

The impact of social connections and discrimination to HIV risk among Asian gay and bisexual men in Australia

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ABSTRACT

Background. Asian gay, bisexual, and other men who have sex with men (GBMSM) are overrepresented in new HIV diagnoses in Australia. Social engagement with other GBMSM has been associated with HIV testing and pre-exposure prophylaxis (PrEP) uptake. Asian GBMSM may be socially disconnected from LGBTQ+ people, which may increase their HIV risk. This analysis assessed the contribution of social connection on HIV risk among Asian GBMSM. **Methods.** Using an online cross-sectional survey of Asian GBMSM in Australia, we measured condomless anal intercourse (CLAI) in the last 6 months without PrEP or an undetectable viral load (UVL), i.e. CLAI with a risk of HIV transmission. Bivariable and multivariable logistic regression models were performed to compare demographic characteristics and social engagement of participants who had CLAI without PrEP or UVL to those who had not. Analyses were restricted to participants who reported sex with casual partners in the last 6 months. **Results.** Among 509 participants who had casual partners in the last 6 months, 151 (29.7%) reported CLAI without PrEP or UVL. CLAI without PrEP or UVL was negatively associated with full-time employment, and recently being tested for HIV and was positively associated with experiencing discrimination based on sexual orientation. Social engagement with LGBTQ+ people was not associated with CLAI without PrEP or UVL. **Conclusions.** CLAI without PrEP or UVL was not related to social connections with LGBTQ+ people but was more likely among Asian men who had experienced sexuality-related discrimination, suggesting that mitigating homophobia and biphobia may assist in improving HIV prevention among Asian GBMSM who live in Australia.

Keywords: discrimination, gay men, HIV/AIDS, HIV prevention, homophobia, men who have sex with men, migrant and mobile populations, pre-exposure prophylaxis, social support.

Introduction

In Australia, the overall proportion of gay, bisexual, and other men who have sex with men (GBMSM) who use an effective form of HIV prevention (also known as ‘net prevention coverage’) has increased since pre-exposure prophylaxis (PrEP) became available in 2018.¹ As HIV continues to disproportionately affect GBMSM in Australia, overseas-born GBMSM, particularly from countries in Asia, are of specific concern due to HIV diagnoses increasing in this group despite falling among Australian-born GBMSM.^{2–5}

Asian GBMSM who live in Australia are not a homogenous group due to their diverse cultural and migration experiences, with some growing up in Australia and many having Australian citizenship. Regardless, they share some common experiences that may impact their sexual health-related behaviours. Asian GBMSM in Australia are subject to both racism and homophobia, which can impede access to HIV and sexually transmitted infection (STI) prevention, testing, and care.^{6–8} Furthermore, Asian GBMSM who have recently arrived in Australia may experience barriers to accessing sexual health services due to language barriers, having to navigate a foreign healthcare system, and a lack of access to Medicare, Australia’s universal health insurance system.^{9–13} Beyond healthcare access, there is

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evidence that Asian GBMSM and minority ethnic GBMSM who experience sexual racism or homophobia may face challenges in negotiating condom use with sexual partners due to fear of anticipated rejection.^{7,14,15} This can be particularly challenging for migrant GBMSM if there are different condom norms in Australia compared to their country of origin.^{16,17} In the era of biomedical HIV prevention, many Asian GBMSM, especially those who lack access to Medicare, face structural barriers to accessing HIV/STI testing, PrEP, and treatment.

Different experiences of socialising with GBMSM may add to these disparities in HIV-related outcomes between Asian GBMSM and other GBMSM. Connection to a gay community has historically been identified as a significant contributing factor to Australia's success in HIV prevention through community mobilisation and facilitating access to health interventions.^{18–20} The concept of 'gay community' is fluid and contentious, with individuals having their own conception of what a 'gay community' means,^{18,21,22} and studies investigating gay community have operationalised gay community involvement in different ways.^{22–25} Although there is evidence that a feeling of belonging to a gay community is associated with increased PrEP uptake and reduced illicit drug-related harms,^{26,27} measures of social connection to other GBMSM have also been shown to be associated with some HIV risks. Greater social engagement with gay men among GBMSM has been shown to be related to protective factors, such as PrEP uptake^{28,29} and HIV testing,^{30–32} as well as risk factors, such as condomless anal sex,^{23,33,34} a higher number of sexual partners,³² and illicit drug use.^{35–37} Research suggests that gay social engagement has been declining over time among Australian GBMSM.³⁸ Yet, it is not clear whether the association between gay social engagement and HIV-related behaviours applies in the same way to Asian GBMSM who may have different experiences of social connection compared to white and other Australian GBMSM.

Previous research has found Asian and other minority ethnic GBMSM are more likely to experience exclusion in gay spaces and networks due to the intersection of race, culture, and migration.^{15,21,39–42} Asian and other minority ethnic GBMSM may engage in sexual behaviour that could put them at risk of HIV transmission as a means of coping with racism^{7,8,14} and homophobia.^{14,43} Experiences of structural stigma and discrimination may contribute to a lack of social support and lead to negative health outcomes and less engagement in HIV prevention services.^{44,45} Previous public health campaigns to reduce HIV have successfully leveraged connections to gay communities and the social networks of GBMSM to engage a general GBMSM population,¹⁹ but they may not have adequately reflected the needs of Asian GBMSM who may not feel as connected to a gay community or other GBMSM. Further investigation into the contribution of Asian GBMSM's social engagement with other GBMSM on HIV prevention is needed.

The aim of this analysis was to assess the role of social connections among Asian GBMSM at risk of HIV. Using a cross-sectional survey of Asian GBMSM, we assessed their sources of social connection, their experiences of racism and homophobia in Australia, and whether they engaged in sexual behaviour associated with a higher risk of HIV transmission. We hypothesised that Asian GBMSM who were less socially connected with friends in Australia would be more likely to report condomless anal sex without PrEP or an undetectable viral load (UVL) due to lower awareness and engagement with HIV prevention methods, such as PrEP.

Method

Participants and procedures

The Gay Asian Men's Survey is a repeated cross-sectional study among adult Asian GBMSM living in Australia, as described elsewhere.⁴⁶ Participants were eligible if they were aged 18 years or over, identified as a man, identified as an Asian person or someone with an Asian background, had sex with men in the past 5 years, and lived in Australia. This analysis was restricted to the most recent round of data collection conducted between March and September 2021. Although the survey previously recruited participants from both online and offline channels, only online recruitment was conducted in the latest round due to coronavirus disease 2019 (COVID-19) restrictions in Australia at that time. The study website (<https://www.gayams.org.au/>) and the link to the survey were promoted through Facebook advertising and through partner organisations via email lists and WeChat groups. The survey was advertised in English, Thai, Simplified Chinese, and Traditional Chinese, and participants could complete the survey in the same four languages. The study initially recruited participants in the state of New South Wales (March–June) and was extended to national recruitment in July–September. A prize draw to win 1 of 10 gift vouchers valued at AUD100 was offered as an incentive to participants. This study received ethics approval from the University of New South Wales, Sydney (HC15434).

Outcome variables

The main outcome assessed in this analysis was whether a participant engaged in condomless anal intercourse (CLAI) without PrEP or UVL with casual or non-romantic regular partners (henceforth referred to as 'casual partners'). CLAI without PrEP or UVL was regarded as sex with a risk of HIV transmission. Participants were dichotomised into whether or not they had engaged in CLAI without PrEP or UVL in the last 6 months with casual partners. Following the definition in Holt *et al.*,¹ this was defined as when a non-HIV-positive participant reported having CLAI without using PrEP, or when a participant living with HIV reported having CLAI without

being on treatment or having a detectable viral load. This was measured from questions on self-reported HIV status, condom use with casual partners in the previous 6 months, PrEP use in the previous 6 months, and, for participants living with HIV, whether they were on treatment and had an UVL or not. Only participants who reported having had sex with one or more casual partners in the last 6 months were included in this analysis.

Independent variables

Demographic information was collected and categorised, including age, country of birth (Australia vs overseas), visa status (citizenship or permanent residency vs others), sexual identity (gay, bisexual, or other), education (university degree vs other), employment (full-time vs other), and religiosity/spirituality (religious or spiritual vs not religious or spiritual).

Participants were asked about various aspects of their social connections to Australia. This included the length of time living in Australia (<5 years vs ≥ 5 years), the countries of birth of close friends who lived in Australia (from Australia, outside Australia, mixed, no close friends, or do not know where they are from), and the sense of belonging to Australia and their country of birth, if born overseas (very strongly or fairly strongly vs neutral, only slightly, or not at all).

Social engagement with LGBTQ+ people was assessed by asking participants from which countries their LGBTQ+ friends in Australia were from (from Australia, outside Australia, mixed, no LGBTQ+ friends, or do not know where they are from), and responses were dichotomised based on whether they had spent at least some time with LGBTQ+ friends or not. Participants were also asked how much of their time is spent with LGBTQ+ friends (almost all, most, some, a few, or not at all).

Participants were asked about their HIV testing history, and responses were dichotomised based on whether they had an HIV test in the last 12 months or not. Participants' recent sexual behaviour in the previous 6 months was assessed using self-reported measures. This included the number of male sexual partners (dichotomised to 10 or fewer vs more than 10), having group sex (yes/no), and having used drugs for sex (yes/no). Participants were also asked whether they had sex outside of Australia in the past 4 years (yes/no). The longer period of 4 years was used due to migration and international travel being greatly impacted by COVID-19 and fewer participants having the opportunity to travel overseas during this time. Participants were asked to indicate from which sources of information they had received sexual health information in the past year, including online (e.g. Google, Baidu), social media (e.g. Facebook, WeChat), health care workers, or friends (not mutually exclusive).

Participants were asked to indicate how often they had experienced discrimination in the last 12 months based on

either their sexual orientation or their race from general society, healthcare workers, or intimate partners (always, often, or sometimes vs rarely or never). Participants were also asked how much they agreed with the statement 'Overall, racial discrimination against Asian people is a serious issue in Australia' using a 5-point Likert scale (strongly agree to strongly disagree). Responses were dichotomised to agree or not.

Analyses

Comparisons between those who reported CLAI without PrEP or UVL and those who did not were conducted using bivariable and multivariable logistic regression. Associations significant at $P < 0.05$ at the bivariable level were included in multivariable analysis. Analyses were conducted in Stata 14.2 (StataCorp, College Station, TX, USA).

Results

Participant characteristics

There were 970 participants who completed the survey. Over half ($n = 509$, 52.4%) had sex with casual partners in the previous 6 months, and further analyses were restricted to these 509 participants. Compared to participants included for analysis, excluded participants were more likely to be born in Australia (38.6% vs 28.7%, $\chi^2 = 10.7$, $P = 0.001$) and were less likely to have a university degree (67.5–75.4%, $\chi^2 = 7.6$, $P = 0.006$) or be in full-time employment (49.7–59.5%, $\chi^2 = 9.4$, $P = 0.002$). There were no significant differences between included and excluded participants by age ($t = 0.86$, $P = 0.861$) or sexual identity ($\chi^2 = 2.71$, $P = 0.607$). Of the 509 included participants, 364 (71.5%) completed the survey in English, 83 (16.3%) in Simplified Chinese, 43 (8.5%) in Traditional Chinese, and 19 (3.7%) in Thai.

The mean age of the 509 participants was 32.5 years (s.d. = 8.61). Most had male sex recorded at birth (97.8%), currently identified as men (92.5%), and identified as gay (88.2%) or bisexual (6.1%). Most ($n = 336$, 71.3%) were born outside of Australia, and 372 (73.1%) were either an Australian citizen or a permanent resident. Over half ($n = 277$, 54.4%) spoke a language other than English at home, and of these, the most common (non-mutually exclusive) languages were Mandarin ($n = 106$, 38.3%), Cantonese ($n = 54$, 19.5%), Thai ($n = 29$, 10.5%), Malay ($n = 25$, 9.0%), and Vietnamese ($n = 26$, 9.4%). More than three-quarters of the sample ($n = 384$, 75.4%) had a university degree, and 303 (59.5%) worked in full-time employment. Less than half ($n = 219$, 43.0%) considered themselves religious or spiritual, and of these, the most common faiths were Christianity ($n = 69$, 31.5%), Buddhism ($n = 59$, 26.9%), Catholicism ($n = 28$, 12.8%), and Hinduism ($n = 31$, 14.2%).

Connection to Australia, social engagement with LGBTQ+ people, and experiences of discrimination

Among the participants, 198 (39.5%) reported that their close friends were mostly from Australia, 159 (31.7%) were mostly from other countries, 124 (24.8%) had a mix of friends from inside and outside of Australia, and 20 (4.0%) did not know where their friends were from or did not have close friends in Australia. When asked about where their LGBTQ+ friends were from, 224 (44.6%) reported they were mostly from Australia, 124 (24.8%) reported mostly from other countries, 128 (25.5%) had a mix of LGBTQ+ friends from Australia and other countries, and 26 (5.2%) did not know where their LGBTQ+ friends were from or did not have LGBTQ+ friends in Australia. When asked about how much of their free time they spent with LGBTQ+ friends, 191 (37.5%) participants responded with most or all of their free time, 165 (32.4%) responded with some of their free time, and 153 (30.1%) spent either only a bit of their free time or none at all with LGBTQ+ friends. There were 299 (59.1%) participants who had experienced discrimination based on their sexual orientation and 381 (76.8%) based on their race in the last 12 months.

CLAI without PrEP or UVL with casual partners

About two-thirds of the sample ($n = 333$, 65.2%) reported sex with both casual and non-romantic regular partners in the last 6 months, with 66 (13.0%) only reporting sex with casual partners and 110 (21.6%) only with non-romantic regular partners. There were 32 (6.3%) participants who did not have anal sex with casual or non-romantic male partners in the last 6 months, 125 (24.6%) reported consistent condom use for anal intercourse, 28 (5.5%) participants were living with HIV and reported CLAI while having an UVL, 173 (34.0%) HIV-negative participants who reported CLAI while taking PrEP, 1 (0.2%) participant was living with HIV and had CLAI while having a detectable viral load, and 150 (29.5%) non-HIV-positive participants reported CLAI without PrEP. The first four groups were combined as not engaging in CLAI without PrEP or UVL ($n = 358$, 70.3%), and the last two groups ($n = 151$, 29.7%) were combined as participants who reported CLAI without PrEP or UVL.

Associations with CLAI without PrEP or UVL

In bivariable analysis, engaging in CLAI without PrEP or UVL with casual partners in the last 6 months was positively associated with being religious or spiritual (OR = 2.07, 95% CI = 1.41–3.05, $P < 0.001$), drug use for sex in the last 6 months (OR = 1.72, 95% CI = 1.72–2.57, $P = 0.008$), and having experienced discrimination based on sexual identity (OR = 2.54, 95% CI = 1.67–3.87, $P < 0.001$; see Table 1). CLAI without PrEP or UVL was negatively associated with having a university degree (OR = 0.44, 95% CI = 0.29–0.68,

$P < 0.001$), having an HIV test in the last 12 months (OR = 0.24, 95% CI = 0.16–0.37), having more than 10 recent male sexual partners (OR = 0.44, 95% CI = 0.24–0.79, $P = 0.006$), and believing racial discrimination towards Asian people was a serious issue in Australia (OR = 0.66, 95% CI = 0.45–0.98, $P = 0.039$). Engaging in CLAI without PrEP or UVL was not associated with age, country of birth, years of living in Australia, speaking a language other than English at home, employment, group sex in the last 6 months, where close friends were from, where LGBTQ+ friends were from, time spent with LGBTQ+ friends, experiencing discrimination based on race, having a strong sense of belong to Australia or their country of birth, or where participants got their health information from.

In multivariable analysis, engaging in CLAI without PrEP or UVL with casual partners in the last 6 months was independently associated with having experienced discrimination based on sexual identity (aOR = 2.63, 95% CI = 1.65–4.21, $P < 0.001$) and was negatively associated with having a university degree (aOR = 0.50, 95% CI = 0.31–0.81, $P = 0.004$) and having an HIV test in the last 12 months (aOR = 0.28, 95% CI = 0.17–0.44, $P < 0.001$). Variables significant at the bivariable level that were not significant at the multivariable level included being religious or spiritual (aOR = 1.52, 95% CI = 0.99–2.34, $P = 0.057$), number of recent sexual partners (aOR = 0.66, 95% CI = 0.35–1.26, $P = 0.205$), drug use for sex (aOR = 1.48, 95% CI = 0.93–2.33, $P = 0.095$), and believing racial discrimination towards Asian people was a serious issue in Australia (aOR = 0.67, 95% CI = 0.42–1.05, $P = 0.079$).

Discussion

Our results show that, among sexually active Asian GBMSM who lived in Australia, around one-third had recently engaged in CLAI without PrEP or UVL with a casual or non-romantic regular partner, i.e. sex with a risk of HIV transmission. No association was found between CLAI without PrEP or UVL and social engagement with LGBTQ+ people or participants' social connections to Australia.

Our findings challenge the belief that overseas-born Asian GBMSM either lack social connections to LGBTQ+ people or that variation in these connections affects HIV risk. Previous analyses of social engagement with gay men showed that these connections were associated with protective behaviours, such as PrEP uptake and HIV testing, but also risk factors, like CLAI and higher partner numbers.³⁸ Previous qualitative data from overseas-born Asian GBMSM recently diagnosed with HIV found several barriers to connection to community and health services, including anticipated homophobia, experienced racism, language barriers, and not living in areas with a high concentration of gay men.¹⁶

Table 1. Multivariable logistic regression model predicting CLAI without PrEP or UVL among Asian GBMSM in Australia with casual and non-romantic partners in the last 6 months ($n = 509$).

	No CLAI without PrEP/UVL ($n = 358$)	Had CLAI without PrEP/UVL ($n = 151$)	OR	P	aOR	P
Age (M/s.d.)	32.9 (8.0)	31.7 (9.8)	0.98 (0.96–1.01)	0.146		
Country of birth						
Australia	96 (26.8)	50 (33.1)	1.35 (0.90–2.04)	0.152		
Overseas	262 (73.2)	101 (66.9)	REF	REF		
Years living in Australia						
<5 years	82 (23.0)	39 (25.8)	REF	REF		
≥5 years	275 (77.0)	112 (74.2)	0.86 (0.55–1.33)	0.490		
Visa status						
Citizen or permanent resident	264 (73.7)	108 (71.5)	0.89 (0.58–1.37)	0.606		
No permanent residency	94 (26.3)	43 (28.5)	REF	REF		
Sexual identity						
Gay	322 (89.9)	127 (84.1)	REF	REF		
Bisexual	20 (5.6)	11 (7.3)	1.39 (0.65–3.00)	0.394		
Other	16 (4.5)	13 (8.6)	2.06 (0.96–4.41)	0.062		
Speaks another language at home	198 (55.3)	79 (52.3)	1.13 (0.77–1.65)	0.536		
University degree	287 (80.2)	97 (64.2)	0.44 (0.29–0.68)	<0.001	0.50 (0.31–0.81)	0.004
Full-time employment	220 (61.5)	83 (55.0)	0.77 (0.52–1.12)	0.174		
Religious or spiritual	135 (37.7)	84 (55.6)	2.07 (1.41–3.05)	<0.001	1.52 (0.99–2.34)	0.057
Had HIV test in last 12 months	301 (84.1)	84 (56.0)	0.24 (0.16–0.37)	<0.001	0.28 (0.17–0.44)	<0.001
More than 10 male sexual partners ^A	72 (20.1)	15 (9.9)	0.44 (0.24–0.79)	0.006	0.66 (0.35–1.26)	0.205
Group sex ^A	149 (41.6)	60 (39.7)	0.92 (0.63–1.36)	0.693		
Drug use for sex ^A	99 (27.7)	60 (39.7)	1.72 (1.16–2.57)	0.008	1.48 (0.93–2.33)	0.095
Had sex overseas in last 4 years	184 (51.4)	65 (43.1)	0.71 (0.49–1.05)	0.086		
Close friends are from						
Australia	139 (39.3)	59 (40.1)	REF	REF		
Outside of Australia	117 (33.1)	42 (28.6)	0.85 (0.53–1.35)	0.481		
Mixed	87 (24.6)	37 (25.2)	1.00 (0.61–1.64)	0.994		
Do not know/no close friends	11 (3.1)	9 (6.1)	1.93 (0.76–4.9)	0.168		
LGBTQ+ friends are from						
Australia	153 (43.2)	71 (48.0)	REF	REF		
Outside of Australia	86 (24.3)	38 (25.7)	0.95 (0.59–1.53)	0.840		
Mixed	98 (27.7)	30 (20.3)	0.66 (0.40–1.08)	0.101		
Do not know/no LGBTQ+ friends	17 (4.8)	9 (6.1)	1.14 (0.48–2.68)	0.763		
Spends some time with LGBTQ+ friends	256 (71.5)	100 (66.2)	0.78 (0.52–1.17)	0.236		
Experienced discrimination based on sexual identity	188 (52.8)	111 (74.0)	2.54 (1.67–3.87)	<0.001	2.63 (1.65–4.21)	<0.001
Experienced discrimination based on race	270 (77.1)	111 (74.0)	0.94 (0.6–1.48)	0.788		
Strong feeling of belonging to Australia	243 (67.8)	99 (67.8)	0.96 (0.64–1.45)	0.855		
Strong feeling of belonging to country of birth	201 (56.8)	79 (54.1)	0.90 (0.61–1.32)	0.585		
Believe racial discrimination towards Asian people is a serious issue in Australia	237 (67.1)	85 (57.4)	0.66 (0.45–0.98)	0.039	0.67 (0.42–1.05)	0.079

(Continued on next page)

Table 1. (Continued).

	No CLAI without PrEP/UVL (n = 358)	Had CLAI without PrEP/UVL (n = 151)	OR	P	aOR	P
Get sexual health info from						
Online	207 (57.8)	100 (66.2)	1.43 (0.96–2.13)	0.077		
Social media	106 (29.6)	50 (33.1)	1.18 (0.78–1.77)	0.434		
Health care worker	94 (26.3)	29 (19.2)	0.67 (0.42–1.07)	0.091		
Friends	78 (21.8)	29 (19.2)	0.85 (0.53–1.37)	0.514		

Bold indicates statistical significance at $P < 0.05$.

^APrevious 6 months.

There were high levels of social engagement with LGBTQ+ people in the sample, with 44.6% reporting that they mostly had LGBTQ+ friends from Australia and another 25.5% reporting a mix of LGBTQ+ friends from Australia and elsewhere. We also found that 69.9% spent at least some free time with LGBTQ+ friends. However, this connection to LGBTQ+ people did not appear to be related to HIV risk, as there were similar proportions of connected Asian GBMSM who reported CLAI without PrEP or UVL or CLAI protected by PrEP or UVL. While they may be connected to LGBTQ+ people, the sexual health knowledge and norms within these networks could be different to previous samples of Australian GBMSM. This is because beliefs and norms about sexual health and sexual behaviour in Australia, such as condom use and PrEP, may be different to norms in the home countries of migrant Asian GBMSM.^{16,47} More work is needed to understand the nature and functions of diverse social engagement (e.g. virtual or real-life connections, geographic affinities with their host country or country of origin) with other LGBTQ+ people as well as their impact on HIV risk. These results suggest Asian GBMSM who participate in these HIV/STI behavioural surveillance surveys in Australia are likely to be connected to other gay or LGBTQ+ community networks rather than hidden and isolated as conventionally perceived.

Although we did not find an effect of discrimination based on race on CLAI without PrEP or UVL, we found that those who experienced discrimination based on their sexual orientation had a greater odds of reporting CLAI without PrEP or UVL. Previous evidence has found that intersectional identities of sexuality and race have compounding impacts on sexual behaviour and healthcare service engagement.^{6,7,43,48} Our findings echo the results from Frye *et al.*⁴³ who found that discrimination based on sexual orientation but not race was associated with HIV risk among an ethnically diverse sample from the USA. Our results are also partially consistent with a Canadian study of South Asian GBMSM, which found that both experiences of racism and homophobia contributed to engaging in sexual behaviour that put them at risk of HIV acquisition and was associated with hesitation in using sexual health services.⁷ The Canadian study also suggested that these negative impacts could be mitigated through developing resilience and having a strong social support network.⁷

More work is needed to determine the extent to which discrimination based on sexual orientation impacts on health-seeking behaviour relevant to HIV, such as HIV testing and PrEP uptake.

The HIV prevention coverage of consistent condom use, PrEP, or viral suppression was slightly lower in this sample than in other Australian samples of GBM. In a general sample of GBMSM from 2019, net prevention coverage was found to be 74.9%,¹ whereas we found a level of 70.3% in our sample. Compared to Holt *et al.*,¹ our sample had comparable levels of consistent condom use, PrEP use, and viral suppression, but our sample had a lower proportion of participants who reported no anal sex. Our sample of Asian GBMSM was largely similar to the general sample of GBMSM but with a slightly higher risk profile due to more anal intercourse. However, this sample was recruited in 2021 after COVID-19 lockdowns, which may have affected migration patterns of Asian GBMSM. Asian GBMSM who could be at higher risk of HIV due to lower engagement with healthcare services, such as HIV testing and PrEP, may have returned to their home country. Additionally, fewer Asian GBMSM migrated to Australia during this time. During this time, there were disruptions to HIV testing, PrEP use, and sexual behaviour due to COVID-19.^{49–51} Further monitoring of HIV risk behaviours among migrants will be needed now that COVID-19 restrictions have largely eased, permitting greater migration of overseas-born Asian GBMSM to Australia.

We found a negative association between recent HIV testing and CLAI without PrEP or UVL. A significant challenge in HIV prevention among overseas-born Asian GBMSM is the initial connection to sexual health services; after they become connected to these services, previous research suggests testing frequency and PrEP use are comparable to GBMSM born in Australia.^{5,52} Our results support this, as those who had engaged in recent HIV testing had significantly lower odds of reporting CLAI without PrEP or UVL. Of the participants who engaged in CLAI without PrEP or UVL, 56.0% reported testing for HIV in the last year compared to 84.0% of those who did not engage in CLAI without PrEP or UVL. As HIV testing is required for prescribing PrEP, those on PrEP who by definition did not engage in CLAI without PrEP or UVL are more likely to have recently tested for HIV. This is

concerning, as HIV testing is arguably more relevant for those who engage in CLAI without PrEP or UVL compared to those who do not. Targeted interventions to promote HIV testing to Asian GBMSM who engage in CLAI and who are not using PrEP are recommended.

There are several limitations to this study. Due to the impact of COVID-19 on migration to Australia, this sample consisted of fewer overseas-born Asian GBMSM than could have been recruited when there were less restrictions to travel. COVID-19 also impacted sexual behaviour, PrEP use, and HIV testing and makes this sample difficult to compare to previous samples of GBMSM. The recruitment via WeChat groups and partner organisations may have recruited participants who were more likely to be connected to other GBMSM and other LGBTQ+ people. Innovative approaches are needed in future studies to reach a diverse sample of Asian GBMSM to verify the generalisability of these results to Asian GBMSM not typically captured by standard research recruitment methods. Additionally, as our sample was relatively young, we recommend that future work should investigate whether an individual's social connections changes over time or how social connections vary in a sample with a broader age range. As PrEP use was measured in the previous 6 months, it is possible that participants who had taken PrEP had engaged in CLAI while not taking PrEP but that would not be captured in this analysis. This study asked where participants' friends were from but not about the quality of those relationships. Future studies of social connection among Asian GBMSM should explore the nuances of these relationships and sources of support, including sources of stigma and discrimination, and how they impact on HIV-related behaviours.

Conclusion

A substantial proportion of Asian GBMSM in our sample reported CLAI with a risk of HIV infection (i.e., CLAI not protected by either PrEP or UVL). We did not find evidence that this risk was related to the participants' level of social connection to other LGBTQ+ people or that a lack of connection increased HIV risk. However, the majority of our sample of Asian GBMSM had relatively good levels of support from other LGBTQ+ people. We did find that discrimination based on sexual orientation was associated with CLAI without PrEP or UVL. More work is needed to engage Asian GBMSM in research, utilising their existing networks for health promotion, and to reduce sexuality-based discrimination to facilitate access to services, such as HIV testing and PrEP.

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Data availability. The data that support this study cannot be publicly shared due to ethical or privacy reasons and may be shared upon reasonable request to the corresponding author if appropriate.

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