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ORIGINAL ARTICLE

Gay and bisexual men engage in fewer risky sexual behaviors while traveling internationally: a cross-sectional study in San Francisco

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ABSTRACT

Background International travel poses potential challenges to HIV prevention. A number of studies have observed an association between travel and behavioural disinhibition. In the present study, we assessed differences in sexual behaviour while travelling internationally and within the USA, compared with being in the home environment.

Methods A probability-based sample of men who have sex with men (MSM) from the San Francisco Bay Area who had travelled internationally in the previous 12 months was recruited through an adapted respondent-driven sampling methodology (N=501). Participants completed interviewer-administered, computer-assisted surveys.

Results Detailed partner-by-partner behavioural data by destination type were collected on 2925 sexual partnerships: 1028 while travelling internationally, 665 while travelling within the USA and 1232 while staying in the San Francisco Bay Area. The proportion of partnerships during international travel that involved unprotected anal intercourse (UAI) was lower compared with during domestic travel and staying locally. International travel was associated with decreased odds of receptive UAI (AOR=0.65, p=0.02) compared with staying locally and there was a trend towards decreased odds of insertive UAI (AOR=0.70, p=0.07).

Conclusions MSM engaged in proportionately fewer sexual activities which present a high HIV transmission risk when travelling internationally, namely unprotected receptive and insertive anal intercourse and particularly with HIV serodiscordant partners. The lower sexual risk-taking during international travel was robust to controlling for many factors, including self-reported HIV serostatus, age, relationship status and type of partnership. These findings suggest that when travelling internationally, MSM may experience behavioural disinhibition to a lesser extent than had been described previously.

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INTRODUCTION

International travel poses potential challenges to HIV prevention. Documentation of the contribution of travel to the spread of HIV has been based upon global tracking of HIV strains.[1–5] Sexual networks that extend across international borders are commonplace as geographical boundaries become less restrictive with the increasing ease of intercontinental travel.[6]

A number of studies have observed an association between travel and behavioural disinhibition in a number of different populations, including young adults and men who have sex with men (MSM).[7–13] Behavioural disinhibition, manifesting as increases in risk behaviour, may stem from the fact that travel provides a respite from the daily routines of work and home life and, potentially, removes the social constraints for practicing safer sex. International travel also presents a change in environment that may lead some MSM to engage in sexual behaviours that have a high risk for HIV transmission.[10–13] Taken together, these factors may create situations that may result in increased HIV transmission risk when travelling.

Gay and bisexual men who reside in the Greater San Francisco Area frequently travel internationally. More than a quarter of respondents of a recent National HIV Behavioural Surveillance survey conducted in the San Francisco Bay Area reported international travel in the previous year.[14] Among a cohort of MSM with newly diagnosed HIV infection, 55% of participants had lived or travelled outside of the USA during the time period when they may have acquired and, potentially, further transmitted their infection.[15]

In the present study, International Travel Research to Inform Prevention (I-TRIP), we explored differences in sexual risk behaviour while travelling internationally and to destinations within the USA compared with being in the home environment among a population-based sample of MSM.

METHODS

MSM from the San Francisco Bay Area were recruited using respondent-driven sampling (RDS) from April 2009 through June 2011. MSM were eligible for participation in the study if they were 18 years of age or older, residents of ten San Francisco Bay Area counties, self-identified as male and had travelled internationally in the previous 12 months. RDS is a methodology used for the recruitment of hard-to-reach populations that uses long-chain referral whereby members of the target population recruit other members.[16–18]

For this study, we developed innovative adaptations to conventional RDS for the recruitment of

participants. The methodological innovations included offering participants a choice between electronic and paper coupons for recruitment referrals and modifying the secondary incentives structure from small cash amounts to raffle entries for periodic large cash prize raffle drawings. The I-TRIP study participant recruitment process and RDS adaptations have been described in detail in an earlier publication.[19]

Participants completed interviewer-administered, computer-assisted surveys. Demographic characteristics collected included age, race/ethnicity, highest education level, employment status, sexual orientation and relationship status. Classification of participants' HIV serostatus for this analysis was based on self-report, as it represented their perception of their serostatus when recalling past risk behaviours. Participants were offered HIV testing upon completion of the survey following the standard testing procedures of the San Francisco Department of Public Health.

Sexual activity in the previous 12 months was evaluated in two ways. First, aggregate information was obtained on the total numbers of partners and sexual behaviours that took place within the previous 12 months while travelling internationally, travelling domestically and staying locally. In order to capture more refined contextual information, a detailed assessment of a select number of partnerships was conducted. Partnership-level data were collected for up to three of the most recent sexual partnerships per international country, for up to two of the most recently visited countries, that is, a maximum of six international sexual partnerships: up to three of the most recent sexual partnerships during domestic travel and up to three of the most recent sexual partnerships while staying locally. For analysis purposes, a partnership refers to a unique individual in each geographical location. Data collected include the number, gender and HIV serostatus of sexual partners, partnership type (main, casual or anonymous) and types of sexual behaviour. The primary outcomes of interest within the partnerships were insertive and receptive unprotected anal intercourse (UAI). Main partnerships were defined as those with individuals whom the participant had a commitment, for example, spouse, domestic partner or boyfriend. Casual partnerships were defined as those involving individuals with whom the participant did not have a commitment or whom the participant did not know well. Anonymous partnerships were with individuals with whom the participant had sex once and did not know how to contact again. Partnerships were classified as HIV serodiscordant in cases where the participants and their sexual partner were of the opposite serostatus, and where the participants' HIV serostatus or that of their partner was unknown.[20]

Frequency distributions were calculated for categorical variables; mean and SD, and median and IQR were calculated for continuous variables. Generalised estimating equations (GEE) with the binomial model and logistic link were used to estimate bivariate and multivariate ORs for the sexual behaviour outcomes of interest and all χ^2 tests involving sexual behaviours reported in the results. GEE models were clustered at the participant level. Use of GEE produced population-averaged models that fit generalised linear models, while also adjusting the estimated SEs for the effects of clustering as a result of multiple observations per participant. Covariates at the participant-level, partnership-level and trip-level hypothesised, a priori, to be associated with the main outcomes of interest (insertive UAI, receptive UAI), were included in the multivariate models. RDS weights were created using respondent driven sampling analysis tool (RDSAT) based on participant age and race to account for the sampling design. Univariate estimates and multivariate GEE models were RDS-weighted.

RESULTS

A total of 501 participants were enrolled in the I-TRIP study. Seventy seeds were recruited, of which 41 provided at least one successfully enrolled referral. Recruitment chains ranged from two generations (seed and one wave of referrals) up to 13 generations (seed and 12 waves of referrals), with a median of four wave generations. Equilibrium was reached by the fifth wave generation for all demographic characteristics, including age, race/ethnicity, sexual orientation and education level. Homophily was assessed on a scale of −1 (participant recruited only from outside his group) to 1 (participant recruited only from inside his group). Values at either extreme of the homophily scale were rarely observed among the variables of age, race, sexual identity, education level, county of residence and HIV status.

Participants' demographic characteristics and sexual behaviours are summarised in table 1. The median age was 40 years (IQR 31–48). The majority were white, self-identified as homosexual or gay, had a college degree or higher, were employed full-time or part-time, single and HIV-negative. Self-reported HIV status was highly correlated with laboratory results. Among participants self-reporting as HIV-negative, concordance was 99% as there were two positive and one undetermined test results. Among participants self-reporting as HIV-positive, concordance was 98%, as there were one negative and one undetermined test results. Three of the 14 participants who self-reported their HIV serostatus as unknown (indeterminate or never tested), or who refused to respond, were HIV-positive by laboratory testing. The majority of participants reported engaging in UAI in the previous 12 months.

Participants reported visiting a mean of 3.0 countries (SD 2.8) in the previous 12 months and a median of 2 countries (IQR 1–4). The most frequently visited countries were Mexico, Canada and the UK. Participants took a mean of 6.3 trips (SD 9.6) within the USA in the past 12 months and a median of 4 trips (IQR 2–6).

The partnership assessment tool collected detailed behavioural data on a total of 2925 male sexual partnerships: 1028 while travelling internationally, 665 while travelling domestically and 1232 while staying locally in the San Francisco Bay Area. When compared with the overall number of partnerships reported in the previous 12 months, this assessment tool captured detailed partnership-level data on all partnerships while travelling internationally for 387 participants (77.3%), while travelling domestically for 394 participants (78.6%) and while staying locally for 182 participants (36.3%).

The median number of male sexual partnerships across all destination types was 10 (IQR 5–21), with a median of 2 (IQR 1–4) while travelling internationally, 1 (IQR 0–3) while travelling domestically and 5 (IQR 2–14) while staying locally. Participants reported a median of 4 partnerships (IQR 2–10) across all destination types in which there was any anal intercourse (AI); the median was 1 (IQR 0–2) while travelling internationally, 1 (IQR 0–1) while travelling domestically and 2 (IQR 1–6) while staying locally. For UAI, participants reported a median of 1 partnership (IQR 0–4) across all destination types; the median was 0 (IQR 0–1) while travelling internationally, 0 (IQR 0–1) while travelling domestically and 1 (IQR 1–4) while staying locally.

Participants reported a total of 25 sexual partnerships with women, of which 10 partnerships were while travelling

Table 1 Demographic characteristics, self-reported HIV serostatus and sexual behaviours in the previous 12 months, of men who have sex with men, who travel internationally, San Francisco Bay Area, 2009–2011 (N=501 participants)

	N	Crude %	Weighted % (95% CI)
Characteristics			
Age group (in years)			
18–25	38	7.6	11.2 (5.0–17.0)
26–30	85	17.0	16.3 (11.1–23.8)
31–35	62	12.4	10.7 (5.9–15.5)
36–40	71	14.2	13.9 (9.5–20.3)
41–45	83	16.6	14.8 (9.0–18.2)
46–50	52	10.4	11.4 (6.4–15.9)
51–55	49	9.8	9.2 (5.8–14.2)
56–60	36	7.2	7.1 (4.3–13.8)
>60	25	5.0	5.3 (2.3–9.3)
Race			
White	389	77.6	70.8 (62.5–79.2)
Asian	77	15.4	21.0 (13.4–29.6)
Black	12	2.4	2.7 (0.6–5.9)
Mixed/other	23	4.6	5.5 (2.0–9.0)
Ethnicity			
Not Hispanic	433	86.4	84.0 (78.6–88.9)
Hispanic	68	13.6	16.0 (11.1–21.4)
Education			
High school/GED	18	3.6	5.2 (2.1–8.7)
Some college	65	13.0	18.4 (13.1–26.5)
College degree	234	46.7	43.8 (36.7–50.3)
Graduate school	184	36.7	32.6 (25.2–38.9)
Sexual orientation			
Homosexual/gay	479	95.6	92.1 (84.6–96.3)
Bisexual	19	3.8	7.0 (2.8–14.4)
Heterosexual/straight/other	3	0.6	0.9 (0.0–2.3)
Relationship status			
Single	261	52.1	59.5 (49.8–66.3)
Committed relationship	125	25.0	20.8 (14.1–26.9)
Domestic partnership/civil union/ marriage	107	21.4	18.1 (13.8–27.5)
Other	8	1.6	1.6 (0.3–2.5)
Employment status			
Full time	305	60.9	61.6 (52.4–67.9)
Part time	70	14.0	14.5 (10.1–20.5)
Working intermittently	34	6.8	4.0 (2.3–6.1)
Not working	35	7.0	9.2 (5.1–14.3)
Retired	22	4.4	4.3 (1.6–8.8)
Something else	35	7.0	6.4 (3.4–9.6)
HIV status (self-reported)			
HIV negative	362	72.3	68.3 (58.1–75.2)
HIV positive	125	25.0	27.7 (20.9–38.1)
Indeterminate	7	1.4	1.0 (0.4–2.3)
Never tested	5	1.0	2.8 (0.2–5.9)
Refused	2	0.4	0.1 (0.0–0.6)
Sexual behaviours with up to 3 of the most recent male sexual partners in up to four locations (three destination types) in the previous 12 months			
Any anal intercourse			
Yes	430	85.8	84.4 (77.2–89.5)
Any UAI			
Yes	316	63.1	58.4 (51.5–67.4)
Any receptive UAI			
Yes	251	50.1	48.3 (42.1–57.1)
Any insertive UAI			
Yes	250	49.9	44.3 (37.8–53.0)

GED, general educational development; UAI, unprotected anal intercourse.

internationally, 8 while travelling domestically and 7 while staying locally. There were two partnerships with transgender individuals reported, both of which occurred during international travel. Given the relatively few partnerships with women and transgender individuals, subsequent analyses focused on partnerships with men.

Participants provided detailed behavioural data on 1016 male sexual partnerships while travelling internationally, 657 male partnerships while travelling domestically and 1225 male partnerships while staying locally. Table 2 summarises the different types of sexual behaviours with male partners by destination type and HIV seroconcordancy. Oral intercourse was the most common sexual activity reported across all destination types, followed by mutual masturbation and AI. Participants reported proportionately fewer partnerships that involved oral intercourse, oral–anal contact and all forms of AI while travelling internationally, compared with while staying in the San Francisco Bay Area. They also engaged in proportionately less receptive UAI within serodiscordant partnerships. The proportion of international travel partnerships that involved UAI (24.9%) was lower compared with domestic travel (27.1%) and local partnerships (33.1%). The proportion of AI that was unprotected was significantly higher ($\chi^2=25.39$; $p<0.01$) when staying locally (55.3%) compared with travelling internationally (45.5%) and domestically (46.2%); there was no significant difference in UAI between travelling domestically and internationally ($p=0.26$).

Adjusted ORs (AOR) for sexual behaviour outcomes using multivariate GEE modelling are presented in table 3. Partner type (casual or anonymous vs main) and HIV seroconcordancy (discordant or unknown vs concordant) were significantly associated with a lower likelihood of partnerships in which the participant engaged in insertive UAI and receptive UAI. Participants whose self-reported serostatus was HIV positive, unknown or refused to answer were more likely to report partnerships in which they engaged in insertive UAI and receptive UAI compared with HIV-negative participants. Older age was associated with a lower likelihood of partnerships in which the participant engaged in receptive UAI. Hispanic participants were more likely to report partnerships in which they engaged in insertive UAI. Insertive UAI and receptive UAI were not associated with race or relationship status. International travel and domestic travel were significantly associated with a lower likelihood of partnerships in which the participant engaged in receptive UAI compared with staying locally. There was a borderline significant association between international travel and a lower likelihood of partnerships in which the participant engaged in insertive UAI.

DISCUSSION

MSM engaged in proportionately fewer sexual activities that present a high HIV transmission risk when travelling internationally, namely unprotected receptive and insertive AI and particularly with HIV serodiscordant partners. Nearly half the sexual partnerships that took place while travelling internationally did not involve AI; when AI occurred, they were more likely to be protected. The lower risk during international travel was robust to controlling for many factors, including self-reported HIV serostatus, age, relationship status and type of partnership. These findings suggest that when travelling internationally, MSM may experience behavioural disinhibition to a lesser extent than had been described previously.[10–13]

Oral intercourse was reported in nearly all sexual partnerships, irrespective of destination type or participant HIV serostatus. A quarter of the sexual partnerships involved only oral

Table 2 Sexual behaviours with up to three of the most recent male partnerships in up to four locations (three destination types) in the previous 12 months, by destination type and partnership HIV seroconcordancy, of men who have sex with men who travel internationally, San Francisco Bay Area, 2009–2011 (N=501 respondents for 2898 partnerships)

	Destination type				
	San Francisco Bay Area N (%)*	USA N (%)*	International N (%)*	χ^2†	p Value†
Total partnerships					
Overall	1225 (100)	657 (100)	1016 (100)	–	–
Seroconcordant	801 (100)	420 (100)	532 (100)	–	–
Serodiscordant	424 (100)	237 (100)	484 (100)	–	–
Mutual masturbation					
Overall	962 (78.7)	504 (76.7)	776 (76.4)	1.49	0.47
Seroconcordant	664 (82.9)	329 (78.3)	420 (79.0)	9.52	<0.01
Serodiscordant	298 (70.6)	175 (73.8)	356 (73.6)	4.22	0.12
Oral intercourse					
Overall	1109 (90.7)	589 (89.7)	906 (89.2)	4.21	0.12
Seroconcordant	738 (92.1)	396 (94.3)	493 (92.7)	1.27	0.53
Serodiscordant	371 (87.9)	193 (81.4)	413 (85.3)	5.29	0.07
Oral–anal contact					
Overall	523 (42.8)	278 (42.3)	357 (35.1)	20.81	<0.01
Seroconcordant	409 (51.1)	207 (49.3)	227 (42.7)	18.36	<0.01
Serodiscordant	114 (27.0)	71 (30.0)	130 (26.9)	0.24	0.89
Any anal intercourse					
Overall	733 (59.8)	386 (58.8)	557 (54.8)	10.30	<0.01
Seroconcordant	544 (67.9)	278 (66.2)	340 (63.9)	7.38	0.03
Serodiscordant	189 (44.6)	108 (45.6)	217 (44.8)	1.30	0.52
Insertive anal intercourse					
Overall	511 (41.8)	265 (40.3)	385 (37.9)	7.90	0.02
Seroconcordant	389 (48.6)	193 (46.0)	239 (44.9)	8.39	0.02
Serodiscordant	122 (28.9)	72 (30.4)	146 (30.2)	0.92	0.63
Receptive anal intercourse					
Overall	476 (38.9)	220 (33.5)	332 (32.7)	16.9	<0.01
Seroconcordant	358 (44.7)	162 (38.6)	205 (38.5)	10.25	<0.01
Serodiscordant	118 (28.0)	58 (24.5)	127 (26.2)	4.14	0.13
Any UAI					
Overall	406 (33.1)	178 (27.1)	253 (24.9)	27.92	<0.01
Seroconcordant	332 (41.5)	150 (35.7)	181 (34.0)	19.39	<0.01
Serodiscordant	74 (17.5)	28 (11.8)	72 (14.9)	4.85	0.09
Insertive UAI					
Overall	291 (24.0)	132 (20.3)	170 (16.9)	23.92	<0.01
Seroconcordant	249 (31.4)	116 (27.6)	128 (24.1)	19.20	<0.01
Serodiscordant	42 (10.1)	16 (6.9)	42 (8.8)	3.52	0.17
Receptive UAI					
Overall	284 (23.3)	104 (15.9)	157 (15.5)	36.00	<0.01
Seroconcordant	233 (29.2)	87 (20.8)	113 (21.4)	23.05	<0.01
Serodiscordant	51 (12.1)	17 (7.2)	44 (9.1)	6.70	0.04

*Percentages in table do not sum to 100%; percentages represent 'yes' responses only.
†Wald χ^2 and p value are from bivariate generalised estimating equations models, adjusted for multiple observations per participant.
UAI, unprotected anal intercourse.

intercourse and mutual masturbation, without any AI. This proportion increased to approximately half among serodiscordant partnerships, which may reflect an attempt to engage in lower-risk sexual activities to reduce the risk of HIV transmission. The observation that riskier sexual behaviours occurred more often with HIV seroconcordant partners may represent seroadapation.[21 22]

Contrary to the hypothesis of disinhibition while travelling, the I-TRIP study participants reported engaging in higher-risk sexual behaviours with San Francisco Bay Area partnerships compared with international partnerships. One-third of participants reported having UAI while staying locally, a prevalence that was comparable with the 31% reported by a study of sexual behaviours among MSM in San Francisco.[20] The level of UAI reported by participants poses a risk for transmission of HIV and other sexually transmitted infections.

While participants may have been more likely to engage in UAI because they felt more familiar with their local partners and/or knew their partner's serostatus, the high prevalence of HIV in the San Francisco Bay Area belies any relative safety

Table 3 Adjusted ORs (AOR) and 95% CIs, respondent-driven sampling weight, for sexual behaviour outcomes with up to three of the most recent male sexual partnerships in up to four locations (three destination types) in the previous 12 months, of men who have sex with men who travel internationally, San Francisco Bay Area, 2009–2011 (N=501 participants)

	Insertive UAI			Receptive UAI		
	AOR	95% CI	p Value	AOR	95% CI	p Value
Participant age (years)	0.98	(0.96 to 1.00)	0.09	0.97	(0.95 to 0.99)	0.01
Participant race						
White	1.00			1.00		
Asian	1.26	(0.59 to 2.70)	0.55	1.47	(0.85 to 2.54)	0.17
Black	0.73	(0.11 to 4.82)	0.74	0.37	(0.06 to 2.20)	0.28
Mixed/other	1.52	(0.78 to 2.96)	0.22	0.94	(0.27 to 3.35)	0.93
Participant ethnicity						
Not Hispanic	1.00			1.00		
Hispanic	2.56	(1.51 to 4.36)	<0.01	0.97	(0.52 to 1.84)	0.93
Participant relationship status						
Single	1.00			1.00		
Committed relationship	1.09	(0.61 to 1.94)	0.77	1.42	(0.86 to 2.33)	0.17
Domestic partnership/civil union/marriage	1.57	(0.84 to 2.93)	0.16	1.71	(0.98 to 2.97)	0.06
Other	0.56	(0.21 to 1.48)	0.24	0.70	(0.38 to 1.30)	0.26
Participant HIV status (self-reported)						
HIV-negative	1.00			1.00		
HIV-positive	3.04	(1.64 to 5.63)	<0.01	6.14	(3.53 to 10.69)	<0.01
Unknown/refused to answer	5.77	(1.43 to 23.31)	0.01	12.97	(4.06 to 41.38)	<0.01
Partner type						
Main partner	1.00			1.00		
Casual partner	0.22	(0.14 to 0.33)	<0.01	0.21	(0.13 to 0.33)	<0.01
Anonymous partner	0.15	(0.08 to 0.26)	<0.01	0.10	(0.05 to 0.20)	<0.01
HIV seroconcordancy with partner						
Concordant	1.00			1.00		
Discordant/unknown	0.17	(0.08 to 0.37)	<0.01	0.25	(0.15 to 0.40)	<0.01
Destination type						
San Francisco Bay Area	1.00			1.00		
USA	0.79	(0.60 to 1.05)	0.11	0.58	(0.40 to 0.84)	<0.01
International	0.70	(0.48 to 1.03)	0.07	0.65	(0.46 to 0.93)	0.02

UAI, unprotected anal intercourse.

perceived. Moreover, the association between UAI and local partnerships remained significant even after adjusting for participants' knowledge of their partners' serodiscordancy and for partnership type in the multivariate model. The finding of why participants engaged in more sexual risk-taking with local casual and anonymous partners merits further examination, as there may be situational or cultural factors that influence local and international partnerships differently.

Under-reporting of higher-risk sexual behaviour is a potential limitation of this study. The fact that the survey was interviewer-administered may have introduced social desirability bias. The extent to which respondents may differentially under-report risk behaviour by destination type is unknown. Another potential limitation is the fact that the partnership assessment algorithm did not capture all sexual partnerships that participants had in the 12 months prior to their enrolment in the study. However, detailed behavioural data was available for more than three-quarters of all sexual partnerships that took place while travelling internationally and domestically during this time frame. The data were not as comprehensive for local partnerships, which is understandable given that participants most likely spent the majority of the previous 12 months in the San Francisco Bay Area and, therefore, potentially had more local partnerships than the partnership assessment tool was designed to capture. However, since querying participants about specific behaviours with all partners over the entire 12-month time-frame could introduce recall bias, we chose to ask only about the most recent partners at each destination type in order to minimise errors in recall. Nonetheless, we still found significantly higher levels of UAI within local partnerships, even after adjusting for partner type and HIV seroconcordancy.

We believe that the study was able to recruit a representative sample of the population of gay and bisexual men from the San Francisco Bay Area using our modified RDS methodology. We are not aware of any other population-based data on MSM living in the San Francisco Bay Area who travel internationally against which to compare our study sample. The eligibility criteria of recent international travel likely resulted in the recruitment of a larger proportion of participants of higher socioeconomic status. Population estimates of MSM stratified by race/ethnicity were unavailable for comparison with the demographic characteristics of study participants. However, MSM sub-population sizes can be projected using the total number of MSM from consensus estimates and census data.[2,3] These projections suggest that with approximately one-fifth of study participants being of Asian/Pacific-Islander descent and one-sixth of participants being of Hispanic/Latino descent, we were successful in recruiting a racially and ethnically diverse sample of participants. Approximately one-quarter of the study participants were HIV-positive, a proportion that is very similar to the 2011

HIV Consensus Estimates which are synthesised using recent available data from multiple sources.[24] The demographic characteristics of our HIV-positive participants were also similar to HIV surveillance data with regards to age, race and ethnicity.[24]

In summary, the I-TRIP study data suggest that MSM may refrain from risky sexual activity during international travel. The results from our large, probability-based sample of internationally travelling MSM using partner-by-partner information and destination type stand in contrast to the higher risk surmised in other studies.[10–13] Recent reports indicate that global HIV epidemics in MSM continue to expand.[25 26] While our findings are encouraging from the perspective of resurging transmission of HIV among MSM observed in many parts of the world, a better understanding of the causal factors that result in this risk differential is needed to promote risk reduction among MSM locally and internationally.

Key messages

- Men who have sex with men (MSM) engaged in proportionately fewer sexual activities that present a high HIV transmission risk when travelling internationally, namely unprotected receptive and insertive anal intercourse.
- Nearly half the sexual partnerships while travelling internationally did not involve anal intercourse; when anal intercourse occurred, they were more likely to be protected.
- These findings suggest that when travelling internationally, MSM may experience behavioural disinhibition to a lesser extent than had been described previously.

Correction notice The first author's name has been corrected in the fulltext version since published Online First.

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Contributors HMT designed the study, assisted with the study implementation and data analysis, and wrote the manuscript; RF conducted the data analysis and edited the manuscript; Y-HC assisted with the data analysis; MG, TR, LT, AC, RMG, OR and HFR assisted with the study implementation and reviewed the manuscript; WM assisted with the study implementation and edited the manuscript; and WTS assisted with the study implementation and data analysis, and edited the manuscript.

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