

# Factors associated with low levels of HIV testing among young men who have sex with men (MSM) participating in EMIS-2017 in Spain

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## ABSTRACT

**Purpose** The European Men who have sex with men Internet Survey looked over the characteristics and needs of men who have sex with men (MSM) across Europe. Our objective was to estimate the prevalence of HIV testing and its associated factors among MSM younger than 25 years old participating in the EMIS-2017 in Spain.

**Methods** Multivariable regression model was used to compare those who had been tested for HIV within the last 12 months and those that had not.

**Results** Of 2313 participants, 1070 (46.3%) had been tested for HIV in the past 12 months. Increased age (age 19–21 years, aOR=3.38 (95% CI 2.57 to 4.44); age 22–24 years, aOR=5.26 (4.06 to 6.92) compared with age 16–18 years); being migrant (Latin America: aOR=1.34 (0.98 to 1.84); Europe, North America and Mediterranean countries (aOR=1.56 (0.98 to 2.51) compared with those from Spain); living more openly with one's sexuality (out to some people (aOR=1.53 (1.19 to 1.96)); out to all or almost all people (aOR=2.24 (1.75 to 2.87) compared with those out to none or a few people); having had one condomless steady partners in the last year ((aOR=1.59 (1.26 to 2.02)); having had condomless non-steady partners in the last year (one: aOR=1.76 (1.35 to 2.29)); two or more partners: aOR=2.37 (1.84 to 3.04)); and having practised sex work in the past year (aOR=1.52 (1.07 to 2.13)) were associated with increased odds of HIV testing. Living in a smaller city was associated with less likelihood of HIV testing (<100 000 inhabitants: aOR=0.51 (95% CI 0.41 to 0.64); 100 000–500 000: aOR=0.68 (95% CI 0.54 to 0.86) compared with more than 500 000).

**Conclusion** Young MSM showed low HIV testing rate. Future programming specifically targeting this population, especially those middle adolescents, living in a medium-small city and having less 'outness', can help increase HIV testing and prevent access barriers.

## INTRODUCTION

In 2019, 24 801 new HIV cases were diagnosed in the countries of the European Union/Economic European Area (EU/EEA). Sex between men remains the most common mode of HIV transmission, accounting for 38.7% (9 598) of all new HIV diagnoses.<sup>1</sup> In Spain, 2698 new HIV diagnoses were notified in 2019, and of these, 56.6% were among men who have sex with men (MSM); the median age of new diagnoses was 36 (IQR: 28–45), and 12% of new diagnoses were made up of people

aged between 15 and 24 years.<sup>2</sup> Although new HIV diagnoses among MSM aged between 15 and 19 years old in Spain have stabilised, other studies, however, report increases in HIV prevalence among young MSM in the USA and other countries across every continent, so we must pay attention to any changes in the trend in young MSM.<sup>3</sup>

Young people living with HIV face particular barriers, and the intersectional stigma against young MSM who have HIV often challenges their access to resources and social support.<sup>4 5</sup> Jeffreis *et al*<sup>4</sup> showed young MSM were also less likely to be aware of their HIV infection, use antiretroviral therapy (ART) or be virally suppressed.

Testing and early detection of HIV are key steps in addressing and reducing the impact of the HIV epidemic.<sup>6</sup> Initiating ART early on is the most effective way to prevent a loss of quality of life and AIDS-related deaths<sup>7</sup> and also an important way to prevent further infections.<sup>8</sup> Late diagnoses contribute to the appearance of new HIV infections, seeing as those that do not know their serological status often have higher transmission rates.<sup>9 10</sup>

Because of this, testing is crucial as a pathway to treatment and as a prevention strategy. In settings such as Amsterdam, Scotland and Australia, young MSM have shown lower testing rates than other groups.<sup>11–13</sup> Knowing the sociodemographic, epidemiological, behavioural and other factors related to HIV testing is crucial for the control of HIV infection in this population group.

The European Men who have sex with men Internet Survey (EMIS) was first launched in 2010 in order to understand the characteristics and needs of MSM across Europe and beyond, including HIV status, risk behaviours, knowledge and access to resources, and it was repeated in 2017. An analysis of the EMIS-2010 results in Spain about HIV testing concluded that MSM younger than 25 years had a higher probability of not having been tested for HIV compared with those older than 40 years.<sup>14</sup>

In light of this, the objective of this study was to estimate the prevalence of HIV testing uptake as well as factors associated with testing among young MSM that participated in the EMIS-2017 in Spain.

## METHODS

### Study design and population

The EMIS-2017 was a multilanguage, internet-based, self-completion and a cross-sectional study carried out among MSM in 50 countries.

Participants were recruited through dating apps, Facebook, Twitter, Instagram and a variety of local online promotion, through website banners. Participants received no financial incentives. The survey was totally anonymous; no personal identifying information was collected.

In order to be included in the EMIS-2017 study, participants had to self-identify as men, reported having had sexual relations with other men and/or being attracted by men, indicated having understood the nature and purpose of the study and provided consent to participate in the study. People not of legal age for sexual consent in their country (in Spain, less than 16 years old) or that did not live in one of the 50 countries included in the survey were excluded from the study. For the purpose of this analysis, MSM between the ages of 16 and 24 years (both inclusive) (hereinafter 'under 25 years old') that participated in EMIS-2017 and that resided in Spain at the moment of the survey were included.

Data collection took place between October 2017 and January 2018. International and national EMIS-2017 protocols and methodologies have been previously published.<sup>15 16</sup>

### Questionnaire and variables of interest

The questionnaire was divided into five main sections: (1) demographics; (2) morbidities; (3) behaviour; (4) needs; and (5) interventions.<sup>16</sup> For this analysis, the outcome of interest was HIV testing history within the last 12 months. Other variables included in the analysis can be classified into three categories:

- ▶ Sociodemographic characteristics included age group (16–18; 19–21; and 22–24 years), inhabitants at place of residence (more than 500 000; 100 000 and 500 000; less than 100 000), region of birth (Spain; Latin America; other European, North American or Mediterranean country; other), employment status (employed; student; other (unemployed, long-term sick, whatever situation different from the prior ones)), sexual orientation (gay; bisexual; other) and outness (out to none or few people in their life; out to some; out to all or almost all).
- ▶ Sexual and risk behaviours included variables such as number of steady and non-steady partners for condomless anal sex, receiving or giving payment for sex, partnership status (HIV-negative partner, HIV-positive (any viral load), does not know) and HIV status of partner and the use of pre-exposure prophylaxis (PrEP), postexposure prophylaxis (PEP) and stimulant substances during sex (chemsex) in the past 12 months.
- ▶ The homonegativity and homophobic violence section included internalised homonegativity measured through the Short Internalized Homonegativity Scale (SIHS),<sup>17</sup> and experiences of intimidation, verbal insults or physical violence due to sexual orientation (never; more than 12 months ago; within the past 12 months). The SIHS was calculated by asking participants seven items related to their comfort with their own homosexuality and others' homosexuality. This scale was only displayed to a random sample of participants. Each item was scored on a scale of 0 (most comfortable) to 6 (least comfortable), and the average for each participant was calculated. An SIHS score above 1 (median value of the scale) was considered as indicating some level of internalised homonegativity.

Variables were selected according to prior study in Spain where HIV testing among MSM was evaluated.<sup>14</sup>

### Analysis

We conducted a comparative analysis between young MSM that had been tested for HIV within the last 12 months and those that had not. Those participants who had a positive HIV test previous the last 12 months were excluded of this analysis.

The prevalence of having an HIV test within the past 12 months was calculated according to the young MSM's characteristics. Multivariable logistic regression was used to calculate adjusted ORs and their 95% CIs to evaluate the association of young MSM's characteristics with having an HIV test within the past 12 months.

Predictive modelling was performed, and variables with a *p* value lower than 0.07 were retained in the multivariable model. The analysis was conducted using Stata 16.0.

### RESULTS

A total of 10 652 participants in the EMIS-2017 lived in Spain, and 2313 (21.7%) of them were younger than 25 years old. Their characteristics are shown in [table 1](#).

The median age of participants was 21 (IQR: 19–23). The majority of them were Spanish (85.1%), lived in settlements with less than 500 000 inhabitants (58.1%) and were students (73.2%). A total of 70.3% described their sexual orientation as gay, and 40.7% of respondents described that all or almost all of the people in their lives know their sexual orientation.

Concerning sexual risk behaviours for HIV in the last 12 months, 4.4% of participants reported condomless sexual intercourse with two or more steady partners and 20.9% with two or more non-steady partners. Around 2.2% reported having paid for sex and 8.9% received payment in exchange for sex. A total of 6.1% had practiced chemsex and 17.3% reported feeling dependent to alcohol.

Only 0.6% reported having used PrEP, although 42.1% said that they were very or quite likely to use PrEP if it were available and affordable. In respect to PEP, 2.3% had used it on at least one occasion.

### Internalised homonegativity and negative experiences due to sexual orientation

A random sample of 1143 participants younger than 25 years old was presented with these questions in order to evaluate an SIHS score. Of these, 420 (36.7%) scored a 1 or below, 515 (45.1%) scored more than one and 208 were unknown. Scores above a 1 indicate the presence of some internalised homonegativity.

Within the last 12 months, 53.0% had experienced intimidation due to their sexual orientation, 35.5% verbal insults and 4.6% physical violence ([table 2](#)).

### HIV testing and diagnoses

Among all young MSM participants, 37 (1.6%) had been diagnosed with HIV more than 12 months ago.

In the previous 12 months, 1070 (46.3%) had been tested for HIV, of which 16 (1.5%) had received a positive test result. Out of those that had never been tested for HIV (*n*=1206), 642 (53.2%) indicated that they did not know or were not sure where they could get tested.

### Factors associated with HIV testing

Factors associated with HIV testing in the previous 12 months are shown in [table 3](#).

Participants aged 19–21 and 22–24 years were more likely (*aOR*=3.38; 95% CI 2.57 to 4.44 and *aOR*=5.26; 4.00 to 6.92, respectively) to have been tested for HIV within the past 12

**Table 1** Sociodemographic characteristics of 2313 MSM younger than 25 participating in EMIS-2017 in Spain (created by the authors)

		N	%
Total		2313	100
Age (years)	16–18	498	21.5
	19–21	877	37.9
	22–24	938	40.6
	Unknown		
Settlement size	More than 500 000	950	41.1
	100 000–500 000	577	24.9
	Less than 100 000	769	33.2
	Unknown	17	0.7
Region of birth	Spain	1968	85.1
	Latin America	236	10.2
	Europe, North America, Mediterranean	101	4.4
	Other	5	0.2
	Unknown	3	0.1
Employment status	Employed	414	17.9
	Student	1692	73.2
	Other*	189	8.1
	Unknown	18	0.8
Sexual orientation	Gay	1626	70.3
	Bisexual	494	21.4
	Other	192	8.3
	Unknown	1	0.04
Outness (% of people that know they feel attracted to men)	None or few	552	23.9
	Some	796	34.4
	All or almost all	941	40.7
	Unknown	24	1.0
Condomless intercourse – number of <i>steady</i> partners in the past 12 months	None	1725	74.6
	One partner	449	19.4
	Two or more partners	102	4.4
	Unknown	37	1.6
Condomless intercourse – number of <i>non-steady</i> partners in the past 12 months	None	1432	61.9
	One partner	327	14.1
	Two or more partners	483	20.9
	Unknown	71	3.1
Gave payment for sex	Never	2104	91.0
	Yes, more than 12 months ago	33	1.4
	Yes, in the past 12 months	50	2.2
	Unknown	126	5.4
Received payment for sex	Never	1851	80.0
	Yes, more than 12 months ago	131	5.7
	Yes, in the past 12 months	207	8.9
	Unknown	124	5.4
Ever PEP use (only HIV negative, n=2260)	No	83	3.7
	Yes	53	2.3
	Unknown	2124	94.0
	Probability of PrEP use	Very or quite unlikely	584
Not sure		685	29.7
Quite or very likely		974	42.1
Unknown		70	3.0
Current PrEP use (only HIV negative, n=2260)	No	2226	98.5
	Yes	15	0.6
	Unknown	19	0.8

Continued

**Table 1** Continued

		N	%
Chemsex	Never	2116	91.5
	Yes, in the past 12 months	142	6.1
	Yes, more than 12 months ago	27	1.2
	Unknown	28	1.2
Alcohol dependency in last 12 months	Not alcohol dependent	1890	81.7
	Alcohol dependent	399	17.3
	Unknown	24	1.0

\*Other: unemployed, long-term sick, whatever situation different from the prior ones.

EMIS, European Men who have sex with men Internet Survey; MSM, men who have sex with men; PEP, postexposure prophylaxis; PrEP, pre-exposure prophylaxis.

months than those aged 16–18 years. In terms of settlement size, there were significantly lower testing rates among those living in settlements less than 100 000 (aOR=0.51; 95% CI 0.41 to 0.64) and between 100 000 and 500 000 (aOR=0.68; 95% CI 0.54 to 0.86) than among those living in places with more than 500 000 inhabitants.

Participants born in other countries different Spain were more likely to have been tested for HIV (aOR=1.34; 95% CI 0.98 to 1.84 for those from Latin America; aOR=1.56; 95% CI 0.98 to 2.51 for Europe, North America and Mediterranean countries) than among those from Spain.

Those that were out to some people in their lives (aOR=1.53; 95% CI 1.19 to 1.96) and those were out to all or almost all people in their lives (aOR=2.24; 95% CI 1.75 to 2.87) were more likely to have been tested than those that were out to none or few people in their lives.

Participants that reported having had condomless sexual intercourse with steady (aOR=1.59; 95% CI 1.26 to 2.02 and aOR=1.44; 95% CI 0.89 to 2.32; regarding one partner and two or more partner, respectively) and non-steady partner (aOR=1.76; 95% CI 1.35 to 2.29 and aOR=2.37; 95% CI 1.84 to 3.04; regarding one partner and two or more partner, respectively) in the previous 12 months reported higher testing rates

**Table 2** Experiences with homophobia and internalised homonegativity among MSM younger than 25 participating in EMIS-2017 in Spain (created by the authors)

		N (%)
Internalised homonegativity (SIHS score, >1=homonegativity) (n=1143)	1 or less	420 (36.7)
	Greater than 1	515 (45.1)
	Unknown	208 (18.2)
Experienced intimidation due to sexual orientation (n=2313)	Never	659 (28.5)
	More than 12 months ago	412 (17.8)
	In the last 12 months	1226 (53.0)
	Unknown	16 (0.7)
Experienced verbal insults due to sexual orientation (n=2313)	Never	708 (30.6)
	More than 12 months ago	763 (33.0)
	In the last 12 months	821 (35.5%)
	Unknown	21 (0.9)
Experienced physical violence due to sexual orientation (n=2313)	Never	1905 (82.4)
	More than 12 months ago	286 (12.4)
	In the last 12 months	105 (4.6)
	Unknown	17 (0.7%)

EMIS, European Men who have sex with men Internet Survey; MSM, men who have sex with men; SIHS, Short Internalized Homonegativity Scale.

**Table 3** Factors associated with HIV testing within the previous 12 months among MSM younger than 25 participating in EMIS-2017 in Spain (created by the authors)

	HIV testing within the past 12 months				
	Yes(n/N (%))	cOR (95% CI)	P value	aOR (95% CI)	P value
<b>Age (years)</b>					
16–18	102/498 (20.48)	Ref		Ref	
19–21	414/873 (47.42)	3.50 (2.71 to 4.52)	<0.001	3.38 (2.57 to 4.44)	<0.001
22–24	554/905 (61.22)	6.13 (4.75 to 7.91)	<0.001	5.26 (4.00 to 6.92)	<0.001
<b>Settlement size</b>					
More than 500 000	539/928 (58.08)	Ref		Ref	
100 000–500 000	254/567 (44.80)	0.59 (0.47 to 0.72)	<0.001	0.68 (0.54 to 0.86)	0.001
Less than 100 000	270/764 (35.34)	0.39 (0.32 to 0.48)	<0.001	0.51 (0.41 to 0.64)	<0.001
<b>Region of birth</b>					
Spain	870/1941 (44.82)	Ref		Ref	
Latin America	134/228 (58.77)	1.75 (1.33 to 2.32)	<0.001	1.34 (0.98 to 1.84)	0.066
Europe, North America, Mediterranean	60/99 (60.61)	1.89 (1.25 to 2.86)	0.002	1.56 (0.98 to 2.51)	0.064
Other	4/5 (80.00)	4.92 (0.55 to 44.13)	0.154	5.20 (0.55 to 49.04)	0.149
<b>Employment status</b>					
Employed	240/396 (60.61)	Ref			
Student	725/1678 (43.21)	0.49 (0.40 to 0.62)	<0.001		
Other	97/184 (52.72)	0.72 (0.51 to 1.03)	0.074		
<b>Sexual orientation</b>					
Gay	810/1593 (50.85)	Ref			
Bisexual	184/492 (37.40)	0.58 (0.47 to 0.71)	<0.001		
Other	75/190 (39.47)	0.63 (0.46 to 0.86)	0.003		
<b>Outness (% of people that know they feel attracted to men)</b>					
None or few	172/549 (31.33)	Ref		Ref	
Some	358/789 (45.37)	1.82 (1.45 to 2.29)	<0.001	1.53 (1.19 to 1.96)	0.001
All or almost all	531/914 (58.10)	3.04 (2.43 to 3.80)	<0.001	2.24 (1.75 to 2.87)	<0.001
<b>Condomless intercourse -number of steady partners in the past 12 months</b>					
None	716/1700 (42.12)	Ref		Ref	
One partner	271/438 (61.87)	2.23 (1.80 to 2.77)	<0.001	1.59 (1.26 to 2.02)	<0.001
Two or more partner	65/101 (64.36)	2.48 (1.63 to 3.77)	<0.001	1.44 (0.89 to 2.32)	0.133
<b>Condomless intercourse – number of non-steady partners in the past 12 months</b>					
None	545/1414 (38.54)	Ref		Ref	
One partner	178/323 (55.11)	1.96 (1.53 to 2.50)	<0.001	1.76 (1.35 to 2.29)	<0.001
Two or more partner	312/469 (66.52)	3.17 (2.54 to 3.95)	<0.001	2.37 (1.84 to 3.04)	<0.001
<b>Gave payment for sex</b>					
Never	1.010/2068 (48.84)	Ref			
Yes, more than 12 months ago	12/33 (36.36)	0.60 (0.30 to 1.22)	0.159		
Yes, in the past 12 months	26/49 (53.06)	1.19 (0.67 to 2.11)	0.541		
<b>Received payment for sex</b>					
Never	856/1829 (46.80)	Ref		Ref	
Yes, more than 12 months ago	74/124 (59.68)	1.68 (1.16 to 2.44)	0.006	1.06 (0.71 to 1.60)	0.764
Yes, in the past 12 months	119/199 (59.80)	1.69 (1.26 to 2.28)	0.001	1.52 (1.07 to 2.17)	0.019
<b>Stable partner</b>					
No or not sure	905/1976 (45.80)	Ref			
Yes	164/296 (55.41)	1.47 (1.15 to 1.88)	0.002		
<b>Number and gender of current steady partners (between those with steady partners)</b>					
One or more men	158/278 (56.83)	Ref			
Other	6/18 (33.33)	0.38 (0.14 to 1.04)	0.06		
<b>HIV-positive steady partner (between those with steady partners)</b>					
No, HIV-negative partner	148/251 (58.96)	Ref			
Yes (any viral load)	9/10 (90.00)	6.26 (0.78 to 50.20)	0.084		
Does not know	2/19 (10.53)	0.08 (0.02 to 0.36)	0.001		
<b>Chemsex use</b>					
Never	959/2089 (45.91)	Ref			
Yes, more than 12 months ago	17/132 (62.96)	2.00 (0.91 to 4.40)	0.083		

Continued

Table 3 Continued

	HIV testing within the past 12 months				
	Yes(n/N (%))	cOR (95% CI)	P value	aOR (95% CI)	P value
Yes, in the last 12 months	85/132 (64.39)	2.11 (1.46 to 3.05)	<0.001		
Internalised homonegativity (SIHS score, >1=homonegativity)					
One or less	227/414 (54.83)	Ref			
Greater than 1	221/505 (43.76)	0.64 (0.49 to 0.83)	0.001		
Experienced intimidation due to sexual orientation					
Never	270/649 (41.60)	Ref			
More than 12 months ago	218/405 (53.83)	1.64 (1.27 to 2.10)	<0.001		
In the last 12 months	576/1206 (47.76)	1.28 (1.06 to 1.56)	0.011		
Experienced verbal insults due to sexual orientation					
Never	297/700 (42.43)	Ref			
More than 12 months ago	382/748 (51.07)	1.42 (1.15 to 1.74)	0.001		
In the last 12 months	382/807 (47.34)	1.22 (0.99 to 1.50)	0.056		
Experienced physical violence due to sexual orientation					
Never	863/1875 (46.03)	Ref			
More than 12 months ago	147/280 (52.50)	1.30 (1.01 to 1.67)	0.043		
In the last 12 months	54/104 (51.92)	1.27 (0.85 to 1.88)	0.241		

EMIS, European Men who have sex with men Internet Survey; MSM, men who have sex with men.

than those that had had none steady or non-steady condomless partner. Those that reported having received payment for sex in the previous 12 months had higher testing rates (aOR=1.52; 95% CI 1.07 to 2.17) than those that had never received payment for sex or had done so more than 12 months ago.

Variables such as sexual orientation, internalised homonegativity and having experienced intimidation due to sexual orientation were found to be associated with HIV testing uptake in the bivariate analysis but did not reach statistical significance after adjusting for other variables in the multivariate model.

## DISCUSSION

Nearly half of the young MSM participating in the EMIS-2017 had been tested HIV within the last 12 months, a similar proportion as in other studies<sup>18–20</sup> and clearly fewer than the 79.2% reported by the overall participants in EMIS-2017 in Spain.<sup>21</sup>

Participants aged 22–24 years, those living in larger cities and those that were more 'out' in terms of their sexuality were more likely to have had an HIV test. The associations between HIV testing and age, as well as living in larger cities, were consistent with previous studies and may have been due to these factors allowing a greater involvement in MSM communities and exposure to sexual partners.<sup>22</sup> Living in an urban area may also facilitate access to prevention and testing services.<sup>23</sup> Other studies have found that the association between living in a metropolitan area and higher HIV testing can be explained by other variables, such as condomless intercourse with non-steady partners.<sup>19</sup> Regarding our results, this variable was also associated independently with having an HIV test. Some studies have found that identifying as gay, as compared with identifying as bisexual or any other sexual identity, was associated with a higher likelihood of HIV testing.<sup>24</sup> However, within our model sexual orientation was not found to be related to testing uptake once we adjusted for outness. Our hypothesis is that those participants who shown a higher sexual orientation disclosure (or outness) have less stigma and fear and more social and family support, so they could cope with any result of HIV test.

Participants from Latin America or Europe, North America and Mediterranean countries showed higher percentages of HIV testing than those from Spain. This reflected results from similar

studies, where those born outside of the country were more likely to be tested.<sup>19,25</sup> Migration for sexual orientation reasons is frequent in Spain due to there are laws against discrimination based on sexual orientation and an expanding LGBT collaborative networks. This subset of young migrant MSM may be more aware of the risk of HIV acquisition, showing an increasing probability of HIV testing than young Spanish MSM counterpart.

Our analysis showed an increased chance of having been tested for HIV if the participant had had condomless intercourse with steady and non-steady partners or had received payment for sex within the past 12 months. The relationship between these two risk behaviours and higher testing suggested that adolescents and other young MSM were aware of the risk introduced by these behaviours.

Although variables such as chemsex gave payment for sex and alcohol use were not significantly associated with HIV testing within our study in the multivariable model, it is important to consider that the young age of our sample made them particularly vulnerable to these risky behaviours. Almost 9% of participants had received payment for sex within the past 12 months. Meanwhile, 6.1% had practiced chemsex and 2.2% had given payment for sex within that time period.

These proportions were low but not negligible. These data suggested that very risky behaviours are beginning early in the life of these young MSM and could become maintained or heightened over time that might affect their ability to use protective behaviours (negotiate or use of condoms with their partners). Drug and alcohol use among adolescents in Spain has been identified as a prevalent issue before. Between 2018 and 2019, the average teen began drinking alcohol at 14 years old. An estimated 58.5% of youth aged 14–18 years consume alcohol, 19.3% cannabis, 6.1% hypnotosedatives and 2.4% cocaine.<sup>26</sup> Prior studies had not found consistent results on how practising chemsex affects HIV testing uptake, with some studies indicating that testing increases and others that it decreases.<sup>22,24</sup> Future studies looking to explore these practices, why they happen at high rates and their association with HIV testing should use specific sampling strategies to target these groups. Preventive programmes should target this age group and other young adolescents and could perhaps be integrated into the educational system.

The low HIV testing rate among young MSM makes it clear that further outreach focused on this group is needed. Within the past 12 months, 53.0% of respondents reported having experienced intimidation due to their sexual orientation, while 35.5% had experienced verbal insults and 4.6% physical violence. Given that there is a high degree of stigma and discrimination, testing facilities need to be places where adolescents are comfortable and do not feel stigmatised, since stigma may act as environmental barriers to testing access among adolescents.<sup>27</sup> This includes making all resources and testing facilities more MSM friendly. Other approaches to increase access to testing such as HIV self-test have been rolled among MSM.<sup>28,29</sup> However, this initiative seems to be more acceptable among older than young MSM.<sup>30</sup>

An important limitation to consider regarding this analysis is that the study used a convenience sample, and results may thus not be representative of all MSM in Spain. For example, men that do not use the apps or websites are not well represented within the sample, given that more than 70% of the sample was recruited using that method.<sup>21</sup> Although since the analysis is among young population, this bias is minimised. It is also important to consider that these data are cross-sectional and self-reported and thus may be affected by recall and desirability bias. However, the survey was self-administered that may have reduced social desirability bias in many instances. Similarly, the temporal relationship between variables cannot be fully established given the cross-sectional nature of the survey. In order to minimise the effect of this, all variables that had temporal information were analysed as whether a participant had experienced the event within the previous 12 months or not. The outcome of interest, HIV testing, was also measured in this way, giving our analysis a consistent time frame. The large sample size achieved allowed for this study to conduct a thorough analysis on subgroups and among participants recruited across Spain.

To our knowledge, no studies in Spain has assessed having HIV test among younger MSM. Increasing HIV testing among the youngest group of MSM is a key essential step to link them to prevention and care services and prevent future infections.<sup>7-10</sup> Understanding what factors are associated with higher and lower testing uptake can help inform outreach campaigns and counselling to achieve higher testing rates and reach the populations that are not receiving HIV testing. Tailoring testing outreach strategies to each target age group is critical, and research on what factors are driving testing rates among each group is needed in order to inform these programmes.<sup>18</sup> Informational campaigns should focus on environments where the youngest groups can be reached, for example, by integrating this information into sex education curricula at high school. Overall, more research is needed to fully understand the unique experiences and challenges of young MSM regarding to HIV testing and

HIV risk behaviours. Future programmes specifically target to this population from a combination prevention perspective and using a multilevel intervention strategy are crucial to increase HIV testing and address the factors and experiences that are preventing young MSM from reaching the resources they need. Where and how HIV test is performed may condition the decision to repeat it later. This is important for preventing risk behaviours and for promoting the overall sexual health among the youth.

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#### Key messages

- ▶ Less than half of young men who have sex with men (MSM) participating in the European Men who have sex with men Internet Survey (EMIS) 2017 in Spain had been tested for HIV, despite they reported risky behaviours for HIV acquisition.
- ▶ Identified demographic and behavioural determinants could help to improve HIV testing programmes on this group.
- ▶ EMIS-2017 has generated useful information to understand the practices and needs of the group of gay men, bisexuals and other MSM.

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