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Psychosocial predictors of HIV/STI risk behaviours in a sample of homosexual men

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Objectives: To determine the prevalence of STI/HIV risk behaviours in a sample of homosexual men and investigate the psychosocial and cognitive variables associated with these behaviours.

Method: A sample of 123 users of a homosexual men's sexual health clinic completed a questionnaire which included demographic information, psychometric measures, history of sexual risk behaviour, and history of non-consensual sex (NCS).

Results: High rates of sexual risk were found in this sample behaviour (36% of men had risky sex in the previous month) despite using a narrower definition than other recent studies. Comparable rates of non-consensual sex were found in this sample (26% of the sample had experienced NCS); however, this variable was not directly linked to increased risk behaviour. Depression and cognitions associated with controllability or predictability of risk were associated with increased HIV/STI risk behaviour.

Conclusions: Clinical measures of depression are associated with risk behaviour in this sample as are cognitions about the uncontrollability of risk and reducing chances of exposure to HIV by insertive sexual practices and fidelity. Demographic variables, a history of non-consensual sex and depression are not predictors of risk behaviour when sexual risk cognitions are used to predict unsafe sexual practices indicating that cognitions are foremost in driving risk behaviours, demographic variables, and the NCS history of the subject. Given the considerable costs of providing medical care to patients with HIV it is likely that even modest reductions in rates of HIV infection through proactive psychological interventions to modify erroneous cognitions will prove highly cost effective.

There is a growing body of literature which suggests that the reason public education campaigns continue to have a low impact on reducing rates of HIV/STI sexual risk behaviour is that demographic, psychosocial, and cognitive variables mediate in the decision making process. These include situational factors and cognitions associated with risk analysis such as fatalism, low life satisfaction and lowered life expectancy, and self reported low mood.^{1,2} Low mood has also been identified as a predictor of sexual risk behaviour in other studies³ although only one used a reliable and validated psychometric test to measure this.⁴ A history of non-consensual sex (NCS) in childhood or adulthood has also been identified as a predictor of risk behaviour. Studies have examined this association among homosexual men,³ heterosexual men and women,^{5–7} and teenagers.⁸ The majority of these studies do not consider the impact of mediating psychosocial variables, such as standardised measures of self esteem, low mood and anxiety, in explaining the relation between NCS and risk behaviour. Erroneous cognitions (regarding the safety of withdrawal before ejaculation) have also been found to be independent predictors of seroconversion in a large scale longitudinal study of HIV risk.⁷

A number of studies have examined the prevalence of NCS among homosexual identified men. In a study of 930 homosexually active men in England and Wales, 27.6% reported some form of NCS.⁹ Only 3.9% involved female assailants and in just under one third of assaults some form of consensual activity had previously occurred. A study of 162 homosexual men¹⁰ found that 52% had experienced some sort of unwanted sexual coercion. There is a paucity of research examining the psychosocial impact of NCS in homosexual men and the possible link to sexual risk behaviour. The current study seeks to examine the link between sexual risk behaviour and psychosocial variables (using standardised psychometric instruments) and experiences of NCS in adulthood or childhood in a sample of homosexual men accessing sexual health services.

Developing a reliable and valid measure of sexual risk behaviour remains a difficult issue for research in this field. The present study asked about episodes of unprotected anal intercourse (UAI) in and outside of main relationships. Participants were asked about their HIV status and the HIV status of their partner(s). Riskier sex was defined as UAI where the HIV status of the main partner was positive or not known or any UAI with someone other than their main partner regardless of their reported HIV status.

METHODS

Study population and procedure

Participants were recruited from a weekly homosexual men's sexual health clinic in east London which is advertised through the gay press. Following arrival at the clinic participants were given written information about the study and asked to complete an anonymous questionnaire. A total of 149 men were approached of whom 123 agreed to participate giving an overall response rate of 82%. One person declined to participate because of linguistic difficulties. Completed questionnaires were returned to the researcher in a sealed envelope to ensure anonymity. The study was approved by the local research ethics committee.

Measures

A self report questionnaire designed by the researchers collected information about the following variables:

Demographic information: age, ethnicity, sexual orientation, education level, employment status, relationship status, and current living situation.

STI and HIV risk behaviours: past history of STIs, HIV status, injecting drug use, work in or use of the commercial sex industry. Participants were asked to quantify the amount of sexual activity in and outside of their main relationship in the past month, whether a condom was used in these encounters,

Table 1 Demographic characteristics of the NCS and non-NCS groups

Variable	No NCS		NCS		p Value
	No	%	No	%	
Ethnicity					
White European	71	78.8	29	90.7	0.714
Black Caribbean/UK/African	1	1.1	1	3.1	
Other	20	20.1	2	6.2	
Employment					
Employed	79	87.8	30	93.8	0.301
Unemployed	6	6.7	2	6.2	
Student	5	5.6	0	0	
Social class					
1	15	17.4	1	3.3	0.06
2	58	67.4	22	73.3	
3.1	10	11.6	4	13.3	
3.2	0	0	2	6.7	
4	3	3.5	1	3.3	
5	0	0	0	0	
Relationship status					
Main relationship	53	58.9	13	40.6	0.962
No main relationship	37	41.1	19	59.4	

and what they thought the HIV status of their partner was. This part of the questionnaire was informed by work on the design of STI risk studies which seek to maximise participants' disclosure rates and the accuracy of responses.¹¹

History of non-consensual sex (NCS): whether it had occurred, age at which it occurred, the sex of the assailant, relationship to assailant, whether assault involved penetration or threat of violence, and whether subsequent NCS had occurred.

Psychological distress: The Hospital Anxiety and Depression Scale (HADS)¹² is a 14 item self report questionnaire consisting of two subscales for anxiety and depression. A score of 7 or less represents "non-cases," a score of 8–10 represents "borderline cases," and a score of 11 or greater represents "definite cases." The authors report that the reliability of the scale for assessing cases of anxiety is $r = 0.74$ and for cases of depression $r = 0.70$. It has been found to give clinically meaningful results as a psychological screening tool across a number of settings and patient groups and to be appropriate in transcultural settings.¹³

Self esteem: The Rosenberg Self-Esteem scale (RSE) is a 10 point self administered scale. Self esteem as measured by the RSE has been identified as part of a wider construct of self concept which may moderate against the effects of threatening events or conditions. Internal consistency has been measured and alpha coefficients of between 0.77 and 0.88 reported over a variety of population groups. Test-retest reliability coefficients have been reported between 0.63 and 0.82, although on much more limited population groups.¹⁴

Sexual Risk Cognitions: Gold's "Self justification for Sexual Risk" questionnaire was used.¹ This presents the participant with 22 statements about what might have been in their mind the last time they practised unsafe sex and asks them to rate how strongly each self justification had been on their mind at the time on a four point scale. An additional statement was included which said: "The new combination treatments for HIV mean that you don't have to worry about safe sex so much any more." This was in order to explore whether the impact of new therapies has had an impact on risk behaviour.

Statistical analysis

Data were analysed using SPSS 10.0 for Windows. In univariate analysis, comparisons were made using Pearson's χ^2 test. Stepwise multivariate logistic regression analysis was used to explore the relation between HIV/STI risk behaviour and demographic/psychosocial variables and NCS history. One case was excluded because information on experience of NCS was not recorded.

RESULTS

Prevalence of NCS

Thirty two (26%) of 122 men reported experiences of NCS. Six (19%) reported NCS before the age of 16. Fourteen (44%) reported the assailant as a stranger and nine (28.2%) with a regular or casual partner. For 23 (71.9%) the episode involved penetration and for 22 (68.8%) episodes involved a threat of violence. The assailant was male in all cases.

Demographic profile

Table 1 shows the profile of the study sample. The demographic profile of non-respondents was not known. The mean age of all respondents was 32.6 years (range 20–59) and the majority (78.8%) identified as white UK. When the profile of men who had reported NCS was compared with those who did not the two groups did not significantly differ on any demographic variables. There was a trend level difference in social class between the two groups, with men who had experienced NCS being less likely to come from social classes I and II. There was no difference in the demographic profiles of men who had taken part in higher risk STI/HIV sexual risk behaviour compared to those who had not.

Prevalence of STI/HIV risk behaviours

Men who had experienced NCS reported 19.8 sexual partners per year compared to 43.1 partners per year among men who had not (significant at $p = 0.04$, $f = 7.45$). There was no difference in the number of episodes of unprotected anal intercourse in the previous year indicating a higher percentage of episodes of UAI per sexual partner. Table 2 shows there were no other systematic differences in terms of STI/HIV history between the two groups.

Psychometric variables, NCS, and risk behaviour

Men who had practised unsafe sex were compared to men who had not on psychometric variables and experience of NCS. There was a significant difference in HADS depression between the two groups as shown in table 3, with men who had practised riskier sex showing more likelihood of reaching case level depression scores than those who had not ($\chi^2 9.123$, $df = 2$, significant at 0.01 level). There was no difference in HADS anxiety and likelihood of having experienced NCS.

Cognitions associated with HIV/STI risk behaviour

Logistic regression was used to identify which sexual risk cognitions were associated with HIV risk behaviour. Factors which predicted sexual risk behaviours are presented in table 4. Men who had practised riskier sex in the month before the study were more likely to agree or strongly agree with the cognitions:

"If I'm active . . . my chances of getting infected are low."

"This guy and I have been faithful to each other for a long time and neither of us has the symptoms of AIDS."

"We take chances every day . . . taking a risk is just part of life."

The predictive power of this model was not enhanced by the addition of psychometric measures of mood, self esteem, history of NCS, or demographic variables. Although HADS depression and HADS anxiety were predictive of sexual risk behaviour in models where risk cognitions were not entered as predictor variables the variance explained by these factors was very small (adjusted R^2 of 0.085) compared to the variance explained by the model using cognitive variables (adjusted R^2 of 0.209). When experience of NCS was looked at as the target variable only the cognition "We take chances every day . . ." was a useful predictor variable although the variance explained by this factor was small (adjusted R^2 of 0.061).

DISCUSSION

High rates of sexual risk taking were found in this sample compared to other recent studies^{15–16} despite using a narrower

Table 2 Prevalence of HIV/STI risk factors among men reporting NCS and those reporting no NCS

	No NCS		NCS		p Value
	No	%	No	%	
High risk sex in past month					
No	54	60	20	62.5	0.22
Yes	32	35.6	12	37.5	
Missing	4	4.4	17	53.1	
UAI in past month					
No	34	37.8	17	53.1	0.98
Yes	50	55.6	15	46.9	
Missing	6	6.7			
Any UAI in past year					
No	33	36.7	13	40.6	0.71
Yes	56	62.2	19	59.4	
Missing	1	1.1			
Mean number of partners in past year	43.1		19.8		0.04 (f=7.45)
Mean episodes of UAI in past year	5.3		4.01		0.76 (f=0.119)
Ever had STI					
No	15	16.7	7	21.9	0.76
Yes	75	83.3	25	78.1	
HIV status					
Positive	10	11.1	2	6.2	0.71
Negative	51	56.7	20	62.5	
Don't know	29	32.2	10	31.3	

Table 3 Comparison of psychometric variables for men who have practised riskier sex in the previous 3 months versus men who have not

	No risk behaviour	Risk behaviour	DF	Significance level
Mean score on RSE	18.4	19.7	115	0.114
Score on HADS depression			2	0.01
Case	2.7% (n=2)	13.6% (n=6)		
Borderline	8.1% (n=6)	18.6% (n=8)		
Non-case	89% (n=66)	67.4% (n=29)		
Score on HADS anxiety			2	0.781
Case	28.4% (n=21)	25.6% (n=11)		
Borderline	24.3% (n=18)	30.2% (n=13)		
Non-case	47.3% (n=35)	44.2% (n=19)		
Whether experienced NCS			1	1.00
Yes	27% (n=20)	27% (n=12)		
No	73% (n=54)	73% (n=33)		

definition of STI/HIV risk. It may be that higher disclosure rates of risk activity identified in the sample are due to genuinely higher rates within the population of men who use genitourinary clinics or that the gay affirmative nature of the clinic made disclosure easier. Similar rates of NCS (26%) to previous studies were identified⁹ but the rate of childhood sexual abuse was markedly lower.⁴ The study did not find a clear link between a history of NCS and STI/HIV risk behaviour. There was evidence for a higher rate of episodes of unprotected anal intercourse per partner among men who had experienced NCS than among men who had not. The failure to find a clear link between NCS and risk behaviour may be due to the majority of reported NCS in this study occurring during

adulthood compared to higher rates of NCS in childhood reported in other studies. The relation between NCS and risk behaviour is likely to be complex and linked to a number of intervening variables.

Men who had practised riskier sex were more likely to meet case criteria for depression indicating an association between these variables. It might be that this is a risk factor for UAI with someone whose HIV status is positive or not known as depression reduces the subject's ability to negotiate safer sex, initiate harm reducing behaviours, or engage in risky sex as a form of self harming behaviour. The cross sectional methodology used in this study, however, cannot show causality and it may be the case that unsafe sex is an antecedent for low

Table 4 Logistic regression modelling of cognitions associated with HIV/STI risk behaviour

Predictor variable	Multiple		Standard error b	β	t	Significance of t
	R	B				
If I'm active . . . my chances of getting infected are low	0.378	0.199	0.052	0.361	3.787	0.000
This guy and I have been faithful to each other for a long time . . .	0.448	-0.123	0.041	-2.87	-3.002	0.004
We take chances every day . . .	0.513	0.138	0.052	0.258	2.662	0.009

mood prompted, for example, by self reflection following risk behaviours. Anxiety and low self esteem were not found to be associated with risk behaviour. Analysis of the impact of sexual risk cognitions indicates that a number of different beliefs are indicative of sexual risk behaviour in this population. These are feelings of the uncontrollability of risk (a variable also associated with a history of NCS), of fidelity as a protective factor (despite the complex issues associated with negotiated risk in relationships) and reducing the risk to oneself by only practising insertive sex (despite this been clearly identified as a risk factor in prevention campaigns). All of these beliefs can be conceptualised as erroneous and may be open to modification through cognitive behavioural interventions. It is noteworthy that when depression, anxiety, and a history of NCS are added to regression models based on risk cognitions the predictive power of those models does not improve. This suggests that these cognitions are foremost in driving risk behaviours irrespective of the mood and NCS history of the subject. Thus more notable reductions in risk behaviours may be achieved by campaigns aimed at modifying erroneous cognitions than identifying "at-risk individuals" such as those who have depression or a history of NCS.

The methodology used in this study has a number of limitations which need to be considered when interpreting results and planning future research. Defining and eliciting STI/HIV risk behaviours and episodes of NCS remain a difficult area for researchers. Disclosure rates for both vary considerably with the definitions used and the setting where questions are asked. Developing a reliable and valid measure of what is STI/HIV risk behaviour remains problematic. Although the definition used in this study is more useful than simply unprotected anal intercourse the reliance on the self report of the participant's own and their partner's HIV status remains an unreliable way to evaluate negotiated safer sex in a relationship. Research suggests that a significant number of homosexual men are unreliable sources of information about their own and their partner's HIV status.¹⁷ Clinical experience also suggests that there is a significant number of men who become infected while in relationships where either monogamy or agreements about condom use outside of the main relationship are assumed. Future studies should seek to clarify this definition and perhaps include unprotected oral sex as another risk factor.

The sample size is relatively small and would benefit from being both larger and more representative of the wider community of homosexual men. Although the sample is broadly similar in age and ethnicity to other studies which have looked at the sexual behaviours of large groups of homosexual men in the United Kingdom,^{18,19} men who had been in higher education and are from social classes I and II were comparatively over-represented in this sample. There were also very few men under the age of 25. Findings from this clinical sample may not be generalisable to non-clinical populations. Men who use sexual health clinics may also be a more at-risk group for STI/HIV risk behaviour than those who do not. Although prevention strategies should focus on more at-risk subpopulations knowledge about these rates and relationships in community samples would also be informative.

Rates of STI/HIV risk behaviour have not been significantly reduced by educational campaigns. Identifying pervasive beliefs in particular communities will enable more effective targeting of educational campaigns whilst identifying these beliefs at the individual level in genitourinary or HIV clinics provides frameworks for one to one prevention work.

This leads to some optimism regarding the future of prevention work with homosexual men who attend genitourinary clinics for frequent testing. It indicates that identification of at-risk individuals might lead to the possibility of cognitive input from a psychologist to identify beliefs which maintain riskier behaviours. These can then be challenged and modified using cognitive behavioural strategies. As these cognitions seem to predict riskier sex irrespective of demographic

Key messages

- Rates of sexual risk behaviour remain high among homosexual men.
- Erroneous cognitions are foremost in driving risk behaviours irrespective of depression, demographic variables, and the NCS history of the subject.
- Reductions in rates of HIV infection through one to one psychological interventions to modify erroneous cognitions could prove highly effective in reducing HIV/STI transmission.

variables or indicators of psychological distress it is likely that these approaches will be appropriate for a large number of men. The study also suggests that the relation between NCS and subsequent risk behaviour is a complex one and that the impact of intervening psychosocial variables is still poorly understood. The high cost of antiretroviral therapy means that individual STI/HIV prevention strategies will be likely to be cost effective.

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CONTRIBUTORS

AB, data collection, analysis and preparation of the manuscript; IM, data collection and review of the manuscript; JP, supervision of the study and review of the manuscript.

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