
Yes	91	29.5	1	-	-	1	-	-
Never	731	49.2	2.31[a]	1.77[a]	3.01[a]	1.93[a]	1.29[a]	2.87[a]
Sexual intercourse under influence of drugs								
Yes	282	42.9	1	-	-			
No	508	47.7	1.22[a]	1.00[a]	1.48[a]			
Alcohol	239	46.2	0.98	0.80	1.20			
Hashish/marijuana	38	45.8	1.00	0.64	1.56			
Heroine	1	10.0	7.69	0.97	60.79			
Cocaine	18	28.6	2.17[a]	1.25[a]	3.79[a]			
Poppers	0	0.0						
Others	3	17.6	4.00[a]	1.14[a]	13.96[a]			

cOR, crude odds ratio; aOR, adjusted odds ratio; CI, confidence interval; MSM, men who have sex with men; HM, heterosexual men; SD, standard deviation.
[a] Differences are statistically significant.

etc.). Of 23 900 clients who received a rapid HIV test, 39% were black, 31% were Hispanic, 17% reported male–male sex, and 6% were IDUs.[26]

The proportion of HM who visited sex workers reached by the program appears to be representative of the general population; the prevalence of men who have paid for sex at some time in their lives has been estimated at 25.4–27.3%.[27,28]

Lower levels of condom use by women has been described previously.[25,28] Among MSM, higher rates of substance use have been associated with unprotected sex[29] and an increased risk for

HIV seroconversion.[30] The likelihood of unprotected anal intercourse was higher in men who were HIV-positive, used more than four drugs before sex, were not from Spain, had more than 20 sexual partners, met casual sex partners on the Internet, and presented a high level of internalized homophobia.[31] A history of STIs was more common in our study population than found in other studies.[25,28]

The infection rate detected in women and HM was <1%, similar to the prevalence in adults (15–49 years) described in Western and Central Europe, North and Latin America, Asia, and North Africa.[1] In MSM it reached 6.3%. Globally, the prevalence of HIV infection among MSM is on average 13 times higher than that in the country's general population.[1] In Latin America, HIV is spreading predominantly in and around networks of MSM, and during the past decade surveys have found HIV prevalence of at least 10% among MSM in nine of 14 countries in this region.[2] Epidemics among MSM are growing across Asia and a high prevalence has been found among surveyed MSM in cities in India (up to 18% in the south).[1,32]

The world median proportion of MSM who received an HIV test in the last 12 months was 38%, with fewer than one in three men being tested in the past 12 months in South and Southeast Asia (17% in India in 2009) and Western and Central Europe.[1]

According to the last health and sexual habits survey in Spain, 39.2% of the population had been tested for HIV (40.1% of men and 38.4% of women).[28] Our program reached a significant number of people who had not been tested previously (44.2%), higher than that achieved by the CDC project mentioned above (30%), and also detected fewer positive results (1.4% received preliminary positive HIV results).[26] Other programs that have implemented rapid HIV testing in STI units have reached 65.3% of the population that had not been tested previously for HIV, with a rate of reactive results similar to ours (2.2%), though they saw lower utilization rates in MSM and immigrants (16.7% and 6.7%, respectively).[33] In the pharmacy screening program, half of the users (58.6%) had had no previous HIV test, and the positivity rate was even lower (0.85%; 95% CI 0.34–1.75).[23]

Some studies have found previous HIV testing to be more common in men,[34] especially among MSM,[33,35] and in the autochthonous population.[34,35] Research also indicates that individuals who have not graduated from high school are less likely to be tested, with those who are tested late in the course of the disease are more likely to have lower educational levels.[36,37] A study conducted in the USA found a greater proportion of Latinos had never been tested for HIV.[35] After multivariate adjustment, young age, being female, and low educational levels were significantly associated with not having previously had an HIV test.[35] Another recent study found that divorce, age between 25 and 44 years, and sexual risk behavior were significant predictors of being previously tested among white and Hispanic populations.[38] Untested MSM were younger, had lower educational levels, were less likely to have unprotected anal intercourse with a regular male partner, less likely to have sought professional advice, more likely to expect HIV-negative disclosure, have fewer gay friends, and spend more time using social networking websites.[39]

A survey among clients of sex workers in Switzerland found that 29–46% of clients had never undergone an HIV test.[40] In female sex workers, factors associated with having a previous HIV test included: ≥9 years of schooling, fewer than five clients in the recent week, having a regular sexual partner, and a history of illegal drug use.[41]

A systematic review conducted in 2010 by Deblonde et al. described that barriers to HIV testing centered around a low perception of risk; fear and worries; accessibility of health services; a reluctance to address HIV and offer testing; and a scarcity of financial and well trained human resources.[42] The high acceptability of our program, which is accessible, delivers rapid results, and ensures complete confidentiality, may be why our program was well used by MSM. This group prefers services that are community-based, include non-judgmental and gay-friendly service providers, and offer a high degree of confidentiality.[43] Rapid testing and peer counseling can increase the uptake of HIV testing among MSM.[44]

Migrants have specific legal and administrative impediments to accessing health services. As well as cultural and linguistic barriers, racism, and xenophobia, there is also the fear of stigma and discrimination from their communities.[8] Our program was well attended by immigrants, with free access and the work undertaken by the cultural mediators being central to this. The high participation among the immigrant population was also related to the ability of mediators to communicate with users in their native language, which is one of the main strengths of the service. Availability of testing in non-traditional settings and a variety of times during the day, the use of rapid tests, and providing culturally sensitive services appear to be positively accepted by this community.[8] Immigrants from Western Europe showed the lowest rate of first-time testing, which could be attributed to a higher awareness of their own risk and health. Furthermore, the fact that access to Spain's public health system is easier for citizens from the European Union could also be a factor. Nevertheless, during the study period, although access to Spain could have taken place illegally, the immigrant population had access to the public health system and deportations to home countries were not usually carried out. Given the good results obtained from our study, it would be interesting to extend the rapid HIV testing services to other health care centers with high immigrant and MSM populations. It would be essential to maintain the accessibility, confidentiality, and the prevention work carried out during the counseling. It is also important to publicize these services and increase dissemination strategies and the active targeting of people more at risk of infection.

There are some limitations to this study. The small number of cases in some categories limited the possibility of finding associations. Information on the people with a previous HIV test would have been useful in order to build a picture of HIV screening. Unfortunately the accuracy and completeness of the data was not adequate for analysis. The results of confirmatory tests were not fully available. Self-reported information may be affected by recall bias or the desire to provide socially acceptable answers, although the climate of confidence and confidentiality could have contributed to reduce this bias.

In conclusion, this prevention and early HIV diagnosis program following a community-based approach and delivered in public primary care centers, managed to reach a high proportion of people from vulnerable populations. The proportion of people being tested for HIV for the first time and the detection rate of HIV was high, especially in some groups. The physical location of the service, its cultural acceptability, and its target population, resulted in clear differences in the profile of users and reactive test rates compared to other programs.

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