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SHORT COMMUNICATION

Knowledge, actual and potential use of HIV self-sampling testing kits among MSM recruited in eight European countries.

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Aim

To describe the knowledge as well as current and potential use of self-sampling kits among men who have sex with men (MSM) and to analyse their preferred biological sample and result communication method.

Methods

We analyse data of MSM of HIV negative or unknown serostatus from an online survey conducted in eight countries (Belgium, Denmark, Germany, Greece, Portugal, Romania, Slovenia and Spain) between April and December 2016. It was advertised mainly in gay dating websites. We conduct a descriptive analysis of the main characteristics of the participants, and present data on indicators of knowledge, use and potential use of HIV self-sampling as well as their preferences regarding blood or saliva sample and face or non-face-to-face result communication by country of residence.

Results

A total of 8.226 participants of HIV negative or unknown serostatus were included in the analysis. Overall, 25.5% of participants knew about self-sampling (range: 18.8–47.2%) and 1.1% had used it in the past (range: 0.3–8.9%). Potential use was high, with 66.6% of all participants reporting that they would have already used it if available in the past (range: 62.1–82.1%). Most (78.6%) reported that they would prefer using a blood-based kit, and receiving the result of the test through a non-face-to-face-method (70.8%), even in the case of receiving a reactive result.

Conclusion

The high potential use reported by MSM recruited in eight different European countries suggests that self-sampling kits are a highly acceptable testing methodology that could contribute to the promotion of HIV testing in this population.

Keywords: early diagnosis, HIV testing, men who have sex with men

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Introduction

Estimates are that approximately 16% of the HIV infected population in Europe remains undiagnosed [1]. Due to their higher testing rates this percentage is probably

lower in men who have sex with men (MSM) yet in 2015 approximately 37% had a CD4 cell count level of < 350 mm^3 at the moment of receiving their HIV diagnosis [2].

Promoting diagnosis is of vital importance because late diagnosis increases morbidity and mortality [3,4] and because it contributes to onward transmission [5,6]. With this objective in mind, there have been a number of initiatives to upscale testing but the large proportion of MSM that report not meeting current testing recommendations [7] suggests that there is still room for improvement.

HIV Self-sampling (also known as home-sampling or postal-sampling) could help remove barriers and facilitate access to testing. This methodology requires the individual to collect a specimen and send it to a reference laboratory for testing. Once the result is available, it is communicated to the individual. In Europe, it has been available for some time in the United Kingdom (UK) and Belgium.

The available evidence shows that self-sampling is highly acceptable among MSM [8], that it has the capacity of facilitating access to testing to a high number of individuals and that it is capable of identifying previously undiagnosed infections [9,10]. However, there are gaps of knowledge that need to be filled to guide the decision about its future introduction in other countries. In this context, the aim of this study is to describe the knowledge about the existence as well as actual and potential use of this novel testing strategy and to assess the acceptability of different result communication methods as well as the preferred sampling method among MSM recruited online in eight European countries.

Methods

Data collection instrument

In the context of the EUROHIVEDAT project (Operational knowledge to improve HIV early diagnosis and treatment among vulnerable groups in Europe), we designed an online data collection instrument in Spanish and translated it into English. Once the content of the English version was agreed among all the authors it was then translated into the languages of the participating countries: Belgium, Denmark, Germany, Greece, Portugal, Romania, Slovenia and Spain. Before conducting the analysis, all questions were translated back into English to ensure that all the different translations had the same sense.

The questionnaire included questions to assess sociodemography, risk behaviours, history of sexually transmitted infections (STI), HIV serostatus and testing history. We also included a section to evaluate several aspects surrounding self-sampling which was defined as a device where "you use a kit to take either a blood or saliva sample that you will post to a laboratory that will send your result back". We first assessed knowledge about the existence of self-sampling as well as past and potential use. Potential use of was assessed by asking participants to answer whether they would have used self-sampling in the past if already available in their country. There were 5 response options (certainly not, probably not, not sure, probably yes and certainly yes). We considered potential users as those who answered "certainly yes/probably yes". We also assessed the type of preferred biological sample: blood or oral based. To allow participants to give an informed response, this question was preceded by a description of the characteristics of both methods regarding window period (14 weeks when using oral based vs. 4 weeks when using blood based), sample taking (mouth swab *vs.* finger prick) and positive predictive value (PPV) (90% oral based vs. 95% blood based).

Finally we also asked participants to choose from a list of 7 possible options of receiving the result of their test: 2 face-to-face options (at a clinical setting, at the offices of an NGO/CBO), 4 non-face-to-face (email, secure website, SMS, telephone call) and an additional open ended category for those who considered that their preferred option did not fit in any of above mentioned options. For those who chose one of the non-face-to-face options we assessed if they would prefer a face-to-face option if the result was reactive. The survey was anonymous and confidential. No variables allowing personal identification were collected. The study was approved by the Research Ethics Committee of the Institute of Health Carlos III (CEI PI52_2015-v2).

Recruitment procedures and study participants

Between April and December 2016, MSM were invited to participate through mailing lists, newsletters, social media messages, personal messages and promotional banners distributed mainly through gay dating websites but also through gay media and community based organizations (CBO). Those who decided to access the questionnaire, were asked to check the "I have read and understood the above information, in the country I live in I am old enough to legally have sex and I want to participate" box before been redirected to the survey. Legal ages for sex ranged from 14 to 16, but effectively all participants included in the analysis were 18 or older.

Inclusion criteria

Only MSM who were male at birth, legally old enough to have sex at their country of residence and who reported having resided for most of the last 12 months in one of the participating countries were included in the analysis ($N = 10721$). Additionally, we excluded 1159 participants that did not have a minimum level of survey completion and 1336 who either self-reported being HIV positive ($N = 991$) or who did not reveal their serostatus ($n = 345$). Thus, we included 8226 individuals in the analysis.

Data analysis

First, we perform a descriptive analysis of the main sociodemographic and behavioural characteristics as well as the testing history of participants by country of residence.

Secondly, we estimate the proportion of participants who knew about the existence of self-sampling kits as well as the prevalence of prior and potential use by country of residence.

The data on the total column were weighted to adjust the disproportionate distribution of the sample by country of recruitment. Weighting coefficients were calculated taking into account the male population between 18 and 65 years old living in the participating countries in 2016. Data were extracted from EUROSTAT. Differences by country of residence were assessed by using the chi-square test.

Results

The main characteristics of the participants can be found in Table 1. Briefly, 43.5% were ≥ 40 years old, 90.5% were born in one of the participating countries and with the exception of respondents from Belgium, Portugal and Slovenia the majority lived in very large (≥1 000 000 inhabitants) and large cities (100 000-999 999 inhabitants) (58.9% in total). The proportion of participants that reported having finished a university degree was of 46.6% and 77.7% reported being employed or self-employed.

Half of the participants (50.1%) reported having had sex only with men, and 27.2% kept their sex life with other men hidden or in total secrecy (ranging from 10.6% in Denmark or 14.4% in Belgium to 44.9% and 39.9% in Greece and Romania respectively) (Table 1).

Across all countries the proportion of participants reporting unprotected anal intercourse in the last 12 months (UAI) was above 60% with the exception of Greece (46.8%). Approximately 1 in 10 (8.8%) reported having received an STI diagnosis in the last 12 months (prevalence ranged from 7.4% in Germany or 7.5% in Romania to 12.1% in Portugal or 13.8% in Belgium) (Table 1).

Having never received an HIV test, was reported by 29.5% of respondents; MSM answering from Belgium (10.4%) and Denmark (17.7%) were the respondents with the lowest proportion of never testers whereas MSM answering from Romania were the ones with the highest (53.1%) (Table 1).

Knowledge, use and potential use of self-sampling kits

Of all respondents, 25.5% knew about the existence of self-sampling kits (percentages ranged from 18.8% in Spain to 47.2% in Belgium; Table 2). Past use was very low (1.1%) across all countries with the exception of Belgium where it was reported by 8.9% of the respondents.

Regarding potential use, 66.6% of all participants reported that they would have used a self-sampling kit if already available in the past (potential users). The highest percentage was seen in countries such as Romania (82.1%), Portugal (76.5%) and Slovenia (73.8%) whereas in the rest of the countries the proportions all laid within the 60–70 percent range. (Table 2).

After reading the characteristics of each sampling method, 78.6% of the potential users and those who reported not being sure about having used a self-sampling kit in the past if already available, reported that they would prefer to use a blood based kit (percentages ranged from 59.8% of MSM answering from Belgium to 81.9% and 82.3% of those answering from Portugal and Romania).

When we inquired about how participants would prefer to receive their test results, 70.8% preferred a non-face-to-face option and among them, 71.8% reported that they would still prefer a non-face-to-face option even if the result was reactive (Table 2). If we disaggregate the result communication methods, receiving them through an email was the most commonly reported option across all countries (29.4%) with the exception of Denmark where result reception via SMS was chosen as the preferred option (20.8%) and participants answering from Greece who preferred face-to-face consultation at a clinical setting (26.8%). The next most commonly reported option were the reception of the result at a clinical setting (21.5%), and receiving it through a secure website (19.8%).

Table 1 Main characteristics of MSM recruited online in 8 european countries by country of residence

	Belgium (*N* = 125) (%)	Denmark (*N* = 397) (%)	Germany (*N* = 1638) (%)	Greece (*N* = 795) (%)	Portugal (*N* = 755) (%)	Romania (*N* = 702) (%)	Slovenia (*N* = 242) (%)	Spain (*N* = 3572) (%)	Total (weighed) (*N* = 8226) (%)	*P*
Age										
<30	20.8	30.2	18.4	31.4	28.5	39.2	33.9	34.3	26.7	< 0.001
30–39	34.4	25.9	28.8	35.2	30.7	32.5	36.8	28.4	29.9	
40–49	20.8	26.4	27.8	21.0	23.4	19.5	20.2	23.6	24.7	
> 50	24.0	17.4	25.1	12.3	17.4	8.8	9.1	13.7	18.8	
Place of birth										
In country of current residence	77.0	86.4	90.8	97.1	89.1	98.0	92.1	88.8	90.5	< 0.001
Europe*	18.9	7.8	6.1	2.0	3.2	1.7	7.4	3.6	5.3	
Latinamerica	3.3	1.5	.9	.4	5.5	.0	.0	6.9	2.7	
Others	.8	4.3	2.2	.5	2.3	.3	.4	.8	1.5	
Number of inhabitants of place of residence										
≥ 1 000 000	9.6	32.3	22.1	47.0	17.6	23.2	1.7	32.2	25.2	< 0.001
100 000–999 999	32.0	31.6	32.7	20.6	31.4	40.8	44.6	35.5	33.7	
10 000–99 999	48.8	22.5	28.7	23.4	33.4	21.9	31.8	23.2	27.5	
< 10 000	9.6	13.6	16.5	9.1	17.6	14.2	21.9	9.1	13.6	
Education										
Up to upper secondary	29.6	47.7	42.3	20.2	38.2	35.3	26.1	30.3	36.3	< 0.001
Post secondary Non-tertiary	10.4	3.8	23.0	17.8	5.9	13.5	13.7	14.0	17.1	
University	60.0	48.5	34.7	62.0	56.0	51.1	60.2	55.7	46.6	
Source of income										
Employed	83.0	73.5	83.7	68.6	75.2	78.4	67.1	70.6	77.7	< 0.001
Unemployed	2.3	7.7	2.8	12.1	7.9	4.9	8.4	9.9	11.7	
Student	8.0	15.0	7.4	17.4	12.6	11.9	21.6	16.8	5.9	
Retired-long term leave	6.8	3.8	6.1	1.9	4.3	4.9	3.0	2.7	4.7	
Economic situation										
Comfortable/It is Ok	80.5	76.3	79.1	48.2	59.8	77.8	73.5	60.0	70.9	< 0.001
Tight	16.1	19.5	15.8	35.4	26.1	13.8	20.5	27.0	20.5	
Difficult/Very difficult	3.4	4.2	5.1	16.4	14.0	8.4	6.0	13.0	8.6	
Does not have any kind of insurance	1.1	.3	.7	.0	1.4	8.7	1.8	2.1	1.9	< 0.001
Sex of lifetime sex partners										
Mainly women/men and women equally	9.6	8.6	21.5	21.5	21.7	28.5	16.1	15.0	19.6	< 0.001
Mainly men	38.4	34.3	32.2	28.6	29.4	30.5	29.3	25.6	30.4	
Only men	52.0	57.2	46.3	49.9	48.9	41.0	54.5	59.4	50.1	
Lives sex life with other men										
Openly	45.6	70.3	43.0	14.5	16.3	10.4	28.6	39.3	36.1	< 0.001
Discreetly	40.0	19.1	28.4	40.6	52.5	49.7	49.0	41.4	36.7	
Hidden/In total secrecy	14.4	10.6	28.7	44.9	31.3	39.9	22.4	19.3	27.2	
Number of partners with unprotected anal intercourse (last 12 months)										
None	24.4	26.0	37.9	53.2	35.2	27.1	33.9	39.8	36.8	< 0.001
1	41.1	26.4	29.4	31.3	30.7	36.4	44.4	32.4	31.9	
2–4	22.2	26.4	20.9	10.8	25.1	24.7	17.5	18.7	20.6	
≥ 5	12.2	21.2	11.8	4.7	9.0	11.7	4.1	9.1	10.8	
Has payed or exchanged goods for sex (last 12 months)	11.2	6.2	6.2	9.3	5.1	9.0	4.1	7.6	7	< 0.001
Has received money or goods for sex (last 12 months)	15.6	4.9	5.1	2.5	2.3	5.3	3.5	5.6	5.6	< 0.001
History of STIs										
STI diagnosis (in last 12 months)	13.8	11.8	7.4	9.6	12.1	7.5	12.0	8.7	8.8	< 0.001
STI diagnosis (> 12 months ago)	40.2	36.8	27.1	20.7	24.0	15.4	16.8	26.5	26.3	
No STI diagnosis	46.0	51.4	65.5	69.7	63.9	77.1	71.3	64.8	64.9	
Testing history										
Never tested for HIV	10.4	17.7	27.4	31.5	24.4	53.1	24.4	28.9	29.5	< 0.001
Tested > 12 months ago	25.6	28.0	32.2	18.7	25.5	18.2	25.6	26.1	27.4	
Tested < 12 months ago	64.0	54.3	40.4	49.8	50.1	28.6	50.0	45.0	43.1	

*Includes countries from all regions of Europe.

Table 2 Knowledge, Use, Potential Use and preferred result communication method for self-sampling testing kits

	Belgium (*N* = 125) (%)	Denmark (*N* = 397) (%)	Germany (*N* = 1638) (%)	Greece (*N* = 795) (%)	Portugal (*N* = 755) (%)	Romania (*N* = 702) (%)	Slovenia (*N* = 242) (%)	Spain (*N* = 3572) (%)	Total (weighed) (*N* = 8226) (%)	*P*
Knows about the existence of self-sampling	47.2	23.2	27.4	23.2	23.0	24.6	29.7	18.8	25.5	<0.001
Has used a self-sampling kit in the past	8.9	0.5	0.7	0.3	1.3	1.3	0.4	0.4	1.1	<0.001
Would have used a self-sampling kit if available in their country										
Yes/probably yes	68.1	68.8	63.6	65.4	76.5	82.1	73.8	62.1	66.6	<0.001
Not sure	18.6	15.5	19.5	20.2	12.0	10.0	17.2	16.6	17.2	
No probably not	13.3	15.7	16.9	14.4	11.5	7.9	9.0	21.3	16.2	
Would prefer to use a blood based kit†	59.8	79.8	79.0	79.4	81.9	82.3	77.0	79.7	78.6	<0.001
Preferred option for result communication†										
Non-face-to-face options	79.6	74.4	66.5	59.1	79.9	69.9	79.4	76.2	70.8	<0.001
Email	32.0	19.8	25.6	22.4	40.0	27.8	26.0	36.7	29.4	
Secure web site	21.4	18.2	23.9	6.7	18.8	12.6	25.5	18.9	19.8	
SMS	18.4	20.8	10.4	15.9	18.3	21.0	21.1	14.8	14.5	
Telephone call	7.8	15.6	6.6	14.1	2.8	8.6	6.9	5.7	7.2	
Face-to-face options	18.4	24.7	30.2	39.8	19.6	28.0	19.1	22.2	26.9	
Clinical setting	16.5	16.6	23.4	26.8	12.1	25.2	12.3	19.9	21.5	
NGO/CBO center*	1.9	8.1	6.7	12.9	7.5	2.8	6.9	2.3	5.3	
OTHER	1.9	1.0	3.3	1.1	0.5	2.1	1.5	1.6	2.3	
Would still prefer non-face-to-face methods when receiving a reactive result††	69.9	78.3	74.1	66.1	72.3	75.4	70.4	67.4	71.8	<0.001

*NGO/CBO: non governmental organization/community based center.
†Question limited to participants who answered "yes/probably yes" or "not sure" to the question about having used a self-sampling kit if available.
††Question limited to those who preferred a non-face-to-face option to receive their test results.

Discussion

Even though knowledge about its existence is still relatively low and actual use is anecdotic; self-sampling presented a very high potential use and could constitute a valuable diagnostic option to promote HIV testing among MSM of eight European countries. Participants tend to prefer blood based sampling and non-face-to-face options to receive their results even in the case of receiving a positive result.

This is the first study that describes the percentage of MSM that know about the existence of self-sampling kits. Surprisingly -given the low media coverage received in comparison to self-testing- it is higher than the proportion of MSM that reported knowing about the existence of HIV self-testing in two recent studies conducted in Spain [11,12] and similar to one conducted in France [13].

The extremely low percentage of participants that had used a self-sampling kit in the past is an expected result given its unavailability in most countries. In this study, Belgium was the only country with a noticeable percentage of participants that reported past use. This could be explained by the fact that self-sampling kits have been offered in Belgium since 2012 through the internet and outreach activities [14].

The percentage of MSM who reported that they would have used a self-sampling kit for HIV in the past had it already been available is very similar to the one found in a Canadian study that assessed intention to use internet-based testing. However, their outcome measure not only included HIV but also other STIs [15]. The higher percentage of potential users who preferred blood-based kits (*vs*. oral based) could be due to the description of both methods that we included in the survey immediately before the question where we assessed this matter. Oral based sampling is less invasive, but when given the opportunity to make an informed decision (window period, sample taking, PPV) participants prefer blood based sampling [16]. Preference for non-face-to-face results has been described in qualitative research [8]. They can help to remove barriers and increase accessibility by saving time, increasing privacy or for convenience reasons [15,17]. But when testing is conducted outside clinical settings additional challenges arise such as confirmatory testing, sub-optimal linkage to care and negative reactions derived from receiving a positive result alone.

Given the online nature of this convenience sample, findings should not be generalised to all MSM, especially given the limited sample size of some countries. We cannot discard the possibility that a same individual

answered the survey more than one time; however, it is highly unlikely due to the lack of incentive of any type. Self-sampling and self-testing are two techniques that are sometimes confused [18]. There is the possibility that the main outcomes assessed in this study could be overestimated and participants that reported knowing about self-sampling were in fact referring to self-testing. However, this possibility is limited since the definition of self-sampling used in this study was included in the first screen of the section dedicated to its assessment.

The high potential use of HIV self-sampling underlines its capacity to stand as an additional testing option that could contribute to unearth undiagnosed infections and increase testing rates among undertested MSM. The preferences reported by potential users regarding result reception methods should be taken into account although we need to be cautious with the potential drawbacks of non-face-to-face methods for result communication by establishing clear pathways to assure confirmatory testing and linkage to care and by providing immediate support and information to those receiving a reactive result.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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