Sexual dissatisfaction and associated factors in a sample of patients on antiretroviral treatment in KwaZulu-Natal, South Africa

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Background. Sexual expression affects physical, mental and social well-being. There is a lack of understanding on sexual dissatisfaction among patients on antiretroviral treatment in Africa.

Methods. Using systematic sampling, HIV-positive patients were selected from outpatient departments from three hospitals before commencing antiretroviral therapy (ART), followed up for 20 months (*N*=495) and interviewed with a questionnaire.

Results. Rates of self-reported sexual dissatisfaction were high (32.6%), but reduced significantly from before starting ART (56.1%) to 20 months on ART (32.6%) (*p*=0.006). Sexual dissatisfaction increased among sexually active compared with sexually inactive participants over the 20-month assessment period. In multivariate analysis, not being formally employed (odds ratio (OR) 0.4, 95% confidence interval (CI) 0.2 - 0.9), having had sexual intercourse in the past 3 months (OR 5.8, 95% CI 1.7 - 19.8), taking medications for HIV-related opportunistic infections (OR 2.5, 95% CI 1.1 - 5.7), internalised stigma (OR 1.4, 95% CI 1.2 - 1.6), lack of social support (OR 0.4, 95% CI 0.3 - 0.6) and low depressive symptoms (OR 0.9, 95% CI 0.8 - 1.0) were found to be associated with sexual dissatisfaction.

Conclusions. This prospective study of a large sample of persons on ART showed evidence of reduction of overall sexual dissatisfaction over time and a number of factors influencing sexual dissatisfaction that should be addressed in health care provider interventions.

'The sexuality of men and women with HIV is diminished by the fear of infecting others and being infected, as well as guilt, anger and ill health resulting in negative physical and psychological effects on sexual desire.'[1] Sadeghi-Nejad *et al*.[2] state that surveys show that among persons with sexually transmitted infections (STIs), including HIV, the prevalence of sexual problems is as high as 35% for men and 55% for women. Comparison of sexual problems among HIV-positive and HIV-negative men and women revealed that men and women with HIV reported greater sexual problems than those without.[3,4] Collazos[5] found that sexual dysfunction seems to be very common after the introduction of highly active antiretroviral therapy (HAART), the average prevalence being 51% in different studies. Studies of HIV patients found depression or use of antidepressants,[3,4,6,7] CD4 count <200 cells/µl,[3,8] not being in a relationship,[3] sexual risk-taking,[4,8] older age,[7] recreational drug use,[6] antiretroviral therapy (ART) (particularly protease inhibitors)[5,7] and non-adherence to ART[9,10] to be associated with sexual problems. There is a lack of understanding of sexual problems among patients on ART in Africa. The aim of this study was therefore to assess sexual dissatisfaction and associated factors in a sample of patients on ART in South Africa.

Methods

Sample and procedure

This is a prospective study of all treatment-naïve patients (*N*=735) recruited from the three public hospitals in Uthukela health district, KwaZulu-Natal, from October 2007 to February 2008. All ARV-naïve patients aged 18 and above who were about to commence ARVs and who consecutively attended the HIV clinics during the recruitment period were eligible for the study. Details of the setting, sampling procedure and recruitment have been described elsewhere.[11] Patients were interviewed at clinic visits 6, 12 and 20 months after initiation of ARV follow-up. Ethics approval was obtained from the HSRC Ethics Committee and approval was obtained from the Provincial Department of Health in KwaZulu-Natal.

Measures

Patients were interviewed using an anonymous questionnaire administered by the research team. Information was collected on socio-demographic characteristics, clinical history and health-related characteristics. After initiation of ART, information on side-effects and changing or interrupting ART was also obtained. Clinical data relating to date of HIV diagnosis, HIV acquisition and transmission risk factors, current CD4 cell count, viral load (Chiron 3.0 bDNA), opportunistic infections, and HIV and non-HIV medications were obtained from the medical chart.

Sexual dissatisfaction and behaviour

Sexual dissatisfaction was assessed with one item, 'How satisfied are you with your sex life in the past 2 weeks?', from the WHOQOL-HIV BREF measure of the World Health Organization.[12] Response options were 1 = very dissatisfied, 2 = dissatisfied, 3 = neither satisfied nor dissatisfied, 4 = satisfied and 5 = very satisfied. Responses were re-coded into sexual dissatisfaction as very dissatisfied or dissatisfied = 1 and no sexual dissatisfaction as neither satisfied nor dissatisfied, satisfied or very satisfied = 0. Regarding sexual behaviour, participants responded to items assessing their number of male and female sex partners and frequency of sexual behaviours in the previous 3 months, specifically vaginal and anal intercourse with and without condoms. A 3-month retrospective period was selected because previous research has shown reliable reports of numbers of partners and sexual events over this time period.[13]

Participants were instructed to think back over the past 90 days (3 months) and estimate the number of sex partners and number of sexual occasions in which they practised each behaviour.

The Revised Sign and Symptom Checklist for Persons with HIV Disease
The SSC-HIVrev is a 72-item checklist of HIV/AIDS-specific physical and psychological symptoms, scored using the following scale: 0 = not checked (not present today), 1 = mild, 2 = moderate, 3 = severe.[14] Validity and reliability of the instrument have been reported for various African countries,[15] including South Africa;[16] reliability estimates are from 0.76 to 0.94. The Cronbach α-reliability coefficient of this 64-item scale was 0.78 for this sample.

Depression
We assessed depressive symptoms using the 10-item version of the Centres for Epidemiologic Studies Depression Scale (CES-D).[17] The CES-D has been widely used in studies of the relationship between HIV and depression.[18] While the CES-D 10-item survey has not been directly compared with clinical diagnosis of major depression, the sensitivity and specificity of the CES-D 20-item survey have been reported to average 80% and 70%, respectively, compared with formal diagnostic interview.[19] The Cronbach α-reliability coefficient of this 10-item scale was 0.78 in this sample.

Social support
Three items were drawn from the Social Support Questionnaire to assess perceived social support,[20] as used by Simbayi *et al*.[21] The items were selected to reflect perceived tangible and emotional support. The Cronbach α-reliability coefficient of this 3-item scale was 0.92 in this sample.

Internalised AIDS stigma
We used the 6-item internalised AIDS-related stigma scale for people infected with HIV.[22] Items reflected self-defacing beliefs and negative perceptions of people living with HIV/AIDS. The Cronbach α-reliability coefficient of this 6-item scale was 0.78 in this sample.

Alcohol use disorder
Identification Test (AUDIT)-C focuses solely upon consumption of alcohol (i.e. the frequency of drinking, the quantity consumed at a typical occasion), and the frequency of heavy episodic drinking (i.e. consumption of 6 standard drinks or more on a single occasion – in South Africa a standard drink is 12 g alcohol).[23] Because AUDIT is reported to be less sensitive at identifying risk drinking in women, the cut-off points of binge drinking for women were reduced by one unit compared with men.[24] Gual *et al*.[25] recommend a cut-off point of ≥5 for men and ≥4 for women, although the false-positive rate was 46.5% among male and 63.3% among female patients when compared with a clinical diagnosis of risky drinking. The Cronbach α-reliability coefficient for the AUDIT-C in this sample was 0.91.

Adherence assessment
The 30-day visual analogue scale (VAS) provided an overall adherence assessment for a longer time interval. The VAS is a valid method of assessing medication adherence[26] and has been validated in resource-limited settings.[27] Adherence was calculated as the percentage of doses taken over those prescribed. Adherence levels assessed from the VAS are defined as follows: full adherence = 100%, partial adherence ≥95% and <100%, and non-adherence as <95% of prescribed doses taken since the last refill.

Data analysis
Data were analysed using Statistical Package for the Social Sciences (SPSS) for Windows software application programme version 17.0. Frequencies, means, standard deviations, medians and interquartile ranges were calculated to describe the sample. Bivariate analyses were conducted to examine the relationships between sexual dissatisfaction, socio-demographic variables, sexual behaviour and health and social variables. Associations were considered significant at $p<0.05$.

All variables statistically significant at the $p<0.01$ level in bivariate analyses were included in the multivariate model.

Results
Sample characteristics
The sample at 20 months' follow-up included 495 patients (71.1% female and 28.9% male), with a mean age of 36.2 years (range 18 - 67 years). Nearly three-quarters (70.1%) had never been married, 59.6% had Grade 8 or higher formal education, and the majority (61.7%) lived in rural areas and were unemployed (59.0%). Only 32.1% of respondents had a formal salary as their main source of household income, 37.4% were in receipt of social grants, and in 18% of cases family members contributed. In terms of sexual behaviour, 46.1% had had sexual intercourse in the past 3 months, 23.6% used condoms inconsistently with their last sexual partner, 60% disclosed their HIV status to their last sexual partner, and 34.3% had a sexual partner who was on ART. The median CD4 count at follow-up was 446 cells/µl, and the mean number of HIV symptoms reported at follow-up was 0.18. HIV medications for 377 patients (76.3%) included lamivudine (3TC), stavudine (d4T) + efavirenz (Stocrin) and for 118 (23.7%) lamivudine (3TC), stavudine (d4T) + nevirapine. Seventy (14.1%) took medications for HIV-related opportunistic infections (Table I).

Sexual activity and sexual dissatisfaction
In this sample 160 subjects (32.6%), 30.3% of men and 36.0% of women, indicated that they had experienced sexual dissatisfaction in the past 2 weeks. Compared with previous assessments there was a significant decrease in sexual dissatisfaction ($F=7.33$, $p=0.007$), from 56.1% at time 1 (before ART) to 46.6% at time 2 (6 months on ART), 50.6% at time 3 (12 months on ART) and 32.6% at time 4 (20 months on ART). Among those who had been sexually active in the past 3 months, sexual dissatisfaction increased from time 1 (41.9%) to time 3 (62.3%) and dropped at time 4 to baseline levels (43.4%), and among those who had been sexually inactive in the past 3 months, sexual dissatisfaction decreased from time 1 (64.6%) to time 4 (23.4%). At time 1 the sexually inactive participants were significantly more sexually dissatisfied than the sexually active, while

Table I. Sample characteristics (*N*=495 subjects)

Socio-demographics	
Gender (*N* (%))	
Male	143 (28.9)
Female	352 (71.1)
Age (range 18 - 67 yrs) (mean (SD))	36.2 (9.5)
Age <36 yrs (N (%))	278 (56.2)
Education	
Grade 7 or less	200 (40.4)
Grade 8 - 11	214 (43.2)
Grade 12 or more	81 (16.4)
Marital status (*N* (%))	
Never married	347 (70.1)
Married or cohabitating	116 (24.0)
Widowed or separated or divorced	29 (5.9)
Residence (*N* (%))	
Urban	195 (39.4)
Rural	300 (60.6)
Employment status (*N* (%))	
Housewife/houseman	80 (16.2)
Unemployed	292 (59.0)
Employed	103 (20.8)
Pensioner/disabled/ student	20 (4.0)
Main household income (*N* (%))	
Formal salary	159 (32.1)
Family member contributions	89 (18.0)
Social grants	185 (37.4)
No income	36 (7.3)
Sexual behaviour (*N* (%))	
Had sexual intercourse in the past 3 months	228 (46.1)
No condom use in past 3 month	71 (14.3)
Condom use in the past 3 month	201 (40.6)
Condom use at last sex	332 (71.9)
Consistent condom use with last partner (always/frequently) v. inconsistent condom use (sometimes, never)	353 (76.4)
More than one sexual partner in the past 3 months	20 (4.0)
HIV-positive v. HIV-negative or unknown status of sexual partner	179 (39.2)
HIV status disclosure to last sexual partner	275 (59.9)
Sexual partner is on ART	158 (34.3)

at times 3 and 4 the sexually active participants were significantly more sexually dissatisfied than the sexually inactive (Table II).

Table I. Continued

Health and social variables	
CD4 count (median 446 cells/µl, IQR 305 - 618) (mean (SD))	
<200	53 (10.8)
200 - 349	106 (21.5)
≥350	334 (67.7)
HIV symptoms (range 0 - 8) (mean (SD))	0.18 (0.89))
ART regimen (*N* (%))	
3TC, d4T + efavirenz	377 (76.3)
3TC, d4T + nevirapine	118 (23.7)
ART adherence ≥95% (*N* (%))	453 (91.5)
Medications for HIV-related opportunistic infections (mainly co-trimoxazole, 1 anti-tuberculosis) (*N* (%))	70 (14.1)
Internalised stigma score (range 0 - 6) (mean (SD))	3.7 (1.8)
Social support (range 3 - 11) (mean (SD))	7.3 (1.1)
Quality of life (range 1 - 5) (mean (SD))	4.4 (0.8)
Depression symptoms (range 10 - 40) (mean (SD))	13.5 (3.7)
AUDIT, alcohol use score (range 0 - 12) (mean (SD))	0.5 (1.4)

SD = standard deviation; IQR = interquartile range.

Determinants of sexual dissatisfaction

In bivariate analyses, not being formally employed, having had sexual intercourse in the past 3 months, condom use in the past 3 months, having an HIV-positive sexual partner, taking medications for HIV-related opportunistic infections, internalised stigma, lack of social support, lack of quality of life and low depressive symptoms were found to be associated with sexual dissatisfaction, and in multivariate analyses, not being formally employed, having had sexual intercourse in the past 3 months, taking medications for HIV-related opportunistic infections, internalised stigma, lack of social support and low depressive symptoms were found to be associated with sexual dissatisfaction (Table III).

Discussion

Self-reported sexual dissatisfaction in this large sample of black patients on ART at 20 months was found to be high in South Africa, as reported by others.[5] There was a significant reduction in sexual dissatisfaction from the beginning of ART over the 20 months, however, and sexual dissatisfaction increased among sexually active participants compared with those who were sexually inactive over the 20-month assessment period. This could indicate that overall being on ART could improve sexual functioning. However, an increase in sexual dissatisfaction among sexually active participants compared with those who were sexually inactive could indicate side-effects of ART on sexual functioning among the sexually active, and possible 'acceptance' or resignation to little or no sex owing to a deeper understanding of the risk associated with HIV positivity and sex and decreased sexual dissatisfaction among the sexually inactive.

Table II. Sexual activity and sexual dissatisfaction (*N*=495) (%)

	T1, sexually active in past 3 months		T2, sexually active in past 3 months		T3, sexually active in past 3 months		T4, sexually active in past 3 months	
Sexual (dis)satisfaction	Yes (52.7%)	No (47.3%)	Yes (53.4%)	No (46.6%)	Yes (50.1%)	No (49.9%)	Yes (46.1%)	No (53.9%)
Overall (very) dissatisfied	56.1		46.6		50.6		32.6	
(Very) dissatisfied	41.9	64.6	47.1	45.7	62.3	40.3	43.4	23.4
Very dissatisfied	5.4	8.1	10.1	10.6	14.4	12.4	9.3	5.3
Dissatisfied	36.5	56.5	37.0	35.1	47.9	27.9	34.1	18.1
Neither satisfied nor dissatisfied	32.0	17.7	5.0	6.7	1.7	4.7	11.1	12.8
Satisfied	24.6	14.5	39.1	42.8	33.5	51.9	31.9	55.1
Very satisfied	1.5	3.2	8.8	4.8	2.5	3.0	13.7	8.7
	χ^2 23.61	*p*=0.000	χ^2 3.63	*p*=0.459	χ^2 25.49	*p*=0.000	χ^2 32.92	*p*=0.000

T1 = before ART; T2 = 6 months on ART; T3 = 12 months on ART; T4 = 20 months on ART.

The study found that sexual dissatisfaction, in concordance with other studies, was associated with socio-demographic factors (not being formally employed),[4] lack of social support,[4] physical factors such as poor general health (low quality of life),[4] psychological factors (internalised stigma)[4] and behavioural factors (being sexually active, condom use).[4] However, symptoms of depression were not associated with sexual dissatisfaction, as was also found in a study among HIV-positive women in the UK[28] but not in most studies.[3,4,6,7] It is possible that generally being on ART over longer periods is associated with an increase in quality of life and a decrease in overall depression. In this study sexual risk taking, alcohol use and non-adherence to ART were not found to be associated with sexual dissatisfaction, in contrast to some other studies.[4,6,8-10] An important finding was that taking medications for HIV-related opportunistic infections was associated with sexual dissatisfaction.

This prospective study with a large sample of persons on ART showed evidence of reduction of sexual dissatisfaction over time and a number of factors influencing sexual dissatisfaction that should be addressed in health care provider interventions. Health care providers can provide some reassurance that improvement in health will address some sexual dysfunction. Addressing concerns and providing simple behavioural interventions could increase confidence.[1]

Limitations

This study also has limitations. The assessment of sexual dissatisfaction was only based on one item and by self-reports. Caution is also urged in generalising findings to other districts and provinces in the country.

Conflict of interests. None declared.

Acknowledgement. I thank the TIBOTEC REACH initiative for funding this study, and Robert Colebunders for raising the issue of sexual dysfunction among patients on ART.

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Table III. Determinants of sexual dissatisfaction at 20 months' follow-up

	CrOR (95% CI)	*p*	AdjOR (95% CI) *†	*p*
Socio-demographics				
Male v. female	0.81 (0.53 - 1.25)	0.351	-	
Age	1.01 (0.99 - 1.03)	0.584	-	
Education				
Grade 7 or less	1.00			
Grade 8 - 11	1.48 (0.97 - 2.27)	0.071	-	
Grade 12 or more	0.61 (0.36 - 1.03)	0.064	-	
Never married/widowed/separated/ divorced v. married or cohabitating	0.72 (0.46 - 1.15)	0.172	-	
Urban v. rural residence	0.82 (0.56 - 1.22)	0.336	-	
Formal/informal employment v. not	0.35 (0.21 - 0.60)	0.000	0.44 (0.22 - 0.90)	0.024
Formal salary as main household income v. other	1.38 (0.93 - 2.06)	0.115	-	
Sexual behaviour				
Had sexual intercourse in the past 3 months	2.51 (1.70 - 3.65)	0.000	5.77 (1.68 - 19.82)	0.005
No condom use in past 3 months	0.96 (0.56 - 1.66)	0.893	-	
Condom use in the past 3 months	2.58 (1.75 - 3.80)	0.000	1.06 (0.36 - 3.12)	0.915
Condom use at last sex	0.87 (0.50 - 1.35)	0.873	-	
Consistent condom use with last partner (always/frequently) v. inconsistent condom use (sometimes, never)	0.57 (0.36 - 0.89)	0.013	-	
More than one sexual partner in past 3 months	0.63 (0.22 - 1.79)	0.390	-	
HIV-positive v. HIV-negative or unknown status of sexual partner	2.36 (1.54 - 3.46)	0.000	0.52 (0.24 - 1.10)	0.087
HIV status disclosure to last sexual partner	1.38 (0.92 - 2.08)	0.122	-	
Sexual partner is on ART	1.67 (1.11 - 2.51)	0.015	-	
Health and social variables				
CD4 count (cells/µl)	1.00 (0.99 - 1.00)	0.567	-	
HIV symptoms	0.69 (0.47 - 1.03)	0.071	-	
ART regimen				
3TC, d4T + efavirenz	1.00			
3TC, d4T + nevirapine	1.28 (0.83 - 1.97)	0.273	-	
ART adherence	1.82 (0.85 - 3.90)	0.123	-	
Medications for HIV-related opportunistic infections	2.33 (1.39 - 3.91)	0.001	2.51 (1.09 - 5.74)	0.030
Internalised stigma	1.57 (1.36 -1.67)	0.000	1.40 (1.20 - 1.64)	0.000
Social support	0.32 (0.26 -0.41)	0.000	0.42 (0.32 - 0.56)	0.000
Quality of life†	0.67 (0.53 -0.84)	0.001	1.08 (0.76 - 1.55)	0.664
Depression score	0.78 (0.72 -0.84)	0.000	0.89 (0.81 - 0.98)	0.013
AUDIT, alcohol use score	1.29 (0.89 - 1.88)	0.178	-	

*Using forced entry.
†Hosmer and Lemeshow χ^2 8.00, df=8, p=0.433. Cox & Snell R^2 0.37; Nagelkerke R^2 0.52.
CrOR = crude odds ratio; AdjOR = adjusted odds ratio.

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