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Predictors of high risk sexual behaviour in gay and bisexual men

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Gay and bisexual men are known to have made substantial adjustments to their sexual behaviour in response to AIDS [1]. Nevertheless studies continue to report a high frequency of homosexually active men engaging in potentially risky sexual activity, particularly, unprotected receptive anal sex [2]. An understanding of such behaviour is required in order to design appropriate health educational interventions.

The Health Belief Model [3] draws attention to a number of social-psychological factors that may be important influences upon health behaviour, and that may also suggest how to target health interventions. Thus one central variable of the HBM is the individual's perception of personal risk in relation to a disease such as AIDS in determining readiness to change behaviour [4]. Related to perception of risk is the individual's level of knowledge about HIV transmission. The model also suggests that the greater the perceived seriousness or threat of a disease, the greater the likelihood of change [5]. Another factor central to the HBM is the perception of costs and benefits of changing behaviour. In particular gay men may have strong attitudes regarding the costs and benefits associated with adopting safer sex [6]. Individuals' sense of control over health, general self-confidence or self esteem have been suggested as elements additional to the HBM that may also be important influences upon behavioural change in this area [6]. The HBM also indicates that a range of external cues may be stimuli to change. One factor that may be particularly important is degree of contact with the AIDS epidemic [7].

This paper reports on aspects of the sexual behaviour of a sample of homosexually active men in England. Results from a longitudinal study are used to examine the extent to which high risk sexual behaviour may be predicted by the following variables from the HBM: perceptions of risk, level of knowledge about HIV transmission, perceived severity and threat from the AIDS epidemic, perceived costs and benefits of adopting safer sex including views about condom use, personal sense of control over health generally and specifically in relation to HIV, self confidence and self esteem and contact with the AIDS epidemic. In addition the influence of mens' current partnerships is examined. Whilst not included within the normal range of variables of the HBM, relationships may be expected to play a potential role in influencing high risk sexual behaviour.

Methods and sample

For inclusion in this study it was necessary for the subject to be a man who had had sexual contact with another man within the last 5 years. A sample of 502 men was recruited for interview from a diverse range of sources: 283 (56%) from gay pubs, clubs and gay organisations; 96 (19%) by referrals from those already interviewed ("snowball" sampling) and 123 (25%) from clinics of departments of genito-urinary medicine. Four main towns and cities were used: London 228 (45%), Manchester 145 (29%), Oxford 65 (13%) and Northampton 31 (6%). A further 33 (7%) of the sample were recruited from areas around these four centres. The interview gathered detailed information about current sexual behaviour, as well as variables from the HBM as described below. Three hundred and sixty-nine men (74%) completed a follow-up postal questionnaire 9 months later. The only significant differences between those who returned the follow up-questionnaire and the rest of the original sample were that those returning the follow-up questionnaire were older ($t = 2.28$; $p < 0.05$), had spent longer in full-time education (chi square 6.35, $p < 0.05$) and were less likely to be unemployed (chi square 11.65, $p < 0.001$).

In the interview, men were asked to assess their personal risk in relation to HIV/AIDS in a number of different ways. In one question they were asked to rate their position on a five-point scale in relation to the question, "How do you rate your chances of developing AIDS?". A second question asked "When you compare yourself to other gay men what would you say are your chances of developing AIDS?" In each case, a higher score denoted a higher perception of risk. A number of questions were asked about knowledge of AIDS, but the subjects were so well informed that there was very little variability in the responses. In this report answers to the following question are used to assess

knowledge of relevant health risks: "Can you tell me if receptive anal sex without a condom is safe for you to do, assuming you don't know whether your partner is HIV antibody positive or negative?".
The perceived severity and threat of AIDS to individuals was assessed by a four item Likert form scale with satisfactory internal reliability (Cronbach's alpha = 0.48). Items included: "AIDS has no real consequences for the way I lead my life" and "When the topic of AIDS comes up, I switch off". The range of scores varied from 4 to 20 with a low score indicating no perceived threat from AIDS.
The perceived costs and benefits of adopting safer sex were assessed in three different ways. Respondents were provided with a definition of safer sex in terms of kissing, body rubbing and mutual masturbation. With this in mind, they then had to give their views about safer sex in relation to 4 statements e.g. "safe sex is fun" and "safe sex isn't an effective way of preventing me from getting AIDS". The scoring of the second item was reversed and the four items summed to produce a range of scores from 4 to 20 with a low score indicating that the individual perceives greater benefits than costs from safe sex. The internal reliability of the scale was satisfactory (Cronbach's alpha 0.65). Attitudes towards condom use were considered to represent a second component of the perceived costs and benefits of adopting safer sex to the individual. A Likert-form scale was developed containing four items, which included, "condoms are an acceptable part of sex for me" and "I find/would find condoms messy and unpleasant to use". The scoring for the second item was reversed and the four items totalled to produce a range of scores from 4 to 20 with a low score denoting a high level of acceptability towards condoms. The internal reliability of the scale was satisfactory (Cronbach's alpha 0.64). Finally, respondents were also asked to state whether they particularly liked or disliked certain sexual activities such as receptive anal sex with a condom or, alternatively, without a condom.
Personal control over health was assessed by the Multi-dimensional Health Locus of Control Scales which measure general beliefs about control over health [8]. The instrument produces three sub-scales: (i) Internal Health Locus of Control assesses the belief that one's own behaviour contributes to one's health; (ii) Powerful Others Health Locus of Control assesses the belief that significant others such as doctors, nurses and one's family influence one's health and (iii) Chance Health Locus of Control assesses the belief that health is determined by chance and fate. In addition an AIDS Locus of Control Scale was developed. This Likert form scale contains six items (e.g. "It is largely up to chance whether I develop AIDS" and "There is nothing I can do personally that will make any difference to whether or not I develop AIDS"). The range of scores for the scale varied from 6 to 30 with a low score indicating a high level of fatalistic beliefs in relation to AIDS. The internal reliability of the scale was satisfactory (Cronbach's alpha 0.61). Some construct validity for the scale is indicated by its agreement with scores for the Chance Health Locus of Control Scale ($p < 0.0001$).
Self esteem was assessed by the Rosenberg Self Esteem Scale [9]. Contact with the AIDS epidemic was measured by asking whether men had a close friend or relationship with someone who was either HIV positive, had AIDS or had died of AIDS.
The follow-up questionnaire obtained information about sexual behaviour in the previous month and previous year. The reliability [10] and validity [11] of self-reported homosexual behaviour over short periods of recall has been established. Information was gathered by means of a check list of sexual behaviours and respondents were asked to describe their sexual behaviour with each of their partners in turn. A distinction was made between regular partners with whom the respondents were currently in a relationship and other non-regular partners.
The mean age of the sample was 31.6 years (SD 10.4) with a range from 16 to 67. Eleven percent of men were either married, separated, divorced or widowed. Fifty-one men (10%) described their sexual orientation as bisexual, 43 (9%) as homosexual and 392 (78%) as gay. A further 16 (3%) preferred no designation or unique terms not included in the checklist. In terms of education, 63% had reached higher education (university, polytechnic or higher education college), 23% reached some intermediate level of educational qualification and 14% left school without qualifications and obtained no further education. Using the Registrar General's classification of occupations 84% were in social classes I, II and III non-manual.
The Mann-Whitney test was used to examine differences on ordinal scales, otherwise Student's t-test or chi square were used as appropriate.

Results

In the follow-up postal questionnaire, 142 men (39%) reported having receptive anal sex and 81 (22%) had had unprotected receptive anal sex within the previous month. One hundred and forty-five men (39%) reported insertive anal sex and 75 (20%) had had unprotected insertive anal sex.
Variables were examined from the interview conducted 9 months previously that might be associated with reporting unprotected receptive anal sex at follow-up. The majority of men (441, 88%), when interviewed, did not perceive themselves to be at any great risk of developing AIDS and 90% (454) of men assessed their risk as being lower than or about the same as that of other gay men. Men who perceived their risk of developing AIDS as likely or highly likely were significantly more likely to report

Tab. 1. Perception of personal risk of AIDS amongst homosexually active men and subsequent sexual behaviour.

	Unprotected receptive anal sex	No unprotected receptive anal sex
Personal risk of developing AIDS:		
Likely/ Highly likely	14 (17%)	24 (8%)*
Highly unlikely/ Unlikely	67 (83%)	262 (92%)
	81 (100%)	286 (100%)

* Chi square 4.46, $p < 0.05$.

Tab. 2. Perception of risk compared to other gay men and subsequent sexual behaviour.

	Unprotected receptive anal sex	No unprotected receptive anal sex
Risk of developing AIDS compared with other gay men:		
Higher/ Much higher	8 (10%)	10 (4%)*
Lower/ Much lower/same	72 (90%)	266 (96%)
	80 (100%)	276 (100%)

* Chi square 4.01, $p < 0.05$.

having unprotected anal sex at follow-up (Table 1). Similarly, respondents who rated their personal risk as higher or much higher than that of other gay men were more likely to report having unprotected receptive anal sex at follow-up (Table 2). These two significant relationships were re-examined controlling for sexual behaviour at interview (time 1). Amongst men who did not at interview report unprotected receptive anal intercourse, the positive relationship between risk of developing AIDS and unprotected anal sex as reported at follow-up remained significant (chi square 4.32, $p < 0.05$). However, the relationship between perceived risk relative to other men and unprotected anal sex disappeared.

None of the following variables were related to having unprotected receptive anal sex: knowledge about the mechanism of transmission of HIV in anal sex, the scales to assess the perceived threat from AIDS, the three scales of the Multidimensional Health Locus of Control, the AIDS-specific locus of control scales, and the self esteem scale.

No relationship was found between the scale to assess perceived costs and benefits of adopting safer sex and reporting unprotected anal sex at follow-up. However, the majority of men expressed generally positive attitudes towards individual items concerning condom use (Table 3). Men who achieved lower scores on the condom acceptability scale at interview, denoting a greater degree of acceptance, were significantly less likely to report having unprotected receptive anal sex at follow-up ($t = 2.54$, $p < 0.05$). Men who said that they particularly disliked receptive anal sex with a condom were significantly less likely to report unprotected receptive anal sex at follow-up (9, 15% vs. 63, 28% chi square 4.56, $p < 0.05$). However, men who said that they particularly liked receptive anal sex without a condom were significantly more likely to report having unprotected anal sex at follow-up (42, 55% vs. 48, 18% chi square 41.69, $p < 0.00001$).

Tab. 3. Attitudes to condom use.

Agree	
"Condoms are an acceptable part of sex for me"	75%
"Condoms are an acceptable part of sex for my partners"	67%
Disagree	
"I find condoms messy and unpleasant to use"	52%
"I find/would find condoms awkward and difficult to use"	54%

Three hundred and fifteen men (63%) reported knowing someone who was HIV antibody positive; 98 men (20%) had a close friend, lover or ex-lover who currently had AIDS and 84 men (17%) had had a close friend or lower who had died from AIDS. No significant differences were found between those who had or had not had any of these kinds of close personal contact with AIDS in relation to unprotected receptive anal sex at follow-up.

At interview, 331 men (66%) and at the questionnaire stage 272 men (74%) reported having a regular partner. Of the follow-up sample, those who reported having a regular partner within the last month were more likely to have had unprotected receptive anal sex (chi square 18.0, $p < 0.0001$). Some possible confounding variables for this relationship were considered. Firstly, it is possible that the important factor may not be that partners are in a regular relationship, but rather that both partners have been tested and found to be compatible (e.g. both sero-negative). We considered this possible confounding effect by examining those respondents who said they had not been tested. Within this group the relationship between having a regular partner and unprotected receptive anal sex remained significant (chi square 12.8, $p < 0.001$). Thus compatibility for sero-status is unlikely to be the reason for the obtained relationship. The second

possible confounding variable considered was the possibility that partners in "monogamous" exclusive relationships (i.e. neither partner had other sexual partners) were more likely to have unprotected receptive anal sex. This possible confounding effect was considered by examining two groups, those men who described themselves in a "monogamous" exclusive relationship and those who were not. There were no significant differences in the rate of unprotected receptive anal sex between these two groups. Again, this would tend to suggest that being in an exclusive relationship is not the explanation for the association between having a regular partner and having higher risk sex.

Discussion

It is essential to identify models or theories that have explanatory power in relation to sexual behaviour and risk of HIV infection in order to inform prevention strategies. It has been argued that the Health Belief Model (HBM) is of particular value in this context[12]. Some early cross-sectional studies drew attention to variables from the Health Belief Model that were associated with high risk sexual behaviour amongst gay men[5,13], although subsequent longitudinal studies found diminished effects of HBM variables[14].

The longitudinal design of this study makes it more feasible than in cross-sectional surveys to establish the time-order of variables from the Health Belief Model that might predict potentially high risk sexual behaviour. In this study many variables from the HBM have not proved particularly helpful. Thus, none of the measures of perceived personal risk or vulnerability are associated with a lower probability of unprotected anal intercourse. To some extent, as with the Michigan MultiCentre AIDS Cohort study[14], the puzzling positive relationship between perceived risk and sexual behaviour disappeared when sexual behaviour at time one was controlled out. Similarly, other studies have failed to find that either general or AIDS specific locus-of-control type measures are predictive of high risk sexual behaviour[14]. The absence of effects of knowledge is due to the uniformly well informed nature of gay men in this, as in other studies[4].

There was a complex association between the perceived costs and benefits incurred by adopting safer sex and the occurrence of unprotected receptive anal sex. No relationship was found to exist between behaviour and perceived personal costs and benefits of adopting safer sex, as assessed by the scale of attitudes to safer sex. On the other hand, a positive association was found between expressing a particular liking for receptive anal sex without a condom and reporting having the same activity at follow-up. In addition, the positive finding relating condom acceptability to their future use confirms previous findings derived from cross-sectional data[15].

It would appear that overall the explanatory power of the HBM and of constructs such as locus of control in relation to potentially high risk sexual behaviour is small. The history of the model in other areas of health behaviour has been quite mixed. In some areas such as uptake of immunization it has been quite helpful in explaining variation in behaviour[16]. In studies of whether individuals make use of cancer screening the results have varied, with variables from the model explaining considerable variance in some studies[17] and only modest variance in others[18]. One reason for its limitations in the field of sexual behaviour is that two individuals are concerned in the risky behaviour, and the perceptions of risk of two individuals from each other are central. Thus the clearest result of the study is that unprotected anal sex is considerably more likely to occur in the context of a regular rather than casual or less well-established relationship. This result confirms findings from other studies of the importance of type of partner on sexual behaviour. Men are far less ready to have unprotected penetrative sex with non-regular partners[7,19]. In our study, 84% described themselves as in a regular relationship at the start or finish of the nine-month period covered by the two stages of the survey. So, the majority of men may find themselves in the situation in which unprotected penetrative sex may occur. There are reasons to be concerned about this pattern of findings. Even partnerships defined by gay men as regular tend to be of short duration. Thus in our study partnerships described as exclusive and monogamous typically lasted less than two years[20]. Less than half the men had ever had the HIV test and there is little evidence that having the test has become a routine part of partnership formation[21]. Our results are similar to another recent study[22] which also suggests that it is not monogamy or concordance for HIV status that leads to this pattern, but a sense of familiarity with the partner that reduces perceptions of risk.

These results are of relevance to preventative strategies. The Health Belief Model attempts to identify particular perceptions and cognitions that may be targeted by health education or other interventions. Our results regarding the role of attitudes towards condoms in influencing actual use would be an instance of such a factor. However, in addition, we would suggest that, in the light of our results, men should also be alerted to the processes whereby unsafe sex occurs more often when partners view themselves as part of a more regular relationship. As evidence increases of resurgence of gonorrhoea and HIV infection in gay men[23,24], it is clear that this message is of particular importance.

Summary

Evidence of high risk sex between gay men continues to be reported, as does a range of sexual behaviour. Three hundred and sixty-nine homosexually active men from different areas of England were each assessed twice at an an interval of 9 months in order to examine the extent to which a number of social-psychological factors predicted subsequent high risk sexual behaviour. Few of the variables were significantly related to unprotected receptive anal sex in the way that the Health Belief Model predicted, except for some perceptions of costs and benefits of safer sex. However, whether or not men were involved in a regular relationship with a partner was strongly associated with high risk behaviour. The implications of these results are that health education interventions should focus on alerting all men to the social context in which high risk sex is more likely to happen: the regular partnership.

Résumé

Prédicteurs de comportement sexuel à haut risque chez les hommes homosexuels ou bisexuels

Certaines indications font penser qu'une partie des homosexuels continuent à avoir certains comportements sexuels à haut risque. 369 homosexuels actifs de différentes régions d'Angleterre ont été interrogés deux fois dans un intervalle de 9 mois; le but de l'enquête était d'examiner si certains facteurs socio-psychologiques prédisaient un comportement sexuel à haut risque. Peu de variables avaient une relation significative avec une attitude anale réceptive non protégée, analysée selon le «Health Belief Model»; des exceptions concernaient quelques perceptions concernant les coûts et les bénéfices de la sexualité sûre. D'autre part, l'existence d'une relation avec un partenaire stable était fortement associée avec un comportement à haut risque. Ces résultats impliquent que les campagnes d'éducation devraient s'adresser à tous les hommes chez lesquels une sexualité à haut risque est la plus répandue, à savoir ceux vivant un partenariat régulier.

Zusammenfassung

Prädikatoren eines risikoreichen Sexualverhaltens homo- und bisexueller Männer

Noch immer finden sich Hinweise auf ein sehr risikoreiches Sexualverhalten homosexueller Männer, wie das Festhalten an gefährlichen Sexualpraktiken. Zweimal im Abstand von neun Monaten waren 369 homosexuelle geschlechtlich aktive Männer aus verschiedenen Gebieten Englands befragt worden, um zu untersuchen, in welchem Ausmass sozio-psychologische Faktoren mit einem risikoreichen Sexualverhalten verbunden sind. Nur wenige dieser Variablen waren in statistisch signifikanter Weise mit der Praxis des ungeschützten Analverkehrs verbunden, so wie das „Health Belief Model" es hätte vermuten lassen. Eine gewisse Ausnahme bildete die Beurteilung von Aufwand und Nutzen des „Safer Sex". Die Tatsache, dass der Befragte einen regelmässigen Sexualpartner hatte, war statistisch positiv mit einem Hochrisikoverhalten korreliert. Präventionskampagnen sollten darum die Männer auf die Situation hinweisen, in der auf „Safer Sex" am ehesten verzichtet wird, nämlich eine stabile Partnerbeziehung.

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