

Sexual Satisfaction Among Men Living with HIV in Europe

I. De Ryck · D. Van Laeken ·
C. Nöstlinger · T. Platteau · R. Colebunders ·
The Eurosupport Study Group

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This study determined risk factors for decreased sexual satisfaction among men living with HIV (MLHIV). Self-administered questionnaires were distributed consecutively to all MLHIV attending 17 European HIV treatment centres. The sample included 1,017 MLHIV, among whom 79.2% self-identified as homosexual or bisexual. Sexual satisfaction was measured for five domains of sexual functioning and 33.2% reported low satisfaction in at least one domain. Decreased sexual satisfaction was associated with psychosocial factors, i.e. depression (OR 2.77, $P < 0.001$), anxiety (OR 1.77, $P < 0.001$), stress (OR 2.27, $P < 0.001$) and social factors, such as low partner support (OR 2.28, $P < 0.001$) and experiences of HIV related discrimination (OR 1.69, $P < 0.001$). Discussing satisfaction with sexuality should be integrated in regular HIV care, considering patients' personal and relationship-related resources next to medical treatment if indicated.

Keywords Sexual satisfaction ·
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De Ryck I is first author with Van Laeken D as equal first author with equal contribution.

I. De Ryck (✉) · D. Van Laeken · C. Nöstlinger · T. Platteau ·
R. Colebunders (✉)
HIV AIDS Center, Institute of Tropical Medicine,
Nationalestraat 155, 2000 Antwerp, Belgium
e-mail: irisderyc@hotmai.com

R. Colebunders
e-mail: bcoleb@itg.be

R. Colebunders
Epidemiology and Social Medicine, University of Antwerp,
Antwerp, Belgium

Introduction

Sexual health is an essential element of overall health related quality of life. It encompasses the possibility of having pleasurable and safe sexual experiences [1]. Hence, satisfaction with sexual functioning (covering sexual desire, orgasms and satisfaction during sexual activity) is relevant to sexual health [2].

On average 51% of people living with HIV (PLHIV) report sexual problems [3]. Multiple factors may cause sexual problems in PLHIV. Psychological and relational [4] factors play an important role, as well as HIV related stigma [5]. The correlation with HIV disease parameters such as CD4 count or viral load is less clear [4–6]. Importantly, the role of antiretroviral medication in the onset of sexual problems remains controversial [7].

Besides causing a decrease in quality of life, sexual problems impact on a variety of domains relevant to PLHIV. Sexual dysfunction has been found to be related to suboptimal adherence to antiretroviral treatment [8] and sexual risk behavior [9–11].

The study goal was to assess the prevalence of and possible causal factors for decreased sexual satisfaction in men living with HIV infection (MLHIV).

Methods

Study Population and Procedure

This cross-sectional retrospective study was conducted within the framework of the European public health project Eurosupport V, carried out by a European research network of 17 HIV treatment sites in 14 European countries (Belgium, Austria, Germany, Greece, Italy, Portugal,

Spain, United Kingdom, Slovakia, Czech Republic, Hungary, Poland, Latvia and Switzerland).

Ethical approval was obtained from the coordinating center's Institutional Review Boards (Institute of Tropical Medicine/University Hospital of Antwerp). All participants signed a written informed consent prior to participation.

During the recruitment period, consecutive PLHIV (men and women) were invited by a study nurse or an HIV physician to anonymously and voluntarily participate in the study. Inclusion criteria were: HIV diagnosis since at least 6 months, literacy, to be able to comprehend and fill in the questions independently, and to understand the study goals and objectives. This paper only reports on the findings related to men, as we may assume that women's satisfaction with sexual functioning is differently conceptualized. Distinction has been made between men self-identifying as homosexual/bisexual versus those self-identifying as heterosexual.

Between March and October 2007, self-administered questionnaires were distributed with a pre-paid envelope among consecutive MLHIV attending clinics participating in the Eurosupport V network. Responding to the questionnaire took between 30 and 45 min. Filled-in questionnaires were returned to the coordinating centre.

Measures

Data were collected using an anonymous self-administered questionnaire. Adopting a procedure of translation and back-translation, questionnaires were made available in all 12 languages of the participating countries. The questionnaire was piloted at the coordinating centre to assess clarity and feasibility.

Sexual satisfaction was measured by assessment of the categories of sexual functioning in the International Classification of Diseases (ICD10), as well as DSM IV-TR (APA, 2000) [1]. We asked patients to score their sexual satisfaction during the last 6 months on a visual analogue scale between 0 and 10 for sexual desire, sexual arousal (erection during sexual intercourse and during masturbation), and orgasm (during sexual intercourse and masturbation).

We examined 32 factors potentially influencing sexual functioning. These included age, CD4 count, viral load, antiretroviral therapy (ART) (current use of protease inhibitors (PI), nucleoside reverse transcriptase inhibitors (NRTI), and nonnucleoside reverse transcriptase inhibitors (NNRTI)), time since HIV diagnosis, mental health (depression, anxiety, stress) and social factors (partner support, social support, experiences of HIV-related discrimination in the previous 3 years), a history of sexual intimidation or forced sexual activities, concerns about HIV transmission, and other sexually transmitted infections, use

of medication in general and anti-depressive and anxiolytic medication specifically.

To assess mental health, the 21-item version of the Depression Anxiety Stress Scales (DASS) was used [12, 13]. Social and partner support was assessed by the SSI (social support inventory) [14]. This latter scale assesses satisfaction with 20 types of social support including emotional, informal and instrumental support, and social companionship.

Statistical Analysis

Data were analyzed with SPSS 17.0. Parametric variables were expressed as means and their standard deviation.

The internal consistency of the sexual satisfaction questionnaire was assessed by calculating Cronbach's alpha values for the whole male population and for homosexual/bisexual men and heterosexual men separately.

Mean differences in sexual satisfaction scores between risk factors were assessed using *t* tests. To determine this relation we only considered the lowest satisfaction score given by each participant.

We compared people with high and low satisfaction scores by calculating their odds ratios adopting logistic regression. As a gold standard to define sexual dissatisfaction does not exist, an arbitrary cut-off to define high versus low satisfaction was chosen. We considered men reporting values of less than 5/10 as more likely to experience low sexual satisfaction. To rule out confounders we performed a multiple logistic regression for the odds ratios of risk factors with possible interference (i.e. psychological and social risk factors, use of psychotropics).

Results

Demographics

A total of 1,125 questionnaires were returned by MLHIV. For our analysis, we excluded heterosexual men reporting HIV infection via intravenous drug use and men who migrated from abroad to Europe ($n = 108$), as their cultural background may account for diversity in perceived satisfaction with sexuality. The overall response ratio of the study (men and women) was 40.9%; information on gender of the non-responders was not obtained.

Within the analyzed cohort ($n = 1,017$) the majority of men self-identified as homosexual/bisexual ($n = 805$, or 79.2%). Seven hundred ninety-eight (79.1%) men were on ART, of which only 54 (9.1%) reported to have a CD4 count below $200/\text{mm}^3$ and 120 (16.7%) had a detectable viral load (Table 1).

Table 1 Characteristics of participating men

		Homosexual/bisexual	Heterosexual
Number	Number (% of total)	805 (79.2%)	212 (20.8%)
Age	Mean (SD)	43.8 (10.5)	43.1 (10.9)
Years since diagnosis	Mean (SD)	8.5 (6.6)	9.7 (6.8)
CD4 count/mm ³	Mean (SD)	545 (282)	528 (412)
Relational status	Single	346 (43.2%)	81 (38.6%)
	In a steady relationship	455 (56.8%)	129 (61.4%)
ART	Naïve	131 (17.0%)	24 (11.8%)
	On ART	623 (81.0%)	175 (85.8%)
	Stopped	15 (2.0%)	5 (2.5%)

SD standard deviation, *ART* antiretroviral therapy

Sexual Satisfaction Scale

The Cronbach's alpha value of this instrument was 0.923 for heterosexual men and 0.924 for homosexual/bisexual men respectively, with an overall value of 0.923. If one of the domain scores was deleted, the Cronbach's alpha diminished with 0.007–0.034. This was calculated for all domains in all subgroups, therefore this test has excellent internal consistency, and all domain scores fitted well in the overall concept (sexual satisfaction).

Degree of Sexual Satisfaction

Three hundred thirty-eight (33.2%) men reported a sexual satisfaction score of less than 5 in one or more of the domains of sexual functioning, without major differences between homosexual/bisexual men and heterosexual men. The scores for each type of sexual problem for homosexual/bisexual men and heterosexual men are shown in Table 2. The most prevalent domain of decreased satisfaction was loss of libido ($n = 251$, 26.1%). Two hundred seventy-four men (32.8%) scored as dissatisfied with erection during masturbation or sexual activity.

Factors Associated with Sexual Satisfaction

Associations with sexual satisfaction are presented in Table 3. Increasing age, moderate to severe depression, anxiety or stress and the use of anxiolytics were significantly associated with a lower sexual satisfaction in both homosexual/bisexual men and heterosexual men. Within these factors depression had the strongest association with low sexual satisfaction (OR of 3.00 in homosexual/bisexual men and 3.13 in heterosexual men). Other factors associated with low sexual satisfaction were: history of having been intimidated or forced into unwanted sexual activities, being concerned about other sexually transmitted infections, lack of partner support and perceived HIV-related discrimination. The concern to transmit HIV to others was not significantly linked with low sexual satisfaction.

The prevalence of sexual dissatisfaction was comparable in persons with a CD4 count below and above 500/mm³. Sexual satisfaction was not associated with the use of ART in general, or with any specific group of antiretrovirals (PI, NRTI, and NNRTI). The only medications used by homosexual/bisexual men with a significant negative effect on sexual satisfaction were anxiolytics.

The prevalence of sexual risk behavior was comparable in men with low (31.1%, $n = 119$) and high sexual satisfaction

Table 2 Sexual satisfaction

	Homosexual/bisexual men ($n = 805$)		Heterosexual men ($n = 212$)	
	Score ≤ 4 % (n)	Domain score Mean (SD)	Score ≤ 4 % (n)	Domain score Mean (SD)
Libido	26.7 (204)	6.14 (2.9)	23.7 (47)	6.42 (1.9)
Erection during sex	21.2 (152)	6.35 (2.9)	22.4 (39)	7.02 (2.5)
Erection during masturbation	25.3 (176)	6.69 (2.8)	15.5 (26)	6.76 (2.7)
Orgasm during sex	19.9 (138)	6.79 (2.8)	14.5 (24)	7.22 (2.5)
Orgasm during masturbation	19.6 (137)	6.89 (2.7)	20.3 (36)	6.78 (2.7)

SD standard deviation

Table 3 Associations with sexual satisfaction

Reference group	Risk factor	Homosexual/bisexual men (805)				Heterosexual men (212)					
		Low sexual satisfaction		Sexual satisfaction score		Low sexual satisfaction		Sexual satisfaction score			
		<i>n</i>	OR (CI)	<i>P</i>	Mean diff. (CI)	<i>P</i>	<i>n</i>	OR (CI)	Mean diff. (CI)	<i>P</i>	
CD4 >500/mm ³	CD4 < 500/mm ³	275	1.44 (1.02; 2.03)	0.04	-0.52 (-1.02; -0.02)	0.04	70	1.55 (0.71; 3.38)	0.27	-0.78 (-1.83; 0.28)	0.15
ART naïve	Treated with ART or stopped	447	0.99 (0.65; 1.49)	0.95	0.09 (-0.50; 0.69)	0.76	111	0.86 (0.31; 2.37)	0.86	-0.43 (-1.75; 0.89)	0.52
ART naïve	PI containing regime	210	0.97 (0.63; 1.50)	0.97	0.10 (-0.54; 0.75)	0.75	44	1.00 (0.36; 2.76)	1.00	0.00 (-1.33; 1.33)	1.00
Normal depression score	Moderate to severe depression	267	3.00 (2.19; 4.11)	<0.001	-1.48 (-1.91; -1.04)	<0.001	71	3.13 (1.64; 5.95)	<0.01	-1.37 (-2.19; -0.56)	<0.001
Normal anxiety score	Moderate to severe anxiety	261	2.36 (1.73; 3.22)	<0.001	-1.18 (-1.62; -0.74)	<0.001	75	1.98 (1.05; 3.71)	0.03	-0.91 (-1.73; -0.09)	0.03
Normal stress score	Moderate to severe stress	199	2.74 (1.96; 3.83)	<0.001	-1.51 (-1.98; -1.04)	<0.001	53	1.91 (0.98; 3.73)	0.06	-0.76 (-1.65; 0.14)	0.10
Good partner support	Medium partner support	141	1.85 (1.19; 2.88)	<0.01	-0.73 (-1.33; -0.13)	0.02	39	2.05 (0.79; 5.35)	0.14	-0.73 (-1.89; 0.43)	0.21
Good partner support	Low partner support	86	2.00 (1.19; 3.35)	<0.01	-0.95 (-1.65; -0.25)	<0.01	24	2.46 (8.38; 7.23)	0.10	-0.91 (-2.23; 0.40)	0.17
Good partner support	No partner	166	2.23 (1.46; 3.41)	<0.001	-1.39 (-1.96; -0.82)	<0.001	49	1.81 (0.72; 4.54)	0.21	-1.25 (-2.19; -0.31)	0.01
No antidepressants	Antidepressants	79	1.18 (0.74; 1.9)	0.49	-0.18 (-0.88; 0.51)	0.60	18	3.11 (1.16; 8.35)	0.02	-1.01 (-2.38; 0.36)	0.15
No anxiolytics	Anxiolytics	94	2.02 (1.31; 3.13)	<0.01	-0.90 (-1.54; -0.26)	<0.01	14	1.25 (0.40; 3.89)	0.71	0.22 (-1.32; 1.76)	0.78
No experiences of discrimination	HIV related discrimination	210	1.46 (1.05; 2.03)	0.02	-0.64 (-1.11; -0.16)	<0.01	46	2.18 (1.09; 4.37)	0.03	-1.26 (-2.19; -0.33)	<0.01
History negative	History of unwanted sex	100	1.46 (0.95; 2.23)	0.08	-0.32 (-0.94; 0.30)	0.31	14	1.29 (0.41; 4.04)	0.66	-0.05 (-1.59; 1.48)	0.95
No fear of STD	Moderate/lot of fear of other STD	226	1.46 (0.92; 2.30)	0.11	-0.40 (-1.05; 0.25)	0.23	36	1.82 (0.77; 4.26)	0.17	-1.13 (-2.25; -0.01)	0.05
Not applicable	Age (per decade)	805	1.24 (1.07; 1.43)	<0.01	-0.10 (-0.49; -0.08)	<0.01	212	1.53 (1.12; 2.09)	<0.01	-0.27 (-1.12; -0.35)	<0.001

n Number of exposed, *OR* odds ratio, *CI* 95% confidence interval, *mean diff.* difference in mean

Table 4 Multivariate logistic regression for lower sexual satisfaction in MLHIV

	Homosexual/bisexual men			Heterosexual men		
	<i>n</i>	OR (95% CI)	<i>P</i>	<i>n</i>	OR (95% CI)	<i>P</i>
Antidepressants	69	0.90 (0.52; 1.57)	0.71	15	2.54 (0.78; 8.27)	0.12
Anxiolytica	78	1.63 (0.97; 2.76)	0.07	11	0.70 (0.16; 3.02)	0.64
DASS depression	221	2.15 (1.37; 3.40)	<0.01	61	2.86 (0.96; 8.57)	0.06
DASS anxiety	214	1.16 (0.75; 1.80)	0.51	67	1.65 (0.62; 4.42)	0.32
DASS stress	163	1.40 (0.88; 2.24)	0.16	47	0.69 (0.24; 2.02)	0.50
Medium versus good partner support	139	1.88 (1.18; 3.00)	<0.01	38	1.89 (0.68; 5.27)	0.23
Poor versus good partner support	85	1.74 (1.01; 2.99)	0.05	23	1.99 (0.61; 6.43)	0.25
No partner versus good partner support	163	1.87 (1.19; 2.92)	<0.01	49	1.60 (0.60; 4.23)	0.35

n Number of exposed, *OR* odds ratio

scores (36.0%, *n* = 136). In a multiple logistic regression analysis depression and lack of good partner support were the main determinants of sexual dissatisfaction (Table 4).

Discussion

In this study on sexual satisfaction in MLHIV we found that sexual dissatisfaction was common in this group and strongly linked to psychological and social well being.

We acknowledge certain limitations to this study. The study population is a self-selected convenience sample. Only patients followed in HIV treatment centers were addressed. Patients lost to follow-up were not reached, which may have lead to a potential overestimation of the correlation between ART and sexual dissatisfaction (as one could hypothesize that people who are lost to follow-up are more likely to feel depressed, since not caring about health is a core symptom of depression). The role of ART in the onset of sexual problems in MLHIV remains unclear, also because of the inconsistency of the results obtained in other studies [6, 15–22]. The lack of a gold standard to define sexual dissatisfaction necessitated defining an arbitrary cut-off point without proven clinical relevance. We used values less than 5/10 as a way to compare the characteristics of patients with low and higher degree of sexual satisfaction.

Notwithstanding these limitations, we may draw a number of relevant conclusions. By using the cut-off value of 5/10, 33.2% of the MLHIV were considered as having low satisfaction in one of the domains of sexual functioning. This is somewhat lower than 51% of MLHIV reporting sexual problems in other studies [3].

Since the introduction of erection enhancing medication a large number of studies have been performed concerning the effects of pharmacological treatment on sexual desire, erection and ejaculation [23]. Despite the fact that erection enhancing medication is highly effective [24], the

multifactorial etiology of sexual dysfunction must be considered, including psychological and social factors. This is corroborated by our findings, which revealed an association between sexual dissatisfaction and psychosocial factors, including mental health, lack of partner support and perceived HIV-related discrimination. While the latter is a highly understudied area, one recent study in France found similar associations between sexual (dis)satisfaction, HIV-related stigma and feelings of isolation among PLHIV [25].

Previous authors have noted a reluctance of some physicians to treat sexual dysfunction in HIV-seropositive homosexual/bisexual men because of concerns about the risk of unsafe sex [26]. Our findings point to the necessity of integrating a discussion on sexual satisfaction in HIV care, using a holistic approach that considers not only treatment with erection enhancing medication, if indicated, but also patients' personal and relationship-related resources. The latter seems to be particularly important since our data show that perceived HIV-related discrimination inevitably contributes to sexual satisfaction.

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