

An Event-Level Analysis of Substance Use, Relational, and Psychosocial Factors Affecting Condom Use During Anal Intercourse Among Self-Identified HIV-Negative and Unknown Status Gay and Other MSM in Vancouver, British Columbia

NJ Lachowsky^{1,2} (nlachowsky@cfenet.ubc.ca), J Jollimore³, A Rich¹, Z Cui¹, P Sereda¹, A Lal¹, RS Hogg^{1,4}, DM Moore^{1,2}, EA Roth^{5,6}

1. British Columbia Centre for Excellence in HIV/AIDS, Vancouver, BC
2. Faculty of Medicine, University of British Columbia, Vancouver, BC
3. Health Initiative for Men, Vancouver, BC

4. Faculty of Health Sciences, Simon Fraser University, Burnaby, BC
5. Department of Anthropology, Faculty of Social Sciences, University of Victoria, Victoria, BC
6. Centre for Addictions Research BC, University of Victoria, Victoria, BC

Background

- Condoms remain a vital prevention tool within HIV combination prevention, and additionally provide protection against the transmission of other STIs
- We sought to identify psychosocial and event-level factors associated with condom use during anal intercourse among self-identified HIV-negative and HIV status unknown gay, bisexual and other men who have sex with men (MSM) in Metro Vancouver.

Methods

Study Protocol & Participants: The Momentum Health Study is a longitudinal bio-behavioural study of gay and other MSM aged 16+ in Metro Vancouver recruited using respondent-driven sampling from February 2012 to February 2014.

Data: Collected during an in-person study visit that lasted ~90 minutes, which included a computer-assisted self-interview (CASI) regarding demographics, sexual behaviour, substance use, and psychosocial attributes, and a subsequent nurse visit for biological specimen collection and a clinical questionnaire. We limited this analysis to self-identified HIV-negative or unknown status participants.

Outcome: Condom use versus non-use during anal intercourse as measured for individual sexual encounters (i.e., event-level data). During the CASI, participants completed a “partner matrix”, which included a repeating set of questions, for their last sexual encounter with each of up to their five most recent sexual partners within the past six months (event-level factors, see below). We excluded sexual encounters that did not include anal intercourse.

Explanatory Variables: Explanatory factors included event-level factors (substance use, partner’s HIV status, sexual history with partner, sexual position) and individual-level factors (demographics and psychosocial scales, see bullet point list below).

- HAART Optimism** (Van de Ven et al., 2000): less fear of HIV disease and probability of HIV infection
- Sexual Sensation Seeking** (Kalichman & Rompa, 1995): need for varied, novel, and complex sexual experiences and willingness to take personal physical and social risks to enhance sexual sensations
- Cognitive Escape** (McKirnan et al., 2001): escape-related alcohol and drug use, which assesses sexual disinhibition expectancies from consuming alcohol and drugs
- Sexual Altruism** (Nimmons & Folkman, 1999): regarding HIV prevention, personal subscale regarding their own or their partner’s sexual health, and communal subscale regarding collective well-being of the gay community and one’s role as part of that

Statistical Analysis: Descriptive statistics and multivariable models were prepared to explain condom use and non-use for all sexual encounters where anal intercourse was reported. Factors associated with condom use versus non-use were determined using multivariable generalised linear mixed models with a random effect for participant. Model selection used Type III p-values and AIC minimization to select the optimal factors to retain in the final models (p<0.05 considered significant).

Results

- Individual-Level:** The majority of participants reported at least one anal intercourse event in the past six months (85.0%, n=436/513). Of these 436 MSM, 36.7% reported only condom-protected anal intercourse.
- Event-Level:** Two-thirds of all sexual encounters involved anal intercourse (64.1%, n=1196/1866), an average of 2.74 anal intercourse events per participant. Condoms were used during 55.5% of these events.
- Factors independently association with condom use versus non-use are shown in Table 1.**

Table 1. Multivariable model of demographic, psychosocial, and event-level factors associated with *condom use versus non-use* at last anal sex encounter

Individual-Level Explanatory Factors	AOR	95% CI	
Annual Income			
<\$30,000	1.00		
at least \$30,000	0.66	0.45	0.95
Relationship Status			
No current partner	1.00		
Have not lived together for one year	0.99	0.63	1.57
Have lived together for at least one year (or are married)	0.57	0.34	0.96
PSYCHOSOCIAL SCALES <i>(mutually exclusive)</i>			
HAART Optimism	0.95	0.91	0.99
Sexual Sensation Seeking	0.94	0.89	0.98
Cognitive Escape	0.97	0.94	0.99
Sexual Altruism – Communal Subscale	1.98	1.46	2.68
Event-Level Explanatory Factors	AOR	95% CI	
SEXUAL HISTORY WITH EACH PARTNER <i>(mutually exclusive)</i>			
Number of months since first sex	0.99	0.990	0.999
Number of times of anal sex in past 6 months	0.96	0.95	0.98
Sexual position(s) during anal intercourse			
Both insertive and receptive	1.00		
Receptive only	1.81	1.20	2.74
Insertive only	2.42	1.59	3.69
Awareness of Partner’s HIV Status Before Sex			
No, I did not know his HIV status	1.00		
Yes, I was <u>certain</u> he was HIV-negative	0.24	0.08	0.72
Yes, I <u>think</u> he was HIV-negative	0.23	0.08	0.69
Yes, I was <u>certain</u> he was HIV-positive	0.11	0.03	0.39
Yes, I <u>think</u> he was HIV-positive	0.02	0.01	0.25
Source of Awareness of Partner’s HIV Status Before Sex			
Did not know this partner’s status	1.00		
Partner disclosed their HIV status	2.54	0.90	7.17
Participant learnt from profile or if HIV-positive met at poz event	7.63	1.72	33.90
Participant assumed or was told	5.27	1.56	17.83
SUBSTANCE USE <i>(mutually exclusive)</i>			
Any alcohol use by participant	1.43	1.02	2.00
Any crystal methamphetamine use by partner	0.19	0.07	0.55

AOR = Adjusted Odds Ratio, 95%CI = 95% Confidence Interval; **Bolded text** indicates statistical significance at p<0.05

Conclusion

- Half of anal intercourse events were condom-protected.
- Factors associated with less condom use were higher levels of HAART optimism, sexual sensation seeking, and cognitive escape, and at the event-level: crystal methamphetamine use, knowing a partners’ HIV status, more anal sex experience with that partner, longer relationship length, and assuming both sexual positions (versus only one).
- Communal sexual altruism was associated with greater condom use.
- Health promotion to increase condom use among gay and other MSM should consider the individual, relationship, and community attitudes and factors that effect likelihood to use condoms.

Acknowledgements

This work was supported by the Canadian Institutes for Health Research [107544]; National Institutes for Health, National Institute for Drug Abuse [R01DA031055] and Health Canada. We thank our community colleagues at the Health Initiative for Men, YouthCO HIV & HepC Society of BC, and Positive Living BC for their support. We also thank the research participants for sharing their important data with the Momentum Health Study. DMM is supported by a Scholar Award from the Michael Smith Foundation for Health Research.

I have no conflicts of interest.