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Research Paper

# Chemsex among gay, bisexual, and other men who have sex with men in Singapore and the challenges ahead: A qualitative study

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ABSTRACT

*Background:* Sexualised substance use, or 'chemsex' has been shown to be a major factor driving the syndemic of HIV/AIDS in communities of gay, bisexual, and other men who have sex with men (GBMSM) around the world. However, there is a paucity of research on chemsex among GBMSM in Singapore due to punitive drug laws and the criminalisation of sexual behaviour between men. This qualitative descriptive study is the first to explore perceptions towards, motivators to engaging in, and the barriers to addressing the harms associated with chemsex among GBMSM in Singapore.

*Methods:* We conducted 30 semi-structured in-depth interviews with self-identifying GBMSM between the ages of 18–39 in Singapore following a purposive sampling strategy. Interview topics included participants' perceptions of drug use among GBMSM in Singapore, perceptions towards chemsex, reasons for drug use and chemsex, and recommendations to address the harms associated with chemsex in Singapore. Interviews were audio-recorded, transcribed, coded, and analysed using thematic analysis.

*Results:* Participants reported that it was common to encounter chemsex among GBMSM in Singapore as it could be easily accessed or initiated using social networking phone apps. Enhancement and prolongation of sexual experiences, fear of rejection from sexual partners and peers, and its use as a means of coping with societal rejection were three main reasons cited for engaging in chemsex. The impact of punitive drug laws on disclosure and stigmatisation of GBMSM who use drugs were reported to be key barriers towards addressing chemsex. Participants suggested using gay-specific commercial venues as avenues for awareness and educational campaigns, and social media to reach out to younger GBMSM.

*Conclusions:* This study highlights the complexities behind chemsex use among GBMSM in Singapore, and the range of individual to institutional factors to be addressed. We recommend that community-based organisations and policymakers find ways to destigmatise discussion of chemsex and provide safe spaces to seek help for drug use.

## Introduction

Gay, bisexual, and other men who have sex with men (GBMSM) are a key population who are disproportionately affected by the HIV epidemic. In spite of ongoing HIV prevention efforts, concentrated epidemics of HIV continue to expand across communities of GBMSM in

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different settings (Beyrer et al., 2012). Studies have shown that risk factors for HIV acquisition among GBMSM include anal intercourse in the absence of condoms or other biomedical prevention strategies or technologies, prior diagnosis of other sexually-transmitted infections (STIs), and recreational substance use (Carey et al., 2008; McCarty-Caplan, Jantz, & Swartz, 2014; Nguyen et al., 2016).

Recreational drug use is more prevalent in gay and bisexual male populations, relative to heterosexual male populations, and is often rooted in sexualised contexts (Bourne, 2012; Hunter, Dargan, Benzie, White, & Wood, 2014; Mackesy-Amiti, Fendrich, & Johnson, 2008; McCabe, Hughes, Bostwick, West, & Boyd, 2009). Terms such as 'chemsex' and 'party and play' – denoting the use of drugs such as gamma-hydroxybutyrate/gamma-butyrolactone (GHB/GBL), crystal methamphetamine (crystal meth), and mephedrone before or during sexual activity among GBMSM (Bourne, Reid, Hickson, Torres-Rueda, & Weatherburn, 2015) – have become incorporated into the lexicon of gay male culture and society (Bianchi, 2016; Glyde, 2015). Studies have shown that chemsex 'parties' typically involve the use of drugs with multiple sexual partners, transactional sex, the sharing of sex toys, and are of longer duration, all of which increase the risk of transmitting HIV and other STIs (Bourne et al., 2015; Hegazi et al., 2017).

The use of the term 'chemsex' has stirred up considerable debate in recent years. The practice of using drugs such as crystal meth in the context of sex among gay men is not a new phenomenon (Bolding, Hart, Sherr, & Elford, 2006; Halkitis, Parsons, & Stirratt, 2001), but has been a source of recent alarm in the British healthcare system and the broader global health domain as a major driver for the spread of HIV and other sexually transmitted diseases among GBMSM (Bianchi, 2016; McCall, Adams, Mason, & Willis, 2015). Similarly, several media outlets have portrayed chemsex as an urgent health threat to GBMSM (Cormier, 2015; Flynn, 2015; Halliday & Godfrey, 2015). However, several scholars have cautioned that such sensationalistic representations of chemsex risk pathologising or "unconstructively moralising" chemsex and might further marginalise occasional drug users or implicate the formulation of effective health policies for sexual minorities (Hakim, 2018; Pienaar, Murphy, Race, & Lea, 2018; Race, 2015).

To date, a total of 7548 cases of HIV infections had been diagnosed in Singapore, of whom 5660 remained alive as at end-2016. In 2016, GBMSM made up 62.0% of all incident cases of sexually-transmitted HIV infections in Singapore, with those aged 15 to 39 making up 62.7% of cases among GBMSM (Ministry of Health Singapore, 2016). In spite of the risk that chemsex poses for HIV acquisition, few studies have sought to measure the prevalence of drug use among GBMSM in Singapore. The Asia Internet MSM Sex Survey (AIMSS), which included 4072 participants who self-identify as MSM from Singapore, found that 12.8% of respondents had consumed drugs prior to, or during sex in the preceding six months (Koe, 2011), while a community-based survey in 2014 found that 9.3% of 334 MSM respondents reported drug use in the preceding 12 months (Wong, 2014).

Notwithstanding these studies, there is a paucity of research on chemsex among GBMSM in Singapore. This may be attributed to laws that create barriers for the GBMSM to participate in related research or access resources provided by healthcare and community organisations (Chua et al., 2013). The Misuse of Drugs Act criminalises the possession and use of drugs with penalties that range from fines of up to S$20,000 to a maximum of ten years in prison. The law also imposes a mandatory death penalty or life imprisonment for the trafficking of controlled drugs in amounts exceeding stipulated thresholds (Misuse of Drugs Act, 1999). In addition, Section 377 A of the Singapore penal code criminalises consensual sexual behaviour between two men, which may lead to imprisonment for a term that may extend up to two years (Penal Code, 2008). In light of this gap, we conducted this study to explore the perceptions of, and reasons for engaging in chemsex among GBMSM in Singapore, and suggest ways to address the harms associated with chemsex in the present setting.

## Methods

### *Study design*

A qualitative descriptive study was conducted with semi-structured interviews (SSIs) among 30 self-identified GBMSM between the ages of 18 and 39 years old from May to September 2016. Eligibility criteria include participants self-reporting having had sexual contact with men in the past 12 months and being Singapore citizens or permanent residents who had lived in Singapore for at least a year. We recruited participants for this qualitative descriptive study through recruitment posters on display at the Communicable Disease Centre (CDC) in Singapore, the Department of STI Control (DSC) clinic, and on *GLBT Voices Singapore*, a popular lesbian, gay, bisexual, and transgender (LGBT) community group on Facebook. Participants were purposively sampled based on self-reported HIV and other sexually transmitted infections (STI) status. Half of the participants we recruited were HIV or STI-positive as a proxy for engaging in riskier sexual behaviour while the other half were HIV or STI-negative. The study protocol was approved by the National Healthcare Group Domain Specific Review Board (reference number 2014/00586).

### *Data collection*

Two trained researchers interviewed participants at the researcher's office, or at a conducive location mutually agreed upon by the participant and interviewer. Each interview took between 60–90 min. All participants gave verbal consent to participate in the study and agreed to be audio-recorded. They were also assured that all personal identifiers would be removed to protect their identity.

Interviews were conducted using a semi-structured interview guide as part of a larger study on a formative research exploring sexual risk behaviours of GBMSM in Singapore, and recommendations for future HIV prevention programs. Interview topics for this analysis included participants' opinions on the sexual behaviour of GBMSM, the use of substances before or during sex, reasons for drug use among GBMSM and its impact on the gay male community, and suggestions on how to address the harms associated with drug use among GBMSM and ideas on possible interventions. Participants were also asked to complete a demographic questionnaire prior to the start of the interview, and were asked during the interview if they had ever taken drugs, including crystal meth, GHB/GBL, ecstasy, ketamine, and other illicit substances.

Table 1 provides a summary of the sociodemographic characteristics of the sample. Of the 30 participants, slightly more than a third self-reported current or previous drug use. Of those who had reported drug use, most of them reported as ever being diagnosed for HIV or other STIs. Participants ranged from 18 to 39 years old, and generally had a high level of educational attainment. Slightly over half reported being in a steady romantic relationship with a male partner. All participants had ever tested for HIV, and most participants had tested for other STIs. Slightly less than half of those who had reported ever taking drugs had reported providing sex in exchange for money or gifts, while only a fifth of those who reported never taking drugs had done so.

### *Data analysis*

Audio-recordings were transcribed verbatim, and the data was analysed using applied thematic analysis (Guest, MacQueen, & Namey, 2012). Transcripts were first reviewed by study team members to familiarise themselves with the data collected and identify emerging themes. Subsequently, a preliminary codebook with structural themes was developed based on the initial literature review and questions on the SSI guide, and utilised by team members who then independently coded a randomly-selected transcript. Discrepancies in coding were discussed and resolved to establish inter-coder reliability and the study team proceeded to code a second transcript using a revised codebook

**Table 1**
Sociodemographic characteristics of participants.

| Variables | Reported drug use (n = 11) | No reported drug use (n = 19) | Total (n = 30) |
|---|---|---|---|
| | n | n | n |
| **Self-reported status for HIV or other STIs** | | | |
| HIV or other STIs positive | 8 | 7 | 15 |
| HIV or other STIs negative | 3 | 12 | 15 |
| **Age (in years)** | | | |
| Less than 20 | 0 | 1 | 1 |
| 20 to 25 | 6 | 12 | 18 |
| 26 to 29 | 4 | 2 | 6 |
| ≥ 30 | 1 | 4 | 5 |
| **Educational attainment** | | | |
| Secondary | 2 | 1 | 3 |
| Pre-university education | 6 | 11 | 17 |
| Bachelor's or post graduate degree | 3 | 7 | 10 |
| **Employment status** | | | |
| Unemployed / Not in school | 0 | 1 | 1 |
| Student | 5 | 10 | 15 |
| Private sector | 2 | 3 | 5 |
| Public sector | 1 | 1 | 2 |
| Self-employed | 1 | 0 | 1 |
| Others | 2 | 4 | 6 |
| **Relationship status** | | | |
| Not in a romantic relationship | 5 | 7 | 12 |
| In a romantic relationship with a male partner | 6 | 12 | 18 |
| **When was the last time you tested for HIV?** | | | |
| I never had an HIV test | 0 | 0 | 0 |
| In the past one month | 3 | 2 | 5 |
| In the past 6 months | 1 | 10 | 11 |
| In the past 12 months | 1 | 1 | 2 |
| > 12 months ago | 6 | 6 | 12 |
| **When was the last time you tested for other STIs?** | | | |
| I never tested for other STIs | 0 | 5 | 5 |
| In the past one month | 1 | 2 | 3 |
| In the past 6 months | 3 | 5 | 8 |
| In the past 12 months | 3 | 2 | 5 |
| > 12 months ago | 4 | 5 | 9 |
| **Provided sex in exchange for money and gifts** | | | |
| Yes | 5 | 4 | 9 |
| No | 6 | 14 | 20 |
| Unsure | 0 | 1 | 1 |

which also included inductive codes that emerged from the transcripts. This process continued iteratively until a fourth and final codebook was developed and used to code the rest of the transcripts. Data from the coded transcripts were then organised using NVivo 10 software (QSR International Pty Ltd), and coding reports were then summarised and analysed by the study team.

## Results

### *Perceptions of drug use in the gay male community*

Participants cited alkyl nitrites ('poppers'), methamphetamine ('ice' or 'crystal meth'), ecstasy ('candy' or 'wawa'), ketamine, and gamma-hydroxybutyric acid ('g water' or 'gina') as common drugs used among GBMSM in Singapore. In addition, participants also highlighted that drugs typically used for the treatment of erectile dysfunction such as Cialis, Viagra and other phosphodiesterase (PDE)-5 inhibitors (e.g. 'black ants'), were also used during chemsex.

Most participants perceived that drug use, and in particular chemsex, was common among GBMSM in Singapore. Many participants highlighted how they had seen other GBMSM openly soliciting for chemsex using code words such as 'CF' or 'chill fun', or using symbols such as the snowflake or ice cream emoji in their online profiles on geosocial networking smartphone apps. One participant portrayed the perceived ubiquity of such practices on mobile phone apps and online dating sites as follows:

> I think it is quite common. If you go to Grindr [sexual networking mobile phone app], there is a lot of things that is called 'CF' – chill fun. That's like another way of saying, wanna have fun with drugs? Personally, I've been asked a lot to do that when I browse Grindr, Hornet, Jack'd… whatever app. (HIV/STI-negative, reported drug use, 28 years old)

Despite the perceived ubiquity of drug use among GBMSM, several participants felt that these activities involving drug use among GBMSM typically take place out of the public eye or away from visible spaces in the local gay male community. These participants cited private sex parties in hotels, home parties, and overseas circuit parties as venues for drug use, all of which accord greater anonymity for GBMSM who use drugs. One participant described how his first chemsex experience took place in Thailand at a yearly gay circuit party that is organised during *Songkran*, Thailand's traditional festival for the New Year:

> I think after going for Songkran, which my friends dragged and asked me to go to party instead of brooding over a lost relationship, and being introduced to drugs for the first time, I didn't know it was used for sex. Then I had sex and whoa ok! It's that different! So, I became receptive to the idea of having sex on drugs… It gradually transformed into something – when I have sex, I will use drugs. (HIV/STI-positive, reported drug use, 26 years old)

The quotes from both participants provide a sense of how drugs are easily accessible among GBMSM through social spaces such as geosocial networking smartphone apps, even though those who engage in drug use make active attempts at concealing their use of drugs by using code words or symbols or by using drugs at overseas parties and other settings that accord them greater anonymity. The experience of the second participant who attended the circuit party in Thailand illustrates how GBMSM may not only have access to drugs at such parties, but also learn how to 'do' chemsex from other GBMSM.

### *Reasons for engaging in chemsex*

Participants who reported drug use shared their personal reasons for using drugs, while non-users recounted their observations and the experiences of friends who were drugs-users. We identified three main factors that may contribute to an individual's decision to engage in chemsex; these reasons range from proximal factors such as enhanced sexual pleasure associated with drug use, interpersonal factors relating to an individual's interactions with other GBMSM who use drugs, and broader, institutional factors such as stigma and societal rejection.

Firstly, most participants felt that individuals engaged in chemsex because drugs allowed individuals to enhance their sexual experiences, as illustrated below by one participant who shared how drugs had impacted his sexual experiences:

> I guess it is to heighten the stimulating experience, so they will feel high. The other thing is that it can make them last longer, so without cumming [ejaculating]. So if they can do it without cumming and can fuck so many people, they can extend their pleasure time. (HIV/STI-negative, reported drug use, 28 years old)

For this participant, drugs enhanced his experience of sex by allowing him to transcend the physiological limits, and the concomitant heights of pleasure that sex without drugs would typically entail. Specifically, the use of drugs allowed the participant to extend the time

that he could engage in sexual activities, as well as the number of people that he could have sex with, which would typically be disrupted by "cumming" or ejaculating.

Besides the enhancement of sexual pleasure, participants reported that GBMSM are often subjected to peer pressure to use drugs by their sexual partners. One participant highlighted how individuals who are not looking for chemsex may end up being pressured into it as they fear rejection from partners whom they perceive to be more sexually attractive than them, but who are only looking for sexual partners who engage in chemsex:

> From what I've seen, it is always the most physically attractive men that will use the drugs the most. […] They would kind of like force the drugs into the person who wants to have sex with them even if they don't want it. But because of their physical features, along with their need to […] have sex with this attractive person, they will give in to peer pressure and then they will take it. (HIV/STI-positive, reported drug use, 20 years old)

Beyond peer pressure from potential sexual partners, some participants perceive drug use as a part of the gay identity or culture; a participant even likened drug use to a rite of passage towards peer acceptance in the gay male community:

> They need to do drugs to be accepted, […] to be in the crowd. And for them, sometimes they even associate – oh you want to be gay? You need to at least try […] all these things. (HIV/STI-negative, reported drug use, 28 years old)

Thirdly, several participants also highlighted how drug use might be a form of coping in the face of perceived and experienced stigma as a sexual minority in Singapore, where the law still criminalizes sexual relations between men, and a majority of Singaporeans still hold negative views towards same-sex relationships. One participant justified and rationalised his use of drugs as a form of coping with rejection from religion, his family, and society due to his sexual identity:

> These are from religion – usually more people from Christian, Protestant, Catholic background. Those who would not fit in or feel casted out from their parents for their refusal to accept their son's sexuality. So issues like conservatism of society. […] A lot of these people, they rationalise this – they say that ok, society does not want me, the government does not want me. The government will jail me for something that I am doing it in private [referring to Section 377 A of the penal code criminalising consensual sex between two men]. So they are actually driven to self-destructive behaviour. (HIV/STI-positive, reported drug use, 28 years old)

*Barriers to addressing harms associated with chemsex*

Although most participants reported that they perceived drug use to be common among GBMSM in Singapore, more than half of the participants reported that the punitive nature of existing drug laws in Singapore was the main barrier to having open conversations about chemsex and drug use, and for GBMSM to seek help from healthcare providers for addiction management services. One participant described the obstacles he encountered while attempting to discuss his own drug use with his sexual health provider and how it has been difficult to seek drug rehabilitation services without fear of legal consequences:

> It's like for example, when I'm talking to my HIV doctors. I did tell him that I am, I used to take drugs and everything and sometimes I told him, "I use drugs." … he will say this, "I'm listening to you, but this is totally off record." Because once it's in the record, immediately you have to go through the police process and everything so there wasn't a safe environment for people to speak up on this. (HIV/STI-positive, reported drug use, 34 years old)

More than half the participants also highlighted the lack of discussion and efforts to address the issue due to shame and stigma attached to being labeled as a drug user, which one participant who used drugs described as a "deeply shameful" activity:

> I think there is something deeply shameful about it. That everyone wants to be good. But everyone has a dark side to it. To them, it is deep seated shame. So yeah, I have never seen anyone talk about it. (HIV/STI-positive, reported drug use, 28 years old)

In general, participants felt that due to legal barriers and the shame and stigma surrounding drug use, there was a lack of safe spaces to discuss strategies to reduce the harms associated with drug use in the gay male community. Several participants also reported that they did not know of any platforms for GBMSM to speak openly about this topic:

> Er, like create safe and open… Like spaces where they can seek help or reach out? And discuss these things with people. Because right now, I don't think […] there's anywhere that appears to be open for them to talk. (HIV/STI-negative, no reported drug use, 23 years old)

Many participants echoed this need for safe spaces where dialogue on drug use and chemsex can be initiated and sustained, rather than censored due to the zero-tolerance policy on drugs in Singapore. One participant felt that a key feature of such a safe space would be allowing participants to preserve their anonymity while participating in such dialogue:

> I'll say a safe space is a must. There must also be anonymity. There also must be… It will be best if you can give them an environment where they don't have to show their identity or even show their face for that matter. (HIV/STI-negative, no reported drug use, 22 years old)

*Recommendations to address harms associated with chemsex*

Participants suggested several ways to address the harms associated with chemsex in the gay male community. Some felt that more could be done to educate GBMSM and raise awareness on issues surrounding drug use in the gay male community. One view was that commercial entities like gay bars and sex-on-premises venues (e.g. saunas) could play such a role, as there is currently no organisation spearheading education on raising awareness of drug use and HIV prevention among GBMSM in Singapore:

> I think the education in the club is important. I think even in the saunas. […] It's really working with the different organisations and really help to do education. I think that's one thing is how can we gather the community together to work on it. And I think we don't have an organisation to really look into that matter. (HIV/STI-positive, reported drug use, 34 years old)

Participants also felt that more could be done to educate younger GBMSM in Singapore through social media, which could potentially increase the reach of awareness campaigns focusing on HIV prevention and drug use amongst young GBMSM:

> The newer generation of the gay community, they are a lot more into social media. So sharing about drug use and HIV prevention all those, all those platforms are a very good way to get to them. (HIV/STI-negative, no reported drug use, 22 years old)

Although participants provided several novel ways of educating GBMSM on the potential harms associated with chemsex, the suggestions from participants on the use of both online and offline gay male community spaces displayed an implicit understanding on the part of participants of the legal barriers, and thus social spaces where GBMSM individuals and health advocacy groups may operate in Singapore. The extant laws prevent GBMSM-related community organisations from engaging public institutions, such as schools and healthcare

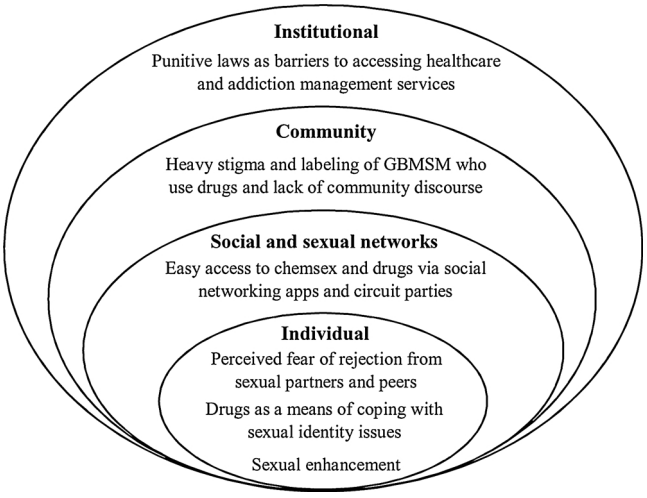


**Fig. 1.** Modified socio-ecological framework of factors driving chemsex among GBMSM.

organisations, to address issues relating to the health and well-being among GBMSM in the present setting.

## Discussion

Our study identified several key reasons for engaging in chemsex, and some major barriers to addressing the harms associated with the issue within the gay male community. In discussing our findings, we referenced a modified socio-ecological framework to frame our findings on the factors driving chemsex among GBMSM (Baral, Logie, Grosso, Wirtz, & Beyrer, 2013), and as a means of identifying potential interventions targeted at the different levels within the socio-ecological framework (Fig. 1).

At the individual level, participants reported how an individual's decision to engage in chemsex may be driven by the desire to enhance sexual experiences and by peer pressure from sexual partners or to fit in with the wider gay male community. The reasons for wanting to enhance or prolong sex was highlighted in a recent study in the United Kingdom, which offers insight to how drugs helped gay men who engaged in chemsex achieve the sex that they value, and to help them overcome insecurities about themselves (Weatherburn, Hickson, Reid, Torres-Rueda, & Bourne, 2017). This emphasis on the glorification and idealisation of sexual experiences may thus be rooted in deeper psychological frameworks relating to emotional insecurities, self-esteem, and sexual identity issues, which have been reflected in our participants' recurrent quotes about the need for acceptance by partners and peers. Our finding that drugs may be used to cope with rejection from the wider society is aligned with the minority stress framework (Meyer (1995)), which posits that individuals from stigmatised social categories are exposed to excess stress, thus predisposing them towards coping mechanisms such as drug use. Several scholars have found evidence supporting an association between minority stressors such as racial stigma or homophobia, and coping mechanisms such as club drug dependence, multiple drug use, and risky sexual behaviours (Bruce, Ramirez-Valles, & Campbell, 2008; Semple, Strathdee, Zians, & Patterson, 2012; Wendi et al., 2016).

At the level of social and sexual networks, participants' observations on the use of social and sexual networking apps for seeking out chemsex in Singapore, and the engagement in drug use at overseas circuit parties also concur with studies elsewhere (Boonchutima & Kongchan, 2017; Zhao et al., 2017). These findings have implications on the delineation of pathways through which participants begin engaging in chemsex, and inform interventions targeting young GBMSM. At the community level, participants highlighted how the stigma of being labelled as a drug user may deter people from having an open conversation about chemsex. Participants reported a lack of "safe and open" spaces or platforms to discuss chemsex in the in the gay male community. This is worrisome, since substance use-related stigma and the internalisation of such stigma among GBMSM who use drugs may facilitate further risky behaviour and have a negative impact on mental health outcomes (Brown et al., 2015; Latkin et al., 2010), thus likely exacerbating the entrenchment of GBMSM who use drugs in the syndemic of chemsex and other sexual risk behaviours. In the Singapore context, these community-level factors may in some part be reinforced by the legal ecosystem that criminalises both gay sex and drug use.

At the institutional or policy level, participants also directly highlighted how the punitive nature of laws criminalising drug use is a barrier to disclosing their drug use in healthcare settings, and in seeking professional help. All medical practitioners in Singapore are bound by regulation to report to the Director of Medical Services and the Central Narcotics Bureau individuals whom they consider to be, or have "reasonable grounds to suspect" are drug users (Misuse of Drugs Act, 1999). Disclosure of drug use along with related sexual risk behaviours to providers is instrumental to the optimal treatment of patients in both mental and sexual healthcare settings, and also serves as an avenue for linking affected individuals to appropriate treatment for drug addiction. The fear of disclosure resulting from these legal barriers may thus be preventing individuals from receiving the care they need.

Table 2 maps the factors identified at the various levels in the modified socio-ecological model to potential interventions, some of which were also highlighted by participants. At the individual level, further research is needed on psychosocial underpinnings that drive individuals' engagement in chemsex, and on psychological interventions that might be effective. At the level of social and sexual networks, drug and HIV/STI prevention messages may be promoted on smartphone apps, as well as at sex-on-premises venues and other venues where GBMSM meet sexual partners. Such efforts may include health promotion messages on social networking mobile apps or through community-based organisations during specified timeframes when key regional circuit parties, such as during Thailand's *Songkran* festival, are taking place. These messages should focus on dissemination information on chemsex, and where to access help in the form of treatment or peer support groups in the region.

**Table 2**
Recommendations for proposed and potential interventions to address factors driving chemsex.

| Level of influence | Recommendations for proposed and potential interventions |
|---|---|
| Individual | Psychological interventions addressing minority stress, sexual identity issues and other underlying psychological factors that may exacerbate the harms associated with substance use |
| Social and sexual networks | Drug and HIV/STI prevention messages and interventions at sex-on-premises venues, online apps and platforms where MSM meet for sex, and at circuit parties. |
| Community | Stigma-reducing and anti-bullying campaigns at commercial venues and on smartphone apps, or support groups to mitigate the impact of stigma towards MSM in school, organisations and the wider community.<br>Provision of safe spaces for discourse on chemsex and drug use in the community, alongside campaigns to destigmatise discussion on drug use. |
| Institutional | Provision of anonymised health and addiction recovery services and harm reduction services for drug users in Singapore.<br>Decriminalisation of same-sex relations between men to encourage uptake of sexual and mental health services. |

At the community level, we concur with participants' suggestions to use gay-specific commercial venues or social media to promote discourse on chemsex in the gay male community, while balancing the need to not stigmatise GBMSM who use drugs while addressing the harms associated with chemsex. As stigma from the wider society may indirectly drive substance use through poorer mental health outcomes for GBMSM, efforts to reduce stigma and the sexual minority stressors that GBMSM face in school and other organisations should be implemented. The benefits of such approaches on reducing drug use and improving outcomes for LGBT school-going individuals have been reported in the literature (Birkett, Espelage, & Koenig, 2009; Konishi, Saewyc, Homma, & Poon, 2013).

Finally, at the institutional level, we recommend the introduction of harm reduction or amnesty policies in the context of drug use, and the decriminalisation of sexual relations between men; this is in spite of the challenges to legal reform in the context of these issues, given Singapore's zero-tolerance policy towards drug use and past failed attempts at challenging the constitutionality of the law criminalizing sex between men (Cheong, 2016; Suang, 2013). Specifically, our findings show that the law that criminalises sex between men, section 377 A of the penal code, is a critical barrier to accessing relevant and essential healthcare services in the present setting. The repeal of section 377 A is hence instrumental to unimpeded, equitable access to such services among GBMSM, and arguably in the public health interest. Furthermore, the introduction of harm reduction and amnesty policies that accord GBMSM who use drugs anonymity and safety when disclosing their drug use in the context of healthcare settings will lead to an increased uptake of sexual and mental health services, which would in turn help reduce the risks associated with chemsex among GBMSM who use drugs, with consequent benefits on HIV/STI prevention.

We are mindful of the study's limitations. As this study focused on younger GBMSM aged between 18–39 years old, the issues identified may not be generalisable to older GBMSM, or other at-risk groups that were inadequately represented in our sample. Secondly, social desirability bias could have affected what was reported on the sensitive topics of sexual practices and drug use. We sought to reduce such bias and encourage participants to speak openly about sex and drugs by building rapport with study participants and assuring participants that all personal identifiers would be removed to protect their identities.

## Conclusions

This study is, to our knowledge, the first to explore perceptions and experiences of drug use among GBMSM in Singapore. We highlight some key factors to be addressed in reducing the harms associated with chemsex, and also offer a framework to guide future interventions looking to address the syndemic of chemsex and HIV/STI among GBMSM in Singapore.

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## Declarations of interest

None.

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