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Author:
Mao, L; Newman, CE; Kidd, M; Saltman, D; Rogers, G; Kippax, SC

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Self-reported sexual difficulties and their association with depression and other factors among gay men attending high HIV-caseload general practices in Australia

ABSTRACT

Introduction. Sexual expression affects physical, mental and social well-being. There is a lack of understanding of male sexual dysfunction in homosexually active men.

Aim. We investigated gay men's self-report of a number of sexual problems.

Methods. The survey data were from a sample of 542 self-identified gay men, 40% of whom were HIV-positive, recruited from six high HIV-caseload general practices in Australia.

Main Outcome Measures. The reporting of experiencing three or more sexual problems over a period of at least one month in the 12 months prior to a survey was defined here as having 'multiple' sexual problems. We explored a number of factors including HIV-status, depression, alcohol and other drug use, and sexual risk-taking with casual male partners, in association with multiple sexual problems.

Results. Rates of a range of self-reported sexual problems were high with erectile dysfunction and lack of sexual desire being the most commonly reported. These high rates were consistent with the limited data from previous Australian studies. Men who had multiple sexual problems were likely to suffer from major depression ($p<0.001$). A higher proportion of the HIV-positive gay men (48.4%) reported multiple sexual problems than the HIV-negative men (35.1%, $p=0.002$). Factors independently associated with multiple sexual problems among the HIV-negative gay men were poorer general health and interpersonal isolation, whereas for the HIV-positive gay men, they were adoption of avoidant strategies to cope with daily life stress, sexual risk-taking in casual encounters, and the use of antidepressants.

Conclusions. Our findings underscore the complex interactions between depression, sexual dysfunction, sexual risk-taking, HIV infection, and general well-being among homosexually active men.

Key Words. Male sexual dysfunction, Gay Men, Depression

Introduction

Sexual expression affects physical, mental and social well-being [1]. There is limited knowledge regarding male sexual dysfunction among homosexually active men despite the importance of understanding the manifestations of, and factors associated with, sexual difficulties that are unique to this sub-population [2-5]. Available data suggest that sexual dysfunction is common among gay men and is associated with a variety of factors including social factors (older age, unemployment, stress, developmental trauma, and social stigma); physical factors (poor physical function related to HIV infection or other chronic illnesses); psychological factors (depression, anxiety, and internalised homophobia); and behavioural factors (alcohol and other drug use, and sexual risk-taking) [6-12].

The current approach in diagnosing specific dimensions of sexual dysfunction, as defined in the tenth edition of the International Classification of Mental and Behavioural Disorders (ICD-10) and the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), has been criticised as it accommodates neither the diverse experiences nor distinct expectations of various sub-populations [1, 13]. Within the small number of existing studies of homosexually active men, there has been no consensus over the definitions and measurements of male sexual dysfunction [5]. While several studies have focused specifically on erectile or ejaculatory difficulties, very few, however, have explored other sexual problems that affect gay men. It is of particular clinical importance to increase our understanding of the factors associated with gay men's experience of a range of sexual problems. No studies have been identified that explicitly investigated both mental health *and* HIV infection in association with sexual dysfunction among homosexually active men. The existing literature does not provide sufficient data on whether men living with HIV experience sexual difficulties differently from those without HIV.

Methods

In a group of homosexually active, self-identified gay men accessing general practice services, we assessed the self-report of a range of sexual difficulties, which had persisted for at least four weeks in the 12-month recall period. We explored factors associated the number of sexual problems, in particular, HIV-infection, depression, alcohol and other recreational drug use, and sexual risk-taking with casual male partners. We further examined whether the factors associated with three or more (multiple) sexual problems differed between the HIV-positive and HIV-negative gay men. We also compared our findings on a range of self-reported sexual problems with data collected in earlier studies of gay men in Australia.

The main dataset was derived from a multi-stage, mixed method, behavioural study on depression among men recruited from general practices in Australia that largely serve gay men, including those living with HIV. Its main aims were to investigate depression in relation to homosexuality and HIV, and to describe how depression was managed by general practitioners and by gay men themselves [14-15]. Ethics approval was granted by the National Research and Evaluation Ethics Committee of the Royal Australian College of General Practitioners and other partner institutional ethics review boards.

For the patient survey component of this project, every man who visited one of the six participating high HIV-caseload general practices in Sydney, in a rural coastal town in northern New South Wales, and in Adelaide during March and June 2007, was approached by a social researcher (the first author). During the two-week consecutive sampling period at each site, all male patients were invited to self-complete a questionnaire while waiting for their clinical appointment. The survey covered a range of questions such as overall general health, history of mental health, perception of social support, sexual relationships at the time of the survey, and

sexual practices with other men in the six months prior to survey. Participants were asked to return their completed surveys a sealed box located at the waiting area at each site and the average response rate was 75% [14].

With the focus on homosexually identified men, we draw data from a sub-sample of 542 men (73.6%) out of the total 736 men who completed the patient survey. These 542 men satisfied the following inclusion criteria: they self-identified as either 'gay' (n=432, 79.7%), 'homosexual' (n=101, 18.6%), or 'queer' (n=9, 1.7%); and all of them self-reported being either HIV-positive (n=217, 40.0%) or HIV-negative (n=325, 60.0%) according to their latest HIV test. Altogether, 194 men were excluded as they were not homosexually identified or did not report their latest HIV-status.

Seven items, each with a "yes" or "no" format, were used to measure sexual function. Participants were asked to report adverse sexual experiences that had lasted over "a period of one month or more" in the 12 months prior to the survey. The questions included: three items concerning difficulties in arousal and orgasm ─ "Came to orgasm/a climax too quickly (premature ejaculation)"; "Unable to come to orgasm/a climax" (difficulty having ejaculation or orgasm); and "Having trouble keeping an erection when you wanted to" (inability to sustain an erection); two items concerning reduced levels of sexual desire and satisfaction ─ "Lacked interest in having sex" (loss of libido) and "Did not find sex pleasurable" (lack of sexual pleasure); one item pertaining to anxiety over sexual performance ─ "Felt anxious about your ability to perform sexually"; and one item asking about the presence of sexual pain during anal intercourse ─ "Experienced physical pain during intercourse". These items were drawn from a large, national, randomly sampled, household, telephone survey of health and relationships in Australia [16]. A summary score for sexual dysfunction was calculated based on responses to these seven items

(Cronbach's standard alpha=0.714). According to the positively skewed distribution of these scores, men were divided into three groups: those who did not report any sexual difficulties in the 12 months prior to survey (scored 0) were in the 'no problems' group (n=148, 27.3%); those who reported one or two problems (scores ranged between 1 and 2) were in the 'some problems' group (n=175, 32.3%); and those who reported at least three such problems (scores ranged between 3 and 7) were in the 'multiple problems' group (n=219, 40.4%). This categorisation served as a proxy measure to indicate the extent of generalised male sexual disorders in further analyses.

For major depression, the original nine-item Patient Health Questionnaire (PHQ 9) was applied (Cronbach's standard alpha=0.927). According to the DSM-IV standards, men were divided into three groups based on their summary scores: those with 'no depression' (the PHQ 9 scores ranged between 0 and 3); those with 'minor depression' (the PHQ 9 scores ranged between 4 and 9); and those with 'major depression' (the PHQ 9 scores ranged between 10 and 27).

In the univariate analyses, one-way ANOVA and cross-tabulation with Chi-square tests were conducted to investigate factors differentiating the three groups of men with varied experiences in sexual function. To examine the correlation between sexual dysfunction and depression, Pearson's r was calculated between the sexual dysfunction scores and the corresponding PHQ 9 depression scores. Cross-tabulation was performed between the three sexual dysfunction groups (no, some and multiple problems) and the three DSM-IV based depression screening groups (no, minor and major depression). In the multivariate analyses, the dependent variable was gay men's self-report of multiple sexual problems. For independent variables, we first entered major depression as a binary variable. In the initial logistic model, three key independent variables were the alcohol use summary score, the recreational drug use summary score, and any unprotected anal intercourse (UAIC) with casual partners in the prior six

months. Based on the existing literature and our univariate analyses, nine covariates were also entered in the initial model. These were age; the levels of education, income, general health, and gay community involvement; the summary scores of daily life stress, social support and negative coping strategies (spending time alone and being in denial); and any use of antidepressants at the time of the survey. Multicollinearity between the factors was also considered. As HIV-status was one of the key factors under investigation, backward model reduction of the same full logistic model with 13 independent variables was performed separately on HIV-positive and on HIV-negative gay men.

In order to make comparisons between a range of self-reported male sexual problems in the current cross-sectional survey and those in previous Australian studies, we drew data from two open community cohorts — the Positive Health (pH) study of HIV-positive gay men and the Health in Men (HIM) study of HIV-negative gay men [17]. The majority of the cohort participants in both studies were sampled from gay community venues and events while a small proportion was also recruited from general practices in Sydney [17]. For the pH study, comparison data were based on the 293 HIV-positive men who completed both the main *and* the optional sexual behavioural questionnaires at the 2006-7 data collection round. For the HIM study, the comparison was based on the 1,427 HIV-negative men who completed the baseline survey between 2001 and 2004 [18]. It should be noted that in the two community studies (the pH and HIM cohorts), many of the same sexual problem questions were asked but the recall period was six months prior to survey. In terms of erectile dysfunction, two separate questions were asked in the two community cohort studies: one referred to erectile dysfunction specifically associated with condoms and the other referred to non-condom associated erectile dysfunction.

Results

In the current survey, the average age of the 542 men was 45 years (median=44 years, range=20-81 years, SD=11.3) with no age difference between the HIV-positive men (mean=46 years, median=45 years, range=22-72 years, SD=9.55) and the HIV-negative men (mean=45 years, median=42 years, range=20-81 years, SD=12.3; $p>0.05$). The men were generally well educated and approximately 40% had at least completed a university degree. Around 80% of the men spent a large amount of leisure time with other gay men and close to half reported that most or all of their friends were gay. Over half of the men considered their general health to be good or very good. About two-thirds reported two or more sexual partners in the six months prior to the survey.

Compared with the 194 survey participants who were excluded from this analyses, the 542 men were, on average, three years younger ($p=0.021$); more likely to be better educated ($p<0.001$), have a full-time job ($p=0.017$), and earn a higher weekly income ($p=0.005$); and more likely to have at least five sexual partners in the six months prior to the survey, use recreational drugs other than alcohol, and report being HIV-positive (all $ps<0.001$). However, they were similar regarding general health, quality of life, being in a relationship at the time of the survey; and were identical in daily life stress, depression, social support and alcohol use (all $ps>0.05$). Notably, the 542 men selected from the current survey were significantly older than the HIV-negative men from the previous HIM cohort (mean age=37 years, $p <0.001$).

The gay men's self-reported rates of sexual problems were highly consistent between the clinical survey and the two community cohorts (Table 1). Across the three studies and regardless of HIV-status, the most commonly reported sexual problems were erectile dysfunction and lack of libido. Overall, HIV-positive gay men reported higher rates of sexual difficulties than HIV-negative ones. For example, in the current survey, the majority (81.1%) of the 217 HIV-positive men reported having at least one of the seven listed problems while only about two-thirds (67.1%)

of the 325 HIV-negative men did so ($p<0.001$). Furthermore, a higher proportion of the HIV-positive gay men (n=105, 48.4%) reported multiple sexual problems than their HIV-negative counterparts (n=114, 35.1%) ($p=0.002$).

As shown in Table 2, a variety of factors differentiated the three groups of men in the extent of sexual dysfunction in the current survey. In the univariate analysis, factors significantly associated with sexual problems among gay men were: socio-demographic indicators (poor education, not in full-time employment, low income, on social welfare, and lack of interpersonal support); subjective health status (poor general health, low quality of life, and HIV infection); psychological well-being (reported stress, passive coping, and depression); reported behaviours (alcohol use, other recreational drug use, drug injection, having no more than five sex partners, having no more than five casual male sex partners, and unprotected anal intercourse with casual partners); as well as possible pharmacological effects (being on antidepressants, or on antiretroviral therapy).

The sexual dysfunction summary scores were significantly correlated with the PHQ 9 depression screening scores in the current survey ($r=0.38$; $p<0.001$). Figure 1 demonstrates that men who reported multiple sexual problems tended to also suffer from major depression. Among the 93 gay men (17.2% out of the 542 men) who suffered both major depression and reported multiple sexual problems, 51.6% were HIV-positive.

As initial analyses indicated that self-reported rates of sexual problems were higher among HIV-positive than HIV-negative men and that HIV-status interacted with a number of variables associated with multiple sexual problems, including adoption of negative coping strategies and engagement in any UAIC, we present here separate multivariate analyses for HIV-positive (n=217) and HIV-negative gay men (n=322 after deleting three cases of men with missing data). As shown

in Table 3, the final logistic models suggest that first of all, major depression had a strong association with multiple sexual difficulties for both HIV-positive and HIV-negative gay men. Further, for those living with HIV, besides major depression ($p=0.013$), passive coping ($p<0.001$), any UAIC ($p=0.002$), and being on antidepressant medication ($p=0.03$) were independently associated with multiple sexual problems in the 12 months prior to the survey (Nagelkerke $R^2=0.33$ for the initial full model and $R^2=0.29$ for the final reduced model). For HIV-negative men, on the other hand, in addition to major depression ($p<0.001$), perceiving less social support ($p=0.008$) and poorer general health ($p=0.013$) were independently associated with multiple sexual problems (Nagelkerke $R^2=0.26$ for the initial full model and $R^2=0.21$ for the final reduced model).

Discussion

Rates of self-reported sexual problems are high among gay men in Australia with erectile dysfunction and loss of libido the most commonly reported, possibly followed by complaints of anxiety over sexual performance. In a 12-month period, more than half of HIV-negative and a majority of HIV-positive gay men are likely to experience some adverse sexual functioning that persists for one month or even longer, and a substantial proportion of these gay men needs further clinical attention. The high rates and wide ranges of sexual problems reported by gay men in our paper are comparable with those reported by a sub-sample of homosexual men in the national survey in Australia, where about 59% reported some sexual dysfunction [16].

Notably, in our analyses we did not find age to be a significant factor associated with sexual problems. This confirms the finding from men in the general population in Australia and supports the view that in developed countries where quality of life is generally high, poorer physical well-being is more closely related to sexual dysfunction than older age *per se* [16]. For

this particular sub-population, it is plausible that drugs such as Viagra, which are commonly used by gay men to enhance sexual performance, could further confound the impact of aging on sexual function.

Based on the reports of homosexually identified men accessing services at general practices in Australia, our data further illustrate the frequent co-occurrence of multiple sexual problems and major depression, confirming the findings of other studies regarding the association between depression and sexual dysfunction among men in general and homosexually active men in particular [1, 6, 10, 19-20]. For homosexually active men, we further propose that multiple sexual problems and major depression could well share a variety of common determinants including socio-demographic factors such as poor education, unemployment, low income, and lack of social support; physical factors such as poor general health, HIV infection, and overall low quality of life; psychological factors such as daily life stress and avoidant cognitive coping; and behavioural factors such as the use of some recreational drugs.

Gay men with HIV are more likely to experience sexual problems than those without HIV. With the exception of major depression, factors associated with multiple sexual problems differ between the two groups. Consistent with the findings from studies of men in the general population and studies of homosexually active men, our finding suggests that the reporting of fewer sexual problems is associated with general well-being and sufficient social support among those without HIV [9, 16]. For men living with HIV, it is likely that social isolation, avoidant coping, and sexual risk-taking in casual encounters is associated with adverse experiences of sexual function. In sum, our findings point to the urgent need for future studies to investigate more thoroughly the relation between sexual function (decreased or increased) and depression (major or minor), on the one hand, and sexual dysfunction and sexual risk-taking, particularly

among HIV-positive gay men, on the other [21-23]. In addition, there is no agreement on whether pharmacotherapy is associated with gay men's sexual dysfunction [12, 19, 24-26]. We found evidence of antidepressants but not HIV antiretroviral treatment being associated with sexual dysfunction among gay men with HIV.

Male sexual dysfunction has a multi-factorial etiology [6, 20]. In this paper, we could only explore some of the important factors associated with gay men's sexual problems. Furthermore, the cross-sectional study design does not allow any conclusions on causality to be drawn. It may be, however, that poor sexual functioning leads to depression, and that depression leads to poor sexual functioning. Further caution is needed to interpret our findings. Our main dataset consisted of homosexually identified men accessing high HIV-caseload general practice services in Australia and these men may not represent homosexually active men in general. However, to some extent, the validity and generalisability of our findings are demonstrated through the highly consistent reporting of a range of sexual problems across a number of studies. The questions pertaining to male sexual function in our study were not used to screen or diagnose sexual dysfunction nor were they used to directly measure its severity. The seven items, taken together, provide a reasonable proxy measure of generalised sexual disorders. Furthermore, the self-reported data from the behavioural studies in this paper unavoidably contain recall bias and report bias which could have resulted in either under-reporting or over-reporting. More critically, there is likely to be social desirability bias as the self-reporting of sexual function depends considerably on how these gay men perceive peer norms of sexual performance, which is highly variable in different socio-cultural contexts [27].

Conclusions

Our findings pose important challenges for policy makers, clinicians and community workers in the HIV education, prevention and treatment fields. We draw particular attention to the synergy between physical, mental, sexual and social well-being and support a holistic approach to promoting gay men's quality of life. We propose that meanings, contexts and experiences of sexual dysfunction could differ between those with and without HIV. The association between sexual difficulties and sexual risk-taking, particularly among HIV-positive gay men, needs to be a priority issue for future HIV-prevention education.

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Table 1 Rates of self-reported sexual difficulties among homosexually active gay men in Australia

	HIV-positive gay men		HIV-negative gay men	
Percentages (%)	Positive Health 2006-7 subsample (n=293)[1]	Current survey[2] (n=217)	Health in Men 2001-4 baseline (n=1,427)	Current survey (n=325)
Difficulty getting or keeping an erection	52.9, 56.3[3]	51.6	38.1, 44.6[3]	38.5
Difficulty having an ejaculation	32.8	31.3	NA	21.8
Premature ejaculation	19.8	20.7	21.3	16.6
Loss of libido	59.4	59.9	38.6	40.0
Did not find sex pleasurable	NA	31.8	NA	25.5
Anxiety over sexual performance	NA	47.0	NA	41.5
Physical pain during intercourse	NA	7.8	NA	6.5

[1]Based on the men who completed both the main and the optional sexual behavioural questionnaire; [2]The recall period in the current survey was 12 months, whereas, it was 6 months in the Positive Health and Health in Men studies; [3]In both the Positive Health and Health in Men studies, this item was asked in two questions: erectile dysfunction not associated with condoms (the first number) and condom-associated erectile dysfunction (the second number); NA: not applicable as data were not collected.

Table 2 Univariate analyses of key factors significantly differentiating the three sexual dysfunction groups in the clinical survey (N=542)

Sexual dysfunction	No problems (n=148)	Some problems (n=175)	Multiple problems (n=219)	p
		Means		
Daily life stressors in the past 12 months summary score[1]	1.53	1.90	2.88	<.001
Passive coping strategies score[2]	3.43	3.09	2.23	<.001
Perceived social support summary score[3]	37.6	36.1	32.6	<.001
Current depression summary score (PHQ 9 screening)[4]	3.63	5.02	9.30	<.001
Use of alcohol in the past 12 months summary score[5]	4.82	4.61	3.95	.007
Recreational drug use in the past 6 months score[6]	3.76	3.99	4.85	.02
		Percentages (%)		
Education				
Up to High School	19.0	29.3	32.3	.04
Trades or college	32.0	33.3	31.8	
University or above	49.0	37.4	35.9	
Current full-time employment	62.8	54.9	44.3	.002
Weekly income				
Less than $300 AUD	11.8	16.6	25.5	<.001

	$300-$999 AUD	25.0	38.5	36.1	
	$1000 AUD or more	63.2	45.0	38.5	
On any pension		14.2	26.3	33.3	<.001
General health					
	Very good-excellent	69.0	62.1	40.4	<.001
	Good	27.6	28.7	35.3	
	Poor-fair	3.4	9.2	24.3	
Quality of life					
	Very good-good	80.4	76.9	47.9	<.001
	Half good half bad	17.6	15.6	32.1	
	Pretty bad –bad	2.0	7.5	20.0	
Any drug injection in the past 6 months		4.1	6.9	15.7	<.001
Number of sex partners in the past 6 months					
	0-5	58.8	60.6	70.8	.030
	6 or more	41.2	39.4	29.2	
Number of casual male sex partners in the past 6 months					
	0-5	60.1	62.9	73.5	.014

	6 or more	39.9	37.1	26.5	
Any unprotected anal intercourse with casual partners in the past 6 months		19.6	14.3	26.9	.008
Self-reported latest HIV-status					
	HIV+	27.7	40.6	47.9	.001
	HIV-	72.3	59.4	52.1	
Current HIV antiretroviral therapy		20.3	29.7	36.1	.005
Current antidepressant medication		6.8	13.1	26.0	<.001

[1]Higher scores indicated experiencing more daily life stressors; [2]*Lower* scores indicated adopting more passive coping strategies (spending time alone and in denial); [3]Higher scores indicated perceiving more social support; [4]Higher scores indicated experiencing more severe depression; [5]Higher scores indicated consuming more alcohol; [6]Higher scores indicated consuming more drugs for recreational purposes.

Figure 1 Correlation between current depression as measured by the PHQ 9 screening tool (DSM-IV based) and self-reported sexual difficulties in the 12 months prior to the survey (N=542)

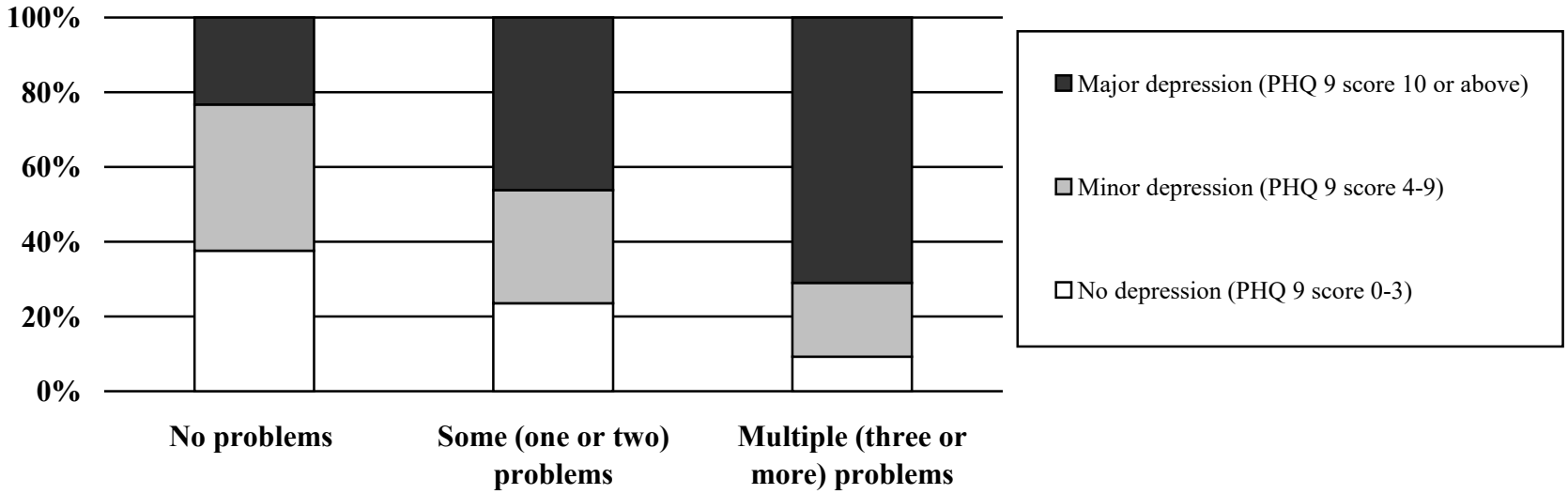

Table 3 Multivariate logistic regression on factors (including major depression) associated with multiple sexual problems among the gay men participated in the current survey

Adjusted Odd Ratio (95% CI)	HIV-positive gay men (n=217)	HIV-negative gay men (n=322)[1]
Screened as having current major depression	2.52 (1.22-5.25)*	3.70 (1.94-7.07)***
Current antidepressant medication	2.33 (1.07-5.08)*	-
General health[2]	-	1.42 (1.08-1.87)*
Passive coping strategies score[3]	0.68 (0.56-0.83)***	-
Perceived social support summary score[4]	-	0.95 (0.92-0.99)**
Any unprotected anal intercourse with casual partners in the past 6 months	2.86 (1.47-5.58)**	-

[1]Not including 3 men with missing data; [2]In a descending order (very good to bad); [3]*Lower* scores indicated adopting more passive coping strategies (spending time alone and in denial). [4]Higher scores indicated perceiving more social support; ***p<0.001; **p<0.01; *p<0.05.