

The Gay Men Sex Studies: prevalence of sexual dysfunctions in Belgian HIV⁺ gay men

Johan Vansintejan
Joris Janssen
Erwin Van De Vijver
Jan Vandevoorde
Dirk Devroey

Department of Family Medicine,
Vrije Universiteit Brussel (VUB),
Brussels, Belgium

Abstract: The aim of this Internet-based survey was to investigate the prevalence and associated predictors of sexual dysfunctions in Belgian self-reported HIV-positive men who have sex with other men. Of the 72 participants, 56% had a mild-to-severe erectile dysfunction, and 15% reported a hypoactive sexual desire disorder. The prevalence of premature ejaculation and anodyspareunia was 18% for both. Independent predictors for erectile dysfunction were frequency of masturbation, frequency of sex with partner, use of erectile enhancement drugs, having a passive sex role, and not having a steady relationship. Independent predictors for hypoactive sexual desire disorder were frequency of masturbation and having a lower lifetime number of sexual partners. Independent predictors for premature ejaculation were not having a steady relationship, having a lower lifetime number of sexual partners, and a lower level of education. The only independent predictor for anodyspareunia was having an active sex role.

Keywords: homosexuality/male, sexual dysfunction, HIV, epidemiology

Introduction

Three decades into the AIDS era, the prevalence of HIV is still rising in Belgium.¹ HIV has become endemic in the group of men who have sex with men (MSM), and prevention efforts seem to be failing to reduce HIV incidence in this population.² In 2010, a total of 1196 new cases were recorded in Belgium, of which 376 had Belgian nationality.³ Homosexual contact was the way of transmission in 81% of the Belgian male population. The prevalence of sexual dysfunction (SD) in HIV-infected (HIV⁺) MSM was previously investigated in different cohort groups, ranging from 43% up to 79%.⁴⁻¹² Different study designs, diagnostic tools, and study periods can explain this large range. With the recently available combination therapy, the quality of life and the life expectancy of persons living with HIV are improving further.^{13,14} As age is an important predictor of SD, thorough insight in these topics is required.^{4,15} Homosexuality as well as being HIV⁺ are independent risk factors for having an SD.¹⁶ Since the introduction of highly active antiretroviral therapy, the proportion of HIV⁺ MSM with SD has increased.¹⁰ Platteau and van Lankveld suggested several explanations: a reintroduced and higher level of sexual activity in this group, a lower threshold for discussing sexual problems, a psychological inhibition towards sexual activity as HIV is a sexually transmitted disease (STD), and the possible influence of medication.¹⁶

To our knowledge, no research on SD in the Belgian HIV⁺ MSM population has been published yet. In 1999, one study examined the prevalence of erectile dysfunction (ED) in the general male population in Belgium. Regardless of sexual preference, it showed a prevalence of 61%.¹⁷ Less is known about the prevalence of pain during or

Correspondence: Johan Vansintejan
Department of Family Medicine,
Vrije Universiteit Brussel (VUB),
103 Laarbeeklaan, Brussels
B-1090, Belgium
Tel +32 2 477 4311
Fax +32 2 477 4301
Email johan.vansintejan@vub.ac.be

after having anal intercourse, also known as anodyspareunia (AD). One study found 14% prevalence in 404 MSM, with no significant difference between HIV⁺ and HIV⁻ persons.¹⁸ The prevalence of hypoactive sexual desire disorder (HSDD) in the general male population is estimated to be 15%, in contrast to 30% in the female population.¹⁹ Premature ejaculation (PE) has had more attention from researchers, and some studies show that it is more present in HIV⁺ MSM.²⁰ The prevalence of PE in the general (heterosexual and homosexual) male population is estimated to be around 30%, varying from 25% to 60% depending on the diagnostic tools used.¹⁹ However, a very recent study by McMahon et al of 4997 men showed a prevalence of only 16%.²¹

The present study aims to investigate the prevalence of SD in the Belgian HIV⁺ MSM population, as well as associations between patient characteristics and different subtypes of SD.

Methods

Participants

We used the data of the online Gay Men Sex Studies (GAMESSS).²² The subjects were recruited by the distribution of 25,000 flyers during various gay events across Belgium. Hyperlinks to the questionnaire were placed on multiple, mostly gay-orientated, Belgian websites. The registration period ran from April 2008 to December 2008. Participation in this study was completely anonymous and voluntary. The study population comprised Belgian MSM aged 18 years or older. Their sexual orientation was identified by using Kinsey's Heterosexual-Homosexual Rating Scale.²³ This paper discusses the results of the HIV⁺ subpopulation. HIV status was retrieved by a self-report question.

Questionnaire

The GAMESSS questionnaire was available in Dutch, French, and English. Several validated diagnostic tools were combined into one questionnaire consisting of 90 questions. The Index of Premature Ejaculation (IPE) was used to detect ejaculation problems.²⁴ This ten-item validated instrument had a Cronbach's alpha of 0.7. For the evaluation of ED, an abbreviated version of the International Index of Erectile Function (IIEF) was used, namely the IIEF-5.²⁵ These five questions, consisting of a 5-point Likert scale, had a Cronbach's alpha of 0.91. For evaluating pain during or after anal intercourse, no validated tests were available. We created an adapted version of the pain domain of the Female Sexual Function Index (FSFI), in which we substituted the word "vaginal" with "anal."^{26,27} These three questions each had

six Likert-type items. No validated test was available for evaluating HSDD in men. We overcame this shortcoming by using the desire domain of the FSFI. This 6-point Likert-scale questionnaire consisting of six questions is not gender-specific. The internal consistency of the SD domain of the FSFI was found to have a Cronbach's alpha of 0.92.

When available, a validated cutoff point was used to determine the absence or presence of an SD. An IIEF-5 score of less than 22 was used for the determination of ED. An FSFI desire domain score of less than 6 was used as the cutoff point for the presence of HSDD. To our knowledge, there have not been any validated cutoff points developed for the IPE or the pain-domain score of the FSFI. To estimate the prevalence of PE and AD, we used cutoff points at 50% and 66% of the total score, with a score of 50% corresponding with answers like "about half of the time" or "moderate level of discomfort," and a score of 66% corresponding with answers such as "high confidence" or "most times." We adopted this idea from the study of Ferguson et al, who encountered the same problem.²⁸ The choice of these definitions was not based on any statistical evidence, but it gave us a general sense of the prevalence and the influence of other variables on these SDs.

SD is a term covering a wide range of physiologic or psychological disturbances in normal sexual performance, affecting quality of life. This paper focused on four different SDs. First, ED: "defined as the consistent or recurrent inability of a man to attain and/or maintain penile erection sufficient for sexual activity."²⁹ Second, AD: persisting or recurrent pain with attempted or complete anal entry.¹⁸ Third, HSDD: persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity in men.³⁰ And last, PE: a combination of short ejaculatory latency, lack of control over ejaculation, and lack of sexual satisfaction.³¹

Statistical analysis

The following parameters were tested for their correlation with each specific SD: age, lifetime number of sexual partners, level of education, use of poppers (a slang term for various alkyl nitrites which are inhaled as an aphrodisiac), use of erectile enhancement products (EEPs), having a steady relationship, number of sex partners at the same time, frequency of masturbation, frequency of sex with partner, and sex role. First, we performed a bivariate regression analysis for every parameter, with every specific SD as the dependent variable. Secondly, every parameter that had a *P*-value < 0.15 was put in a multivariate stepwise logistic regression. Statistical significance was set at *P* < 0.05. Data were analyzed

using bivariate and multivariate logistic regression analyses (backward Wald). SPSS version 19 (IBM, Armonk, NY, USA) was used for all analysis.

Results

Participants

In total, 4006 persons started to answer the questionnaire. With a dropout of 39%, 2438 participants fully completed the questionnaire. The questionnaires that were not fully completed were excluded from the analyses. Of the 78 HIV⁺ MSM that completed the questionnaire, 72 had been sexually active at least once in the 4 weeks prior to the study. Sexual activity was defined as having any form of sexual activity with a partner of the same sex, like mutual masturbation, oral sex, and/or anal sex. The other six participants were excluded because they had not had sex with a partner in the last 4 weeks. The presented results are based only on these 72 subjects. Their characteristics are summarized in Table 1.

The participants had a mean age of 41 years (standard deviation 10 years, range 18–88 years). A steady sexual relationship was reported by 58% of the cohort, but a part of the cohort had also had sex with other men besides their boyfriend/husband. A total of 67% reported having had more than 100 different sexual partners in their life, with 28% of the total cohort having had more than ten sexual partners at the same time. With these results, we can say that MSM have more promiscuous sexual behavior.

Forty-two percent of our population masturbated daily, and 88% at least once a week. Poppers were used by 69%. The use of EEPs was reported by 33%. Sildenafil was used by 20% of the participants, and tadalafil and vardenafil were each used by 4% of the responders. A remarkable proportion of nearly 72% were using Kamagra, a brand of sildenafil citrate, illegal in Belgium.

The sample was limited to 72 participants. To estimate the presence of an SD, we calculated the number of responders who scored 50% or less of the total possible score and the number of responders who scored 66% or less of the total score. When using the most severe cutoff points for PE and AD (66% of the total score), 61% of the participants had an SD. When using less severe cutoff points (50% of the total score), 68% of the participants had an SD.

Erectile dysfunction

Forty of the 72 participants had an IIEF-5 score less than 22. This means that 56% of our participants had at least a mild form of ED. After multivariate analysis, a significant correlation was seen between ED and frequency of masturbation,

Table 1 Characteristics of the study population (n = 72)

Age	
<30 years	18.1%
30–39 years	30.6%
40–49 years	33.3%
>50 years	18.1%
Highest level of education	
Primary school	2.8%
Secondary school	43.0%
Higher education	38.9%
University	23.5%
Lifetime number of sexual partners	
11 to 50	15.3%
51–100	18.1%
101–500	30.6%
>500	36.1%
Number of sexual partners at the same time	
2	11.1%
3	5.6%
4 or 5	37.5%
6 to 10	18.1%
>10	27.8%
Steady relationship	
Yes	58.3%
No	41.7%
Frequency of masturbation	
>1 time per day	11.1%
Daily	30.6%
1–3 times per week	45.8%
1–3 times per month	8.3%
<1 time per month	4.2%
Frequency of sex with a partner	
Daily	5.6%
>2 times per week	19.4%
1–2 times per week	47.2%
1–3 times per month	20.8%
<1 time per month	6.9%
Sex role	
Exclusive active	2.8%
Versatile	91.7%
Exclusive passive	5.6%
Use of erectile enhancement products	
Yes	33.3%
No	66.7%
Use of poppers	
Yes	69.4%
No	30.6%

frequency of sex with partner, use of EEPs, having a more passive sex role, and not having a steady relationship (Table 2).

Anodyspareunia

Five participants that had had no anal sex in the last 4 weeks were excluded for the analyses on AD. The prevalence of AD in the remaining 67 participants was 3% and 18%, using as cutoff points, respectively, an FSFI pain score less than

Table 2 Logistic regression for ED in a group of 72 Belgian HIV+ MSM

	Bivariate analysis (95% CI)			Multivariate analysis* (95% CI)		
	Odds ratio	95% CI	P	Odds ratio	95% CI	P
Comparison of subjects with or without ED (IIEF-5 < 22)						
Age (years)	1.04	1.00–1.04	0.07			
Frequency of masturbation	2.36	1.28–4.36	0.01	3.2	1.39–7.37	0.01
Frequency of sex with partner	1.88	1.08–3.27	0.03	2.44	1.09–5.47	0.03
No steady relationship	2.83	1.05–7.6	0.04	5.95	1.41–25.19	0.02
More passive sex role	2	1.08–3.7	0.03	2.74	1.18–6.39	0.02
Use of erectile enhancement drugs	4.89	1.57–15.25	0.01	12.87	2.54–65.37	<0.001
Use of poppers	3.11	1.10–8.83	0.03			

Note: *In the multivariate analysis, both forward and backward stepwise logistic regression analysis was performed, with identical results.

Abbreviations: ED, erectile dysfunction; MSM, men who have sex with men; IIEF-5, International Index of Erectile Function 5; CI, confidence interval.

50% or 66%. After multivariate regression, a significant correlation was seen between AD and having a more active sex role (Table 3).

Hypoactive sexual desire disorder

In our study, 15% of the participants reported an HSDD. After multivariate analysis, a significant association was seen between HSDD and frequency of masturbation and having a lower lifetime number of sexual partners (Table 4).

Premature ejaculation

The prevalence of PE was 4% and 18% for IPE scores less than 50% or 66% of the total score, respectively. With the cutoff point at 50%, no significant correlations were found after bivariate logistic regression. With the cutoff point set at 66%, a significant correlation was seen, after multivariate regression, between PE and not having a steady relationship, having a lower lifetime number of sexual partners, and a lower level of education (Table 5).

Discussion

To our knowledge, this was the first study conducted in Belgium that focused on SD in HIV+ MSM. Although the study population was relatively small, it may give us

an overview of some aspects of the sexual health in this population. The study group was not collected through an HIV center but through an Internet survey, which can explain the low number of HIV+ participants. The survey was not presented solely to specific HIV+ MSM groups in Belgium.

Erectile dysfunction

The most prevalent SD was ED, with 56%. This is more than the 45% found in the non-HIV+ cohort of our survey, and far more than the 21% in HIV+ MSM recently reported by Hart et al (ED defined as IIEF-MSM-EF < 17).³² Our results are remarkably lower than the 74% prevalence (ED defined as an IIEF-5 < 22) reported by Ende et al in a population of 118 HIV+ MSM.³³ We found in the non-HIV+ study group significant associations between ED and age, having a steady relationship, frequency of sex with their partner, and a more passive sex role. This corresponds partly with the findings of the present study. Another recent, Internet-based survey done by Shindel et al focused on ED and PE in MSM.²⁰ This study covered HIV+ as well as non-HIV+ MSM, also showing a significant association between seropositivity and ED. As in our study, they found significant associations between ED (defined by an IIEF-MSM-EF score ≤ 15) and not being in a steady

Table 3 Logistic regression for AD in a group of 72 Belgian HIV+ MSM

	Bivariate analysis (95% CI)			Multivariate analysis* (95% CI)		
	Odds ratio	95% CI	P	Odds ratio	95% CI	P
Comparison of subjects with or without AD (FSFI pain ≤ 10)						
Higher level of education	0.58	0.41–1.12	0.13			
Sum of lifetime sex partners	0.63	0.35–1.12	0.12			
Frequency of sex with partner	1.86	0.93–3.27	0.08			
More passive sex role	0.42	0.20–0.91	0.03	0.4	0.18–0.87	0.02
Comparison of subjects with or without AD (FSFI pain ≤ 7)						
More passive sex role	0.07	0.01–0.78	0.03	0.07	0.01–0.78	0.03

Note: *In the multivariate analysis, both forward and backward stepwise logistic regression analysis was performed, with identical results.

Abbreviations: AD, anodyspareunia; MSM, men who have sex with men; FSFI, Female Sexual Function Index; CI, confidence interval.

Table 4 Logistic regression for HSDD in a group of 72 Belgian HIV⁺ MSM

	Bivariate analysis (95% CI)			Multivariate analysis* (95% CI)		
	Odds ratio	95% CI	P	Odds ratio	95% CI	P
Comparison of subjects with or without HSDD (FSFI desire < 6)						
Sum of lifetime sex partners	0.55	0.30–1.00	0.05	0.46	0.24–0.89	0.02
Frequency of masturbation	2.11	1.02–4.35	0.04	2.44	1.07–5.60	0.04
More passive sex role	2.14	05/14/89	0.09			
Frequency of sex with partner	1.75	0.86–3.56	0.12			
No steady relationship	2.89	0.76–10.97	0.12			

Note: *In the multivariate analysis, both forward and backward stepwise logistic regression analysis was performed, with identical results.

Abbreviations: HSDD, hypoactive sexual desire disorder; MSM, men who have sex with men; FSFI, Female Sexual Function Index; CI, confidence interval.

relationship, use of EEPs, and having a more exclusively passive sex role.²⁰

Shindel et al did a separate multivariate analysis for PE (defined by Premature Ejaculation Diagnostic Tool [PEDT] score ≥ 9), which confirmed our findings that a lower lifetime number of sexual partners is associated with PE.²⁰ They found significant associations between ED as well as PE and age that could not be confirmed in our research. Frequency of masturbation, level of education, and frequency of sex with partner was not included in their survey. A comprehensive review on the prevalence of PE concluded that PE is very common, with an approximate prevalence of 30% worldwide throughout all age-groups.³¹ Montorsi emphasized the difficulties in determining PE, especially in MSM, where the diagnosis cannot be based upon intravaginal ejaculatory latency.³¹ Although our definition of PE, using invalidated cutoff points of the IPE, is arbitrary, we do believe that our results regarding associated factors of PE are valuable. We found a significant association between lower level of education and PE, which was contradicted by the results from other studies.^{34,35} All these studies were done in specific subject groups. This makes it even harder for us to draw solid conclusions.

Anodyspareunia

We think AD gets far too little attention. When we performed a search for anodyspareunia on the PubMed database, only three articles were shown (January 28, 2013) and no Medical

Subject Heading (MeSH) term for anodyspareunia exists. For dyspareunia, a MeSH term exists, but only five papers refer to this term. One recent study of 404 MSM found a prevalence of 14%.¹⁸ This is in line with our findings. Furthermore, they concluded that the pain perceived during insertional anal sex is primarily based upon psychological factors (57%), followed by penis size (40%), and not enough finger–anus foreplay (26%). They did not find any significant difference between HIV⁻ and HIV⁺ MSM. They also found a significant relation between the use of poppers and AD, which was not confirmed in our study. In the non-HIV⁺ population of the GAMESSS survey, one-third did not practice anal intercourse, and 59% indicated having some degree of AD, varying from 33% having a mild form to 2% suffering from severe AD. The only independent predictor for AD in our study was a more active sex role. This can be explained by the finding of Damon et al that 49% of men with AD coped with it by restricting their behavior to an active sex role.¹⁸

Hypoactive sexual desire disorder

In our study, a higher frequency of masturbation and lower lifetime number of sexual partners were associated with HSDD. Knowing being HIV⁺ may lead to avoidance of sexual intercourse with a partner and limitation to masturbation only. This may support the findings of a small study in which men with HSDD were found to masturbate significantly more often than the control groups.³⁶ The 15% prevalence of HSDD does not show any difference from the prevalence

Table 5 Logistic regression for PE in a group of 72 Belgian HIV⁺ MSM

	Bivariate analysis (95% CI)			Multivariate analysis* (95% CI)		
	Odds ratio	95% CI	P	Odds ratio	95% CI	P
Comparison of subjects with or without PE (IPE ≤ 33)						
Higher level of education	0.58	0.35–0.99	0.05	0.4	0.20–0.81	0.01
Sum of lifetime sex partners	0.51	0.29–0.91	0.02	0.32	0.15–0.68	<0.001
No steady relationship	2.69	0.78–9.26	0.12	5.42	1.17–25.18	0.03

Note: *In the multivariate analysis, both forward and backward stepwise logistic regression analysis was performed, with identical results.

Abbreviations: PE, premature ejaculation; MSM, men who have sex with men; IPE, Index of Premature Ejaculation; CI, confidence interval.

in the general male population, reported to be 15%.¹⁹ This can be surprising, as it has been reported that in 89% of men, decrease or loss of libido is seen after beginning HIV treatment.⁷ Yet our study does not include any information regarding HIV treatment. In previous reports, an association was seen between age and sexual problems.^{20,37} None of our multivariate models could confirm this.

Erectile enhancement products

This study gave also an interesting view on the sexual behaviors of Belgian HIV⁺ MSM. One-third reported using an EEP in the last 4 weeks. The majority used the illegal drug Kamagra. Fisher et al showed associations between being MSM, the knowledge of HIV⁺ status, and the use of sildenafil citrate.³⁸ This may be confirmed by the findings of Schnetzler et al. They showed that only 11% of the general male population reported phosphodiesterase type 5 inhibitor (PDE5i) intake in the last 6 months, with a proportion of 32% getting this without having a prescription.³⁹ They also showed that being embarrassed to talk to a physician was a strong predictive factor for doing so. If these results could be extrapolated to HIV⁺ MSM, we think that there is still a long way to go for physicians in actively addressing these problems with their patients and offering evidence-based treatment. Fisher et al pointed out the place PDE5i is taking in the world of recreational drugs and the accompanying sexual risks that go with it.³⁸ Men who received their ED drugs without prescription reported having more risky sexual behavior.^{40,41}

Study limitations

The study population was limited to 72 participants. This sample can probably not be generalized. Our study group had a high amount of sexual partners. Two out of three stated that they had had more than 100 sexual partners. This surpasses the findings of Shindel et al, who reported that 25% of their MSM had more than 100 sexual partners.²⁰ Furthermore, 83% of our participants had had more than three sexual partners at the same time.

With the Internet-based survey having been drawn up in 2008, some of the instruments used are now dated. This is partly true for the IIEF-5, which could now be replaced by an MSM- and HIV⁺-specific tool developed by Coyne et al in 2010.⁴² For the evaluation of PE, nowadays we would choose the PEDT, which is more widely used and has validated cutoff points.⁴³ DeRogatis et al showed that a brief structured interview, done by a clinician, is an appropriate way to identify men with HSDD.⁴⁴ In diagnosing AD, still

no widely used validated tools are at hand. For their research on AD, Damon and Rosser used two different sets of criteria to assess AD: clinical criteria based upon *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition criteria for female dyspareunia and behavioral criteria consisting of two Likert scales.¹⁸

Because older people have less access to and usage of the Internet, older MSM are likely to be underrepresented. A great benefit of e-research is that the interview happens anonymously, so respondents will be more likely to answer in all openness to more sensitive questions. Not knowing who is actually responding may be a weakness in our survey.

Conclusion

This is the first published study focusing on SD in Belgian HIV⁺ MSM. We saw a 56% prevalence of ED, making it the most prevalent SD among HIV⁺ MSM. For every SD included in this survey, we found at least one independent predictor. A worrisome percentage of 24% were using illegal PDE5is without prescription. We hope that this study can encourage other researchers in their exploration of the world of SDs in HIV⁺ MSM.

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Disclosure

Johan Vansintejan reports that he serves as a consultant to Boehringer Ingelheim, Menarini Belgium, and Eli Lilly. He has no stock or ownership to report. None of the other authors has a conflict of interest, including ownership of shares, consultancy, speaker's honoraria, or research grants from commercial companies or professional or governmental organizations with an interest in the topic of the paper.

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