Analysis of HIV testing services at five community centres in Spain for the improvement of new approaches that promote early diagnosis

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ABSTRACT

Background

In recent years, the number of people tested for HIV has experienced a significant increase. The purpose of this study is to analyze data obtained in Spain in the HIV testing services of five Community Centres members of Agrupación Prueba de VIHda *throughout 2014 and 2015,to determine its effectiveness and to characterize the subpopulation with a HIV reactive result.*

Study design and methods

agrupación Prueba de VIHda *performed free, anonymous and confidential HIV tests according to the* Consolidated guidelines on HIV testing *services of WHO (2015). Data were collected using the questionnaire of the COBATEST network, developed by the COBATEST Project, and its significance was determined statistically.*

Results

3061 HIV tests were performed during 2014 and 2015, with a prevalence of reactive results of 2.5%. Heterosexual and bisexual men got tested at older ages than homosexual men and women. Non-Spanish origin seems to be a risk factor for HIV infection within the sample. Bisexual men showed as high prevalence of reactive test as homosexual men, as well as they reported less previous HIV tests. Finally, **index testing** *performed by HIV positive peer educators to the sexual partners of newly diagnosed patients showed higher prevalence than that of the classical Voluntary Counselling and Testing approach outreach most at risk populations.*

Conclusion

The analysis of the data shows higher prevalence of reactive results in people of non-Spanish origin compared to that of the Spanish subgroup, the former still facing barriers to access the public health system in Spain. It also demonstrates the need of new and adapted approaches for promoting early diagnosis specifically in bisexual men. **Index testing** *by peer HIV positive educators is a highly effective method for testing people at high risk of acquiring HIV infection.*

Keywords: *HIV tests, prevalence, seropositive, men who have sex with men,* Agrupación Prueba de VIHda.

Análisis de los servicios de test del VIH de cinco centros comunitarios españoles para la mejora de nuevas estrategias de promoción del diagnóstico precoz

RESUMEN

Antecedentes

En los últimos años, el número de personas sometidas a pruebas frente al VIH ha experimentado un aumento significativo. El propósito de este estudio es analizar los datos de prevalencia de la infección por VIH obtenidos por cinco centros comunitarios en España pertenecientes a la *Agrupación Prueba de VIHda* entre 2014 y 2015, determinar su efectividad y caracterizar la subpoblación con un resultado preliminar reactivo.

Diseño experimental y métodos

La *Agrupación Prueba de VIHda* realizó pruebas de VIH gratuitas, anónimas y confidenciales de acuerdo con las directrices consolidadas por la OMS (2015). Los datos fueron recogidos mediante el cuestionario desarrollado por el Proyecto COBATEST y su significación se determinó estadísticamente.

Resultados

Durante 2014 y 2015 se realizaron un total de 3061 pruebas frente al VIH, obteniendo una prevalencia de resultados preliminares positivos del 2,5%. Los hombres heterosexuales y bisexuales se realizaron la prueba a edades más avanzadas que los hombres homosexuales y las mujeres. Las personas de origen no español parecieron mostrar un mayor riesgo de infección frente al VIH. Hombres bisexuales mostraron una prevalencia elevada similar a la de hombres homosexuales, así como declararon menos pruebas anteriores frente al VIH. Finalmente, las pruebas realizadas a través de *indextesting* por los educadores pares de VIH a parejas sexuales de pacientes recién diagnosticados mostraron una prevalencia superior a la obtenida por el modelo tradicional de counselling y testado voluntario ofrecido desde los centros comunitarios a poblaciones de mayor riesgo.

Conclusión

El análisis de los datos muestra mayores prevalencias de resultados preliminares reactivos en personas de origen no español comparadas con aquellas del subgrupo de personas españolas, el primero de ellos todavía enfrentando barreras de acceso al sistema sanitario público en España, El análisis también demuestra la necesidad de nuevos enfoques adaptados para promover el diagnóstico precoz especialmente entre hombres bisexuales. Las pruebas realizadas a través de *indextesting* por educadores pares VIH positivos es un método muy eficaz para el testado de las personas con alto riesgo de contraer la infección por VIH.

Palabras clave: test, prevalencia, seropositivo, hombres que tienen sexo con hombres, *Agrupación Prueba de VIHda*.

Introduction

Approximately more than 2 million new HIV infections are reported globally each year, making this infection a major global health problem[1]. From 2003 to 2014, the Spanish Surveillance System for HIV has reported 34,690 new HIV infections with a resulting rate between 7,25 and 12,38, depending on the year, of new HIV diagnosis per 10,000 inhabitants per year[2], being Spain the country of the EU with the higher HIV prevalence. However, the incidence and mortality due to AIDS has been limited substantially with the arrival of the highly active antiretroviral therapy (HAART)[3], and it is well known the fact that as soon as HIV infection is detected and treated, patients will preserve a much healthier condition[4]. Furthermore, early initiation and good adherence to treatment contributes to decrease the number of new infections[5]. But HAART is just one of the key components in HIV treatment and prevention, and needs a combination of several interventions[6]. Hergenrather et al.[7] emphasizes the importance to incorporate as a part of the treatment and prevention methods, the need to have a well-educated and diverse web-connected generation regarding HIV topics.

As for the above, European policies have reinforced the promotion of counselling and testing services. Given that many people from key populations -men who have sex with men, migrant people, sex workers and transgender people among them- are unlikely to attend the public health system for HIV testing due to social and administrative barriers, particularly those who are asymptomatic, community-based HIV testing is considered to be a critical approach for reaching individuals at higher risk of acquiring HIV that would not get tested in other way[8]. For this purpose, the European project HIV community-based testing practices in Europe (HIV-COBATEST) started in2010 to promote early diagnosis of HIV infection[9], by improving the community-based testing practices in Europe.

Accordingly with the information obtained by Spanish Health HIV Surveillance System, the overall results in Spain showed a high percentage of late diagnosis in 2014, i.e. 46.2%[2]. Therefore it seems that there is a lack of information in the population that could be due to several issues. On the one hand, many people have the perception of HIV infection as a chronic disease without severe health impact. This is one of the factors that could be complicating HIV prevention efforts[10]. On the other hand, Clifton et al., after reviewing sexual behaviours of 13,751 people, showed the need to improve another kind of strategies on those people at greatest risk (i.e. men who have sex with men –MSM- and people from African origin) since the main population tested is the one that reports lower risk[11]. Based on this second assumption, the objective of this study was to analyze data obtained in Spain throughout 2014 and 2015 in the HIV testing services of five Community Centres belonging to Agrupación Prueba de VIHda, to determine its effectiveness and to characterize the subpopulation with an HIV reactive result.

Material and methods

From January 2014 to December 2015, five HIV Community Centres (i.e., ACCAS, Actuavallès, Adhara Asociación VIH/Sida, AVACOS-H and OMSida), all of them Non Governmental Organizations and members of Agrupación Prueba de VIHda, performed free, anonymous and confidential HIV tests according to the Consolidated guidelines on HIV testing services of WHO (2015)[8] and developing a Voluntary Counselling and Testing (VCT) approach. Conventional antibodies tests (OralQuick ADVANCE® Rapid HIV-1/2 Antibody Test and Alere Determine™ HIV-1/2) were used.

Data about socio-demographic characteristics, HIV risk behaviour and HIV testing results from all the clients of the five HIV testing services were collected using the COBATEST network questionnaire devel-

oped by the European project HIV community-based testing practices in Europe (HIV-COBATEST)[9] and combined in a common database. Clients with a reactive result were derived to the Infectious Diseases Units of reference hospitals for a confirmation test, although no record of these data was carried out.

People at higher risk of acquiring HIV given sexual behaviour and/or facing barriers for accessing the public health system were prioritized when being offered the HIV test, and these subpopulations were targeted by campaigns developed by the five Community Centres. Additionally some of the clients of Adhara Asociación VIH/Sida were outreached through index testing, so they were sexual partners of newly HIV diagnosed people that were offered the HIV test through a peer education program, from HIV positive educators to newly HIV positive patients, in two different Infectious Diseases Units.

Data collected were stratified by sex and sexual orientation, age, nationality, previous HIV tests performed, and result of the current HIV test, and the Chi-Square test was used to analyze it. Statistical analyses were performed with the software R (http://www.R-project.org).

Results

An overall 3601 HIV tests were performed throughout 2014 and 2015 with 89 reactive results, meaning a prevalence of 2.5%. According to sexual behaviours the HIV reactive results were distributed as follows: 1.2 % in heterosexual men (HeM), 13 reactive results out of 1057; 4.6% in bisexual men (BiM), 9 reactive results out of 195; 4.5% in homosexual men (HoM), 55 reactive results out of 1229; 0.5% in cis women (W), 5 reactive results out of 1050; and 14.8% in transsexual women (TW), 4 reactive results out of 27. 43 HIV tests results were lacking record on sexual behaviour, group that accumulated three reactive results.

Attending at the age of people taking the HIV test, the largest proportion of tests were taken by people from 25 to 29 years old (18.3%), followed by people from 20 to 24 (18.0%) and people from 30 to 34(17.1%). When combining these data with the sexual behaviour and considering a wider age range, clients from 20 to 34 years old represented 48.5% of HeM and 48.7% of BiM; meanwhile that same age range accumulated 57.9% of HoM and 56.7% of W, showing these subgroups a younger profile of clients than HeM and BiM.

MSM (men who have sex with men) subgroup congregated the majority of reactive results: 64 out of 89. The prevalence of reactive results within this subgroup by age showed the highest values for the groups aged between 25-29 and 35-39 years old (near 6.0%).

Considering the ethnic origin of the clients the prevalence of reactive results found in non-Spanish residents was higher than that of the Spanish subgroup of clients: 3.5% (22 reactive results out of 626 tests) vs. 2.2% (61 reactive results out of 2825 tests) respectively; $p<0.05$ (Figure 1). The higher prevalence observed in non-Spanish residents was not due to a bigger proportion of MSM in that subpopulation compared to that proportion present in the Spanish counterpart-as the sexual behaviour congregating more HIV reactive results in the total sample-, that was 19.5% and 44.5% for the non-Spanish residents and the Spanish subpopulations respectively. Moreover this difference was also observed in HeM and MSM subgroups when segregating the sample by ethnic origin and sexual orientation in Figure 1. W and TW also showed the same tendency although the difference was not statistically significant. Non-Spanish resident and tourist were from: Latin America, 447 people screened, Europe, 168 people screened, and Africa, 75 people screened. Asia accounted for only thirteen clients, and North American clients were just seven people, none of those groups accounting for any reactive result.

FIGURE 1. PREVALENCE OF HIV REACTIVE RESULTS ACCORDING TO ETHNIC ORIGIN.A. PREVALENCES OF HIV REACTIVE RESULTS IN THE WHOLE SAMPLE OF CLIENTS BY ETHNIC ORIGIN; Z=2.0 ; *P<0.05. B. PREVALENCES OF HIV REACTIVE RESULTS BY ETHNIC ORIGIN AND SEXUAL BEHAVIOUR. HETEROSEXUAL MEN (HEM): Z=2.6 ; **P<0.01. MEN WHO HAVE SEX WITH MEN (MSM): Z=2.5 ; *P<0.05. WOMEN (W): Z=1.7 ; P=0.09. TRANSSEXUAL WOMEN (TW): Z=1.7 ; P=0,09.
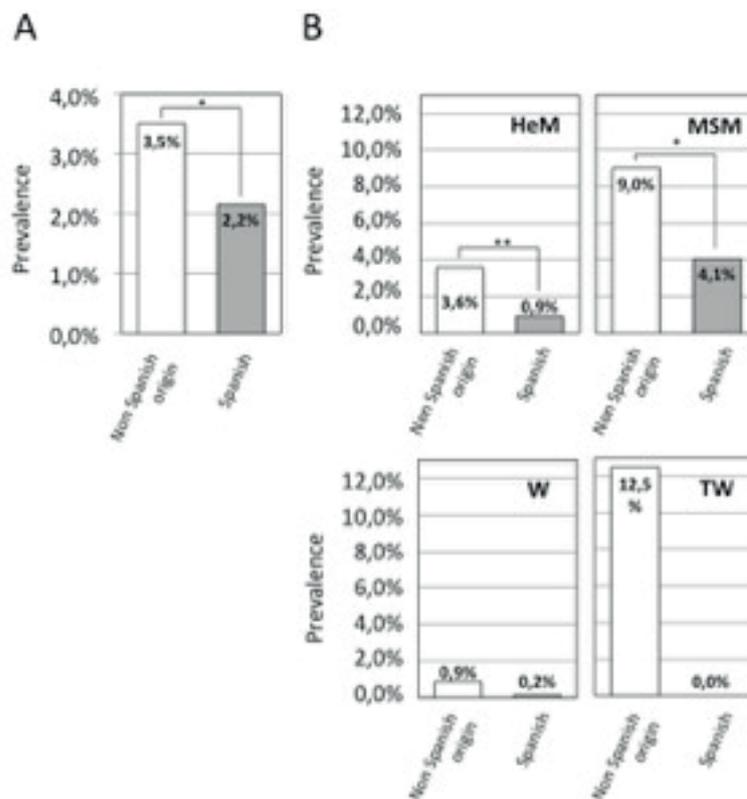
Regarding previous screening for HIV infection, Table 1, HeM and W showed the lowest proportions of previous testing, 45.9% (p<0.001) and 47.0% (p<0.001) respectively. TW was the subgroup reporting higher percentage of having had, at least, one previous HIV test, 85.2% (p<0.01), followed by HoM, 74.4% (p<0.001), and BiM, 60.5% (p<0.001 when compared to that of HoM).

Finally outreach performed through index testing, that is offering the HIV test to sexual partners of newly HIV diagnosed people through a peer education program in two different Infectious Diseases Units, showed higher efficacy than VCT approach performed by community centres that targeted most at risk populations. Figure 2 shows the higher prevalence of reactive results in HeM contacted by index testing, 7.1% (2 reactive results out of 28 tests), compared to that of HeM outreached by VCT, 1.1% (11 reactive results out of 1016 tests); p<0.01. The same was observed in the MSM subgroup which showed a prevalence of 9.7% through index testing (13 reactive results out of 134 tests) and 4.2% through VCT method (51 reactive results out of 1226 tests); p<0.01 .

Discusion and conclusion

The present study analyses the few parameters of clients attending the HIV testing services of five Community Centres in Spain that offer anonymous and confidential HIV tests based on self-declaration, what could present limitations to the results showed. Also no other risk behaviour parameters have been taking

TABLE 1. COMPARISON OF PERCENTAGES OF PREVIOUS HIV TEST IN CLIENTS BY SEXUAL BEHAVIOUR. PERCENTAGE OF PREVIOUS HIV TESTS OF HETEROSEXUAL MEN (HEM), HOMOSEXUAL MEN (HOM), WOMEN (W) AND TRANSSEXUAL WOMEN (TW) WAS COMPARED TO THAT OF THE TOTAL SAMPLE. SINCE BISEXUAL MEN (BIM) SHOWED A SIMILAR BEHAVIOUR TO THAT OF THE TOTAL SAMPLE, THE PERCENTAGE OF PREVIOUS HIV TEST OF BIM WAS COMPARED TO THAT OF HOM.

| Sexual behaviour	Previous HIV test performed	Non previous HIV test performed	Statistic significance
HeM	45,9%	54,1%	Z=8.8; p<0.001
BiM	60,5%	39,5%	Diference to HoM; Z=4.0; p<0.001
HoM	74,4%	25,6%	Z+15.1; p<0.001
MSM (BiM+HoM)	72,5%	27,5%	
W	47,0%	53,0%	Z=7.9; p<0.001
TW	85,2%	14,8%	Z=3.0; p<0.01
Total	57,0%	43,0%	

into account that could also affect some of the interpretations below.

Despite that and according to the Spanish HIV Surveillance System records[2], our study confirms both BiM and HoM to be the groups with highest prevalence of HIV reactive results in the whole sample: 4.6% and 4.5% respectively. That prevalence was even higher in TW, although the size of the sample was not big enough for stating a statistically significant prevalence for this group. Interestingly, HoM and W performing the HIV test showed to be younger than HeM and BiM.

Also in line with those results of new infections and late diagnosis in Spain reported by the Spanish HIV SurveillanceSystem[2], our results also support the higher vulnerability of non-Spanish residents to HIV infection, who presented higher prevalence of HIV reactive results in HeM and MSM, and same tendency in W and TW. This factor of vulnerability could be magnified in that fraction of non-Spanish residents

FIGURE 2. PREVALENCE OF REACTIVE RESULTS IN CLIENTS OUTREACHED THROUGH INDEX TESTING COMPARED TO THAT OF CLIENTS OUTREACHED BY CLASSICAL APPROACH. HETEROSEXUAL MEN (HEM): Z=2.7 ; *P<0.01. MEN WHO HAVE SEX WITH MEN (MSM): Z=2.7 ; *P<0.01.
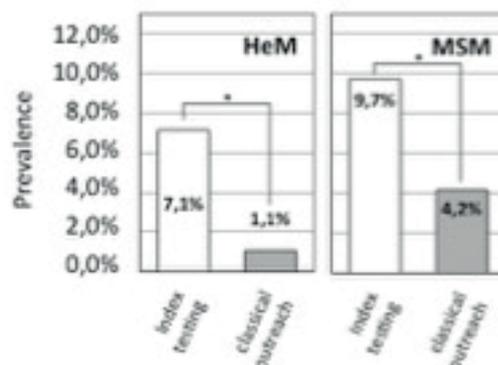
represented by undocumented migrants, that in Spain still faces barriers to access the primary health care services and therefore could not full benefit from the near future change to a Provider-Initiated Testing and Counselling (PITC) scheme[12].In that context and given the results showed here, the service provided by *Agrupación prueba de VIHda* at its five Community Centres can help to reduce late diagnosis in undocumented migrants settled in Spain by directly facilitating diagnostic interventions and access to treatment, therefore reducing, at least in part, the bottleneck to control HIV epidemic in Spain[13].

Normally BiM in HIV related studies are not considered as a unique subgroup with specific characteristics but are included in the bigger subpopulation of MSM. Here we demonstrate differences in HIV prevention and diagnostic behaviours between BiM and HoM: although both groups showed similar prevalence of HIV reactive results -4.6% and 4.5% respectively- BiM reported less previous HIV test, 60.5%, than HoM, 74.4%. Then these data suggest a possible higher risk of late diagnosis in BiM compared to that of HoM. Other authors have also found behavioural differences between those groups[14,15], and also it has been suggested that BiM could serve as a bridge group of HIV infection from MSM to the general population, although results in this sense are contradictory depending on the country and context of the sample[16,17]. Further studies need to be performed in Spain to address behavioural differences between BiM and HoM in order to develop adapted and effective HIV prevention and intervention programmes that take into account the unique needs and risks factors of BiM as a high prevalence HIV subgroup.

In the *Consolidated guidelines on HIV testing* services of W.H.O (2015)[8], *Adhara Asociación VIH/Sida*, a community centre that belongs to *Agrupación Prueba de VIHda*, published its index testing approach as a case example of new ideas and strategies to outreach most at risk people and facilitate linkage to care

and treatment in new cases of HIV infection. Here this method of outreach was studied and compared to the patient-initiated Voluntary Counselling and Testing (VCT) approach in five community centres using a bigger sample, so the potential of this method is confirmed detecting higher reactive results than the whole methods: HeM tested through index testing showed 6.5 times higher prevalence of reactive results than those tested through VCT, and that was 2.5 times higher for HoM. This method of outreach of sexual partners of newly diagnosed HIV positive patients should then be considered as a highly efficacy outreach method adapted to the Spanish social context, that could be implemented in Infectious Diseases Units throughout the country.

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