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The GAy MEn Sex StudieS: Anodyspareunia Among Belgian Gay Men

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ABSTRACT

Introduction. Anal intercourse is commonly associated with male homosexuality, but not all gay males engage in anal sex. Receptive anal intercourse can cause pain. Little is known about this sexual dysfunction.
Aim. This study aims to determine the 4-week incidence of anodyspareunia (AD) in a sample of Belgian men who have sex with men (MSM) population and to assess the relevance of possible predictors such as age, relationship, and sexual behavior.
Methods. An internet-based survey on sexual behavior and sexual dysfunctions, called GAy MEn Sex StudieS, was administered to the MSM aged 18 years or older, between April and December 2008. A part of the questionnaire was focusing on anal eroticism. The participants, who self-reported being human immunodeficiency virus-positive or not having anal intercourse, were excluded.
Main Outcome Measure. Female Sexual Function Index questions on pain domain adapted for anal intercourse.
Results. A total of 1,752 Belgian MSM completed the questionnaire. Of the 1,190 (68%) participants who reported engaging in receptive anal sex in the last 4 weeks, 59% indicated having some degree of anal pain during and after sexual intercourse. For 44%, the level of pain was acceptable. Mild AD was reported by 32%, 17% had mild to moderate AD, 4% had moderate AD, and 2% had severe AD. Independent predictors for the presence of AD were age, having a steady relationship, frequency of sex with their partner, number of sex partners, number of sex partners at the same time, and massaging the anal sphincter before anal sex. The prevalence and severity of AD among the MSM were lower among older participants, the MSM who more frequently had sex with their partner, and participants with a higher number of sex partners. Inadequate lubrication and lack of oral or digitoproctic stimulation prior to penetration were the most important factors predicting pain. Unsafe anal sex was performed by 28%.
Conclusion. One-third of the participants reported not engaging in receptive nor penetrative anal sex. The 59% of participating Belgian MSM, who had anal receptive intercourse, reported some degree of AD. These findings highlight the need for more education about anal eroticism for MSM, and more research into AD is needed.
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Key Words. Homosexuality; Sexual Behavior; Sexual Dysfunction; Pain; Anodyspareunia

Introduction

Although anal intercourse has been linked to homosexuality in historical and biographical literature for centuries, medical research on this topic is relatively rare. Stereotypically, many people consider anal stimulation as being a male homosexual act, but it is known that anal sex is a common sexual behavior regardless of one s sexual preference. Many men who have sex with men

(MSM) do not engage in anal sex, whereas heterosexual couples often do [1]. However, in the last 30 years, there have been literally thousands of studies of anal intercourse in the MSM, almost all focused on human immunodeficiency virus (HIV) and assessments of condom use. The quality of these studies is very mixed. However, there is a substantial scientific literature of good quality including cohort studies examining changes over time (e.g., the Multicenter AIDS Cohort studies) [2]. In 1994, Laumann et al. estimated that 80.0% of gay men practiced anal intercourse, and 20.0% never engaged in it at all [3]. That same year, a survey in *The Advocate* reported that 46.0% of gay men preferred to be top and penetrate their partners, whereas 43.0% preferred to be the receptive partner [1]. Another (longitudinal) survey conducted in San Francisco by the Stop AIDS Project reported an increase from 57.6% in 1994 to 61.2% in 1997 of the MSM engaging in anal sex over the course of the study. At the same time, there was a decline in the use of condoms during anal intercourse from 69.6% in 1994 to 60.8% in 1997 [4,5].

A decade ago, about one-third of the heterosexual couples in Britain occasionally had anal sex, whereas about 10.0% mentioned it being a preferred or regular method. To two-thirds of British gay men, anal sex was a regular part of their sexual experience besides mutual masturbation and oral sex. This means that, in absolute numbers, there were more heterosexuals having anal sex than there were MSM [1,6]. Anal sex is becoming increasingly prevalent in heterosexual relationships [7].

The health risks of anal sex appear to be severely underestimated by a big proportion of sexually active women and men in Africa, South Asia, North and Latin America [8]. Halperin reported rates of condom use by heterosexuals to be lower for anal sex than for vaginal intercourse [8].

Among the MSM, the insertive partner is called the top or active partner, whereas the one being penetrated is termed the bottom or passive partner. The MSM who enjoy either role being active and passive are referred to as versatile. The bottoms and versatiles describe their orgasms, obtained by rubbing their partner s penis against their prostate through the anal wall during anal intercourse, as "deeper," more intense, and longer-lasting than orgasms obtained by stimulating their own penis by masturbation. Some men experience pain during or after receptive anal intercourse. This is formally known as anodyspareunia (AD) [9]. Although pain related to receptive anal intercourse is not uncommon, little is known about this sexual dysfunction. When performing a search for "AD" in the PubMed database (National Center for Biotechnology Information, Bethesda, MD, USA), only three articles are shown (2/02/2013), and no medical subject heading term for AD exists.

Damon and Rosser reported that "based on the limited studies to date, it appears that painful receptive anal sex is a problem for a significant proportion of MSM." In their sample of 404 MSM, 14.0% experienced AD [10]. Another study that examined pain during insertive and receptive anal sex in gay men found that 3.0% of tops and 16.0% of bottoms reported significant pain [11].

The objective of our study was to determine the prevalence and severity of AD in a sample of the Belgian MSM population, without HIV infection. In addition, we evaluated the influence of patient characteristics (such as age, relationship, and education) on the presence of AD. We hypothesized that these characteristics would be of similar influence on AD within the MSM population as within the heterosexual population.

Methods

Participants

The participants were recruited by references to the "GAy MEn Sex StudieS" (GAMESSS) website (http://www.gamesss.be) through various media. Links to the survey were posted on the websites of most gay organizations and a number of commercial gay-oriented websites [12]. In addition, 25,000 flyers, to which a condom had been attached, were handed out during various gay events across Belgium. The participants of the study did not receive any other monetary incentive. The only incentive used to stimulate the participants to complete the study was photographs of naked men on the different pages of the questionnaire website. The registration period ran from April until December 2008.

Women, men under the age of 18, as well as men who reported only sex with women were excluded. To exclude heterosexuals, we used the Kinsey Heterosexual–Homosexual Rating Scale [13]. We restricted our population to a sample of the MSM in Belgium. Participants from outside Belgium and men who self-reported being HIV+ were excluded. We excluded HIV-positive men because some studies [14–16] have found an association between HIV infection and sexual dysfunctions. HIV-positive status and homosexuality make people more vulnerable for the development of sexual dysfunctions [15]. The use of antiviral

therapy for HIV infection has also a negative influence on the quality of erection. Thereupon, psychological issues such as depression, performance anxiety, or fear of infecting others may cause erectile dysfunction [14]. We believe that sexual dysfunctions among HIV-positive men might be related more to their HIV status than to their sexual orientation. For that reason, HIV-positive men were excluded.

Participation in this survey was voluntary and anonymous. The privacy of the participants was guaranteed. The data of this study were entered in an online registration system by the participants themselves. No personal data from the computer of the registered participants were recorded. Names and e-mails of participants were not asked for. The IP address of the participants was stored in a separate data file after encryption and anonymization. This made it possible to limit the maximum of responses per computer to four. Participants were able to use the same computer, but we assumed that when more than four registrations were made with the same computer, these might be duplicate responses.

The databases are stored on a central secure server at the Faculty of Medicine and Pharmacy of the Vrije Universiteit Brussel in a MySQL database (Oracle Corporation, Redwood City, CA, USA). The data can only be consulted through a secure web age with an Apache security login and password.

Questionnaire

The online GAMESSS questionnaire was available in three languages: Dutch, French, and English [12]. Several different validated diagnostic tools were combined into one questionnaire consisting of 90 questions. The Kinsey s Heterosexual–Homosexual Rating Scale was used to determine if the participants identify themselves as heterosexual, bisexual, or homosexual [13]. The index of premature ejaculation could detect problems of ejaculation [17]. For the detection of erectile dysfunction, the Erection Quality Scale [18] and the International Index of Erectile Function [19] were used. The Female Sexual Function Index (FSFI) evaluated the possibility of having pain during sexual activity [20]. The Brief (male) Sexual Function Inventory is a brief and discrete screening instrument for assessing sexual function and sexual satisfaction [21]. Mostly the questions refer to a time frame of the last 4 weeks. Unfortunately, no validated tests to evaluate pain during or after anal intercourse were available. We therefore created an adapted version of the pain domain of the FSFI in which we substituted the word "vaginal" with "anal" [20,22]. This resulted in three questions, each having six Likert-type items as shown in Figure 1. The internal consistency of the standard deviation (SD) domain of the FSFI was found to have a Cronbach s alpha of 0.92. The sum of these three questions was multiplied by factor 0.4. The possible scores ranged from 0 to 6, and AD was classified into six categories based on the cutoff scores: no AD (<1.2), mild (1.2–2.4), mild to moderate (2.5–3.6), moderate (3.7–4.8), and severe (4.9–6).

We also added questions concerning the used foreplay to anal intercourse, using lubricants, poppers (a slang term for various alkyl nitrites inhaled for recreational or sexual purposes to relax the anal sphincter), or massage of the anal sphincter.

Statistical Analysis

Overall and age-specific prevalence estimates were calculated. Both bivariate and multivariate stepwise logistic regression analyses were performed, with AD as the dependent variable. The following independent parameters were examined: age, level of education, number of sex partners (present and/or past), number of sex partners at the same time, age of first sexual experience with a same-sex partner, frequency of sex with their partner, having a steady relationship, massage of the anal sphincter prior to anal sex, and the use of poppers, condom, and lubricant.

We first performed a bivariate regression analysis for every parameter, with AD as the dependent variable. Secondly, every parameter that had a $P < 0.15$ was entered in a multivariate stepwise logistic regression. Statistical significance was set at $P < 0.05$. Data cleaning and data analyses for this study were performed using IBM SPSS Statistics 19.0.0 (SPPS Inc., Chicago, IL, USA) and Microsoft Excel (Microsoft Corporation, Redmond, WA, USA).

Results

Participants

A total of 1,752 Belgian men (mean age 35 years ± 12 SD), who self-identified as MSM, completed the whole questionnaire. We selected 1,190 participants (68.0%) who indicated to have anal intercourse. Table 1 shows the characteristics of the study population. The majority of our study population (66.5%) had a higher educational level. Sixty percent (n = 714) were in a steady

This part of the questionnaire is designed to find out your experiences with anal intercourse. The questions are limited in time to the period of the past 4 weeks. We ask you to answer if you have had at least once anal intercourse the past 4 weeks. For each question you choose the answer which best describes your experience.

Over the past 4 weeks, how often did you experience discomfort or pain "during" anal penetration/anal intercourse?

1 Did not attempt anal intercourse
2 Almost always or always
3 Most times (more than half the time)
4 Sometimes (about half the time)
5 A few times (less than half the time)
6 Almost never or never

Over the past 4 weeks, how often did you experience discomfort or pain "following" anal penetration/anal intercourse?

1 Did not attempt anal intercourse
2 Almost always or always
3 Most times (more than half the time)
4 Sometimes (about half the time)
5 A few times (less than half the time)
6 Almost never or never

Over the past 4 weeks, how would you rate your level (degree) of discomfort or pain during or following anal penetration/anal intercourse?

1 Did not attempt anal intercourse
2 Very high
3 High
4 Moderate
5 Low
6 Very low or none at all

Figure 1 Adapted Female Sexual Function Index (FSFI) questions on pain domain for anal intercourse.

relationship, with 375 of them (31.5% of the total study population) having an exclusive, monogamous relationship, and 339 (28.5% of the total study population) reported having a nonexclusive "open" relationship with a male partner. The latter also reported having sex with other men besides their partner. Forty percent (n = 476) were not in a relationship. Of the MSM engaging in anal sex, 86.6% had a versatile sex role, meaning they enjoy being active/penetrative as well as being passive/receptive during sexual intercourse.

The mean frequency of sexual intercourse among Belgian MSM in our study population is 118 times annually. A majority of 72.8% had sexual intercourse with a man "at least" once a week. More than one-third of the responders declare to have had more than 50 sex partners in their lifetime. One in four MSM indicates having had sex with more than 100 men in their lifetime. The MSM are not only very frequently sexually very active, but they also have a high number of sex partners at the same time; 52% indicates having had orgies involving three or more persons at the same time.

Table 2 shows some specific characteristics of the anal sexual practice. One-third uses poppers to facilitate the penetration. In our study population, 42.0% always uses a condom during anal intercourse, and 28.0% prefers barebacking without using a condom. Lubricant is used by 62.4%, whereas 6.0% never uses it. Massage of the anal sphincter before having anal intercourse is done by 79.3%. Digitoproctic stimulation is performed by 54.3%, and anolingus or rimming is done by 21.6%. One in five MSM never have foreplay before anal penetration.

Prevalence of Anal Dyspareunia

One-third of our total study population never had anal intercourse. Of the remaining 1,190 participants who engage in anal sex, 59.0% reported some degree of anal pain during and after sexual intercourse. Mild AD was reported by 33.0% of the participants, 17.0% had mild to moderate AD, 4.0% had moderate AD, and 2.0% had severe AD.

Logistic Regression Analysis

Table 3 shows the results of bivariate and multivariate logistic regression analyses to identify independent predisposing factors for developing AD, with AD as the dependent variable. When comparing subjects with or without AD, the bivariate analysis showed that the odds of having AD were influenced by the variables age, having a steady

Table 1 Characteristics of the study population (n = 1,190)

	n	(%)
Age groups		
<29 years	491	41.3
30–39 years	366	30.8
40–49 years	210	17.6
50–59 years	103	8.7
>60 years	20	1.7
Highest level of education		
Primary school	19	1.6
Lower secondary school	52	4.4
Higher secondary school	309	26.0
Higher education short course	286	24.0
Higher education long course	144	12.1
University	264	22.2
Postuniversity	98	8.2
Other education	18	1.5
Relationship		
No steady relationship	476	40.0
Open steady relationship	339	28.5
Closed steady relationship	375	31.5
Sex role		
Active	71	6.0
Versatile	1,031	86.6
Passive	88	7.4
Number of sex partners in their lifetime		
None (never had sex with a man)	5	0.4
1	38	3.2
2 to 5 men	196	16.5
6 to 10 men	163	13.7
11 to 50 men	343	28.8
51 to 100 men	157	13.2
101 to 500 men	201	16.9
>500 men	87	7.3
Number of sex partners at the same time		
None (never had sex with a man)	23	1.9
1 man	301	25.3
2 men	247	20.8
3 men	164	13.8
4 or 5 men	203	17.1
Between 6 and 10 men	116	9.7
>10 men	136	11.4
Frequency of masturbation		
Never	6	0.5
Less than once a month	23	1.9
1 to 3 times a month	82	6.9
1 to 3 times a week	500	42.0
Daily	450	37.8
More than once a day	129	10.8
Frequency of sexual intercourse with a men		
Never	8	0.7
Less than once a month	74	6.2
1 to 3 times a month	242	20.3
1 or 2 times a week	444	37.3
At least 3 times a week	310	26.1
Daily	82	6.9
More than once a day	30	2.5

relationship, frequency of sex with their partner, number of sex partners, the number of sex partners at the same time, the use of lubricant, and the massage of the anal sphincter before anal sex. In the multivariate analysis, age and frequency of sex with their partner remained as independent predictors for having AD.

The prevalence and the severity of AD among the MSM were lower among older participants, participants who more frequently had sex with their partner, and participants with a higher number of sex partners. Being in a steady relationship and knowing the sex role of each other (top, bottom, or versatile) also decrease the prevalence and severity of AD. Participants rated inadequate lubrication and lack of oral or digitoproctic stimulation prior to penetration as the most important factors predicting pain.

Discussion

To our knowledge, this was the first study conducted in Belgium, which focused on AD in an MSM population. Based on limited studies to date, it appears that painful receptive anal sex is a problem for a significant proportion of the MSM. There is some belief that anal sex must be painful by necessity, but this belief appears to be erroneous. Experts in anal health agree that anal intercourse does not need to be painful and, if properly prepared for, should not result in tearing of rectal tissue. Thus, anal sex is not by necessity painful, yet a significant number of the MSM appear to struggle with AD, making it an important issue in their sexual health. Because AD has received little attention by health researchers in the past, more epidemiological work is required to generate solid assumptions on prevalence rates in such subgroups as the MSM population.

In an effort to lessen pain during receptive anal sex, the MSM with AD must engage in anal foreplay before attempting to have anal intercourse. Foreplay can be done by digital penetration, anal massage, and anal dilators such as dildos, all with simultaneous use of sufficient lubricants as suggested by Rosser et al. [23]. This rectal foreplay is

Table 2 Characteristics of anal sex experience (n = 1,190)

	n	(%)
Use of poppers		
Yes	409	34.4
No	781	65.6
Use of condom during anal intercourse		
Yes always	496	41.7
Yes sometimes	358	30.1
No	336	28.2
Use of lubricant during anal intercourse		
Yes always	742	62.4
Yes sometimes	376	31.6
No	72	6.1
Massage of the anal sphincter before having anal intercourse		
Yes with the tongue (anolingus)	257	21.6
Yes with a finger	646	54.3
Yes with a dildo/vibrator	41	3.4
No	246	20.7

Table 3 Odds ratios estimated by logistic regression analysis in a group of 1,190 Belgian MSM

Comparison of subjects with or without AD						
	Bivariate analysis (95% CI)			Multivariate analysis* (95% CI)		
Variable	Odds ratio	95% CI	*P*	Odds ratio	95% CI	*P*
Age (years) (increasing continuous variable)	0.985	0.975–0.996	0.006	0.872	0.810–0.939	<0.0001
Number of sex partners (increasing continuous variable)	0.877	0.816–0.943	<0.0001			
Number of sex partners at the same time (increasing continuous variable)	0.913	0.853–0.976	0.008			
Age of first sexual experience with same-sex partner (increasing continuous variable)	1.014	0.995–1.034	NS			
Frequency of sex with partner (decreasing variable)	0.874	0.788–0.970	0.011	0.88	0.795–0.978	0.018
Steady relationship (no/yes)	1.304	1.028–1.653	0.029			
Use of poppers (no/yes)	1.226	0.962–1.562	NS			
Use of condom (no/yes)	1.024	0.890–1.178	NS			
Use of lubricant (no/yes)	0.603	0.374–0.972	0.038			
Massage of the anal sphincter before anal sex (no/yes)	1.175	1.026–1.345	0.02			

*In the multivariate analysis, both forward and backward stepwise logistic regression analysis was performed, with identical results
MSM = men who have sex with men; AD = anodyspareunia; CI = confidence interval; NS = not significant

essential in allowing the receptive partner to slowly accommodate his partner s penis with a decreasing sense of anxiety and muscle tension.

In their study, including 404 MSM, Damon et al. found AD in 14.0% of the participants [10]. This is in line with our findings. Furthermore, they concluded that the pain perceived during receptive anal sex is primarily related to psychological factors (57.0%), penis size (40.0%), and lack of finger–anus foreplay (26.0%). They also found a significant relation between the use of poppers and AD, which was not confirmed in our study. The only independent predictors for AD in our study were age and the frequency of sexual intercourse with a sex partner. This can be explained by the finding of Damon et al. that 49.0% of men with AD coped with it by restricting their behavior to an active sex role.

We compared our results with those from a Dutch survey "Sexual Health in the Netherlands 2011" consisting of a sample of 3,972 heterosexual men (aged between 15 and 70 years) [24]. Thirty percent of the heterosexuals engage in anal sex, compared with 70.0% of the MSM. In these groups, 48.0% of the heterosexuals and 28.0% of the MSM do not use a condom during anal intercourse. This practice of intentional condomless anal intercourse is also known as "barebacking" [25,26]. This behavior has a high risk of transmission of diseases such as HIV. Halkitis et al. found in their study among 518 MSM in New York City that 45.5% reported to have had bareback sex in the past 3 months [27].

Limitations

Because there are few studies on AD in the MSM population, cross-study comparisons are difficult to make. This study was designed as an exploratory, hypothesis-generating investigation. In the past, gay studies have always been prone to representation problems. In most studies, not all age, gender, or education groups are equally represented, with older gays and less educated people being underrepresented. (The same problem may occur with our study.) We can only generalize our findings to Belgian MSM who used the online website from which participants were recruited. A disadvantage of this type of e-research is that men without access to the Internet could not participate. Because older people probably have less access to the Internet, older MSM may have been underrepresented in our study. Fortunately, the Internet has become an important source of dating for the MSM, and they are early adaptors of new gadgets, thus limiting the risk of selection bias caused by e-questioning. Furthermore, asking people about their sexual preferences is becoming more and more accepted in Western postindustrialized countries, and additionally, respondents are more willing to answer sensitive questions such as on sexual preferences in anonymous computer-assisted interviews like ours than in person-to-person interviews.

We used three adapted questions of the FSFI questionnaire to evaluate AD. The questions were initially designated to evaluate female dyspareunia. It is expected that vaginal intercourse is not at all painful. For that reason, among women, the FSFI considers every degree of discomfort and pain during intercourse as unacceptable. For anal intercourse, a certain degree of discomfort is considered as "acceptable." However, it is not clear whether the acceptability of discomfort should be the line discriminating AD that is

sexually dysfunctional from AD that is a reasonable expectation from penetration of the anal sphincter. The figures gathered in the present study do not allow to differentiate between acceptable and unacceptable discomfort. Further research is needed to elaborate an adapted questionnaire for AD.

Strengths

Among the strengths of our GAMESSS study are its large size and the coverage of different sexual dysfunctions. Not only AD but also problems of libido, ejaculation, and erectile dysfunction were questioned.

Conclusions

The GAMESSS study provides the first population-based analysis of AD among interested MSM in Belgium. One-third of the MSM had never had anal intercourse. Having experienced some degree of AD was reported by 59.0% of participants with a variation of 33.0% with mild AD and 2.0% with severe AD. Anal sex is not by necessity painful, but at least a significant number of the MSM appear to struggle with some degree of AD, making it an important issue in their sexual health. As AD has received little attention by medical research, further research is needed to raise awareness of this problem.

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Ethical Approval

The study protocol was approved by the ethical committee of the University Hospital of Brussels. The approval number was B.U.N. B14320083192.

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Con ict of Interest: Johan Vansintejan reports that he serves as a consultant to Menarini Belgium, Boehringer Ingelheim, and Eli Lilly. He has no stock or ownership to report.

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