

Coronavirus (COVID-19) and sexualised drug use among men who have sex with men: a systematic review

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ABSTRACT

Drug-related harms, including harms from sexualised drug use (SDU), are disproportionately experienced by sexual and gender minority people, relative to their majority counterparts. Chemsex, a type of SDU practiced mainly by MSM, is associated with methamphetamine use and increased HIV seropositivity or risk of acquisition. Therefore, participants are at increased risk of immunocompromise. Existing evidence suggests that drug use increases following natural disasters. The impact of coronavirus disease 2019 (COVID-19) on chemsex is unknown. A PRISMA-adherent systematic review was conducted to synthesise reports of changes in the prevalence, frequency, or characteristics of drug use (and factors associated with these changes) following the onset of the COVID-19 pandemic. This report presents findings related to SDU/chemsex among MSM. A comprehensive search across nine databases, supplemented with backward-forward citation searching and contact with key opinion leaders, was conducted. Two reviewers carried out title-abstract screening, full-text screening, and data extraction. Following a final, single database search, nine studies were included in the narrative synthesis. More than half the sample were studies investigating HIV pre-exposure prophylaxis use. Twenty percent of participants in most studies reported chemsex participation. In four, participants reported a net increase or maintenance of chemsex participation during the pandemic and five reported a net decrease. Increased chemsex participation was associated with loneliness, cravings, and working during the pandemic. Decreased chemsex practice was associated with COVID-19-related fear. This synthesis suggests that chemsex practice continued, and for some MSM increased, throughout COVID-19 pandemic 'lockdowns'. This may have increased COVID-19 transmission and severity among potentially vulnerable MSM.

Keywords: chemsex, coronavirus, COVID-19, LGBTQ+, lockdown, men who have sex with men, pandemic, sexualised drug use.

Introduction

Despite significant progress affording lesbian, gay, bisexual, transgender and other sexual and gender minority (LGBT+) people greater social liberty and legal protections, they continue to experience disparities across a range of health domains.¹ These include harm from alcohol, tobacco and illicit drug (drug) use and dependence.^{2,3} Sexual minority people have been found to use drugs earlier, in greater quantities, with more associated harms than their heterosexual counterparts.⁴⁻⁸

Sexualised drug use (SDU) is defined as the use of drugs before and or during sexual activity to prolong or enhance the experience.⁹ While SDU is common among people of all genders and sexual orientations,¹⁰ there are unique conditions that make SDU more common, and in some cases more harmful, among particular LGBT+ subgroups. Men who have sex with men (MSM) are believed to experience a unique set of social (e.g. hook-up culture) and psychological (e.g. shame around 'homo sex') conditions that bring about a cultural phenomenon known as 'chemsex' that is characterised by the use of geospatial networking applications to engage in sex with multiple concurrent or sequential partners under the influence of any combination of crystal methamphetamine (crystal), gamma

hydroxybutyric acid/gamma butyrolactone (GHB/GBL) and mephedrone.¹¹ SDU has also been found to be common among women who have sex with women (WSW) and among transgender women who have sex with men.^{3,12,13} However, these groups are not as widely reported on as cisgender MSM and there is a dearth of evidence relating to SDU among transgender men and non-binary people.³

The prevalence of SDU/chemsex varies between countries and depends on the operationalisation of the behaviour. However, using the United Kingdom (UK) as an example, ~17% of sexual health clinic attendees and ~31% of HIV service users are estimated to participate in chemsex.⁹ While not all MSM who participate in SDU/chemsex encounter significant problems,¹⁴ there is a substantial risk of a range of physical and psychosocial harms. SDU practice has been associated with an increased risk of acquiring sexually transmitted infections (STIs),¹⁵ poorer engagement in HIV-related care,¹⁶ soft-tissue and other injecting consequences,¹⁷ mental ill health (including psychosis),¹⁸ sexual violence victimisation,¹⁹ among other issues.

In March 2020, the World Health Organization declared a pandemic as cases of the novel, highly infectious strain of coronavirus disease 2019 (COVID-19) continued to rise across the globe.²⁰ Public health emergencies of this magnitude have rarely been recorded. However, evidence from historical natural disasters (e.g. flood or earthquake) suggest that living through such times is associated with increases in drug use, with a disproportionate effect on those with greater pre-disaster drug use.^{21,22} Specific to the COVID-19 pandemic, the evidence is variable. However, one cross-sectional study found an increase in participants' cannabis use²³ and a longitudinal study found a progressive increase in Alcohol Use Disorders Identification Test Consumption questionnaire score as the pandemic progressed.²⁴

The COVID-19 pandemic created unique stressors, many of which disproportionately disadvantaged LGBT+ people. Since the start of the pandemic, hate crimes against LGBT+ people in the UK have increased.²⁵ Mental distress, manifesting as anxiety, depression and suicidality has increased among LGBT+ people internationally.^{26–30} For some, this was in part related to disruptions to HIV-related³¹ and gender-affirming care.^{26,32}

Pandemic-related financial hardship²⁷ has resulted in many LGBT+ people moving away from their 'rainbow families'³³ and returning to their family of origin. This has brought about an increase in identity concealment which compounds the loss of community connectedness resulting from 'lockdown' and other social restrictions. According to minority stress theories, these pandemic-related difficulties disproportionately affected LGBT+ people, contributing to an increase in drug use.^{34–38} Early research suggests that LGBT+ people who drank to cope with these minority stressors, drank more than before the pandemic.³⁹

Hypothesising a pandemic-associated increase in the frequency and quantity of drug use by LGBT+ people, we

conducted a systematic review to synthesise the extant literature reporting changes in drug use in this population to understand if public health and clinical responses require adjustment or upregulation. This review reports findings related to SDU/chemsex among MSM only. The authors felt that the 'double jeopardy' of potential SDU-associated HIV acquisition and immune suppression following crystal use^{40,41} during the COVID-19 pandemic warranted a separate report to ensure these important findings were not lost in a larger review with considerable data.

In this article, we aimed to:

1. Describe changes in SDU (including increase/decrease in prevalence or frequency; type of drug use; administration route; setting for use) among MSM since the beginning of the pandemic
2. Explore factors associated with an increase or decrease in the prevalence or frequency of SDU among MSM since the beginning of the pandemic.

Materials and methods

This study was registered on the international prospective register of systematic reviews on 10 August 2021 (PROSPERO: CRD42021271426) and informed by Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) 2020 and extensions PRISMA-S and PRISMA-P.^{42–44}

Search strategy

This study comprised a primary and secondary search. First, eight bibliographic databases (Embase, Epistemonikos, KCI-Journal Database, Medline, PsycINFO, Russian Science Citation Index, SciELO Citation Index, and Web of Science Core Collection) were searched from 1 January 2019 to 14 August 2021 using terms informed by reviewer expertise and previous systematic reviews (see Supplementary Tables S1–S5). Google Scholar was searched three times on 29 August 2021 with terms: (('chemsex' OR 'drug use') AND 'X'), where 'X' was 'COVID*', 'coronavirus' or 'lockdown' (Table S6). Four specialist journals in drug use (*Addiction*, *International Journal of Drug Policy*) or LGBT+ health (*LGBT Health*, *International Journal of Transgender Health*) were hand-searched from March 2019 to August 2021 and a COVID-19 special issue of *Journal of Homosexuality* screened. Thirteen global key opinion leaders (KOLs) were contacted to request additional published or unpublished work. All potentially relevant records from Google Scholar, handsearching journals and KOLs were read in full. Backward and forward citation searching was completed for each systematic review identified by the search and all texts read in full, using the software 'citationchaser'.⁴⁵ This yielded 2037 abstracts. A secondary search was conducted to update the review. This involved a single, focused PubMed search (search two; from

2021) on 9 February 2023 to identify any SDU studies that had been published since the primary search (search one): (('sexualised drug use' OR 'sexualised drug use' OR 'slamsex' OR 'hnh' OR 'pnp' OR 'methamphetamine' OR 'GHB' OR 'GBL' OR 'mephedrone') AND ('COVID*' OR 'coronavirus' OR 'pandemic' OR 'lockdown' OR 'social restrictions')).

Inclusion and exclusion criteria

Regional, national, or international studies reporting on adult (≥ 18 years old) MSM who disclosed SDU during the COVID-19 pandemic were included. Samples with aggregated data for MSM and transgender women were included. Owing to anticipated variation in the definition of chemsex, studies could report on changes in the use of any drug, by any route, in any sexualised context. Primary quantitative, qualitative and mixed-methods studies were eligible with no restriction by study design. Reviews, conference proceedings, book/chapters, commentary articles, editorials, media articles and letters not presenting original data were excluded.

Study selection

Data identified from search one were uploaded to Rayyan, a systematic review software.⁴⁶ Title-abstract screening was completed by two independent reviewers (DC, GG) and full texts were retrieved when consensus could not be reached. Full texts from all 2021 sources were uploaded to Rayyan and each independently reviewed against the inclusion criteria by two reviewers (DC 100%, EE 50%, GG 50%). Reasons for inclusion/exclusion were documented and disagreements resolved through discussion. Where clarification or additional data were required, study authors were contacted. Results from search two were reviewed twice (DC) against the same inclusion criteria.

Data extraction

A data extraction table was piloted before two independent reviewers (DC, EE) extracted the pre-specified data from included studies identified by search one. The first author extracted data from records identified by search two and these data were reviewed prior to submission.

Data synthesis

Owing to a legal requirement to abstain from SDU/chemsex during pandemic restrictions, studies were allocated to one of two groups: (1) net increase or unchanged SDU/chemsex frequency or duration; and (2) reduced or no SDU/chemsex participation. Groups were summarised separately followed by a description of any factors associated with changes in SDU/chemsex.

Results

Search results and sample characteristics

Record selection is in Fig. 1. Across both search one ($n = 5$) and two ($n = 4$), nine studies, comprising 5060 MSM and one transgender woman (whose data were aggregated with MSM and therefore retained), met criteria for inclusion in this review. Most studies were small with two-thirds reporting data from fewer than 500 participants (Table 1). Five studies were cross-sectional, three were prospective and one qualitative. Convenience sampling was most common ($n = 6$; half clinical samples), followed by purposive ($n = 3$), with one study using both purposive and respondent-driven methods. Included studies were conducted in Australia, China, France, Germany, Israel, Netherlands ($n = 2$), Singapore and UK. Average age was largely between 30 and 50 years. Lastly, the primary aim of almost half of the included studies was to monitor changes in HIV pre-exposure prophylaxis (PrEP) use and related behaviour during the pandemic.

Changes in SDU following the onset of the pandemic

Increased or unchanged SDU prevalence or frequency

Four records reported a net maintenance or increase in SDU participation (Table 2). In an Australian study of PrEP-using MSM, 21% continued chemsex participation during social restrictions. Fifteen percent increased and 6% decreased chemsex participation during Australia's second lockdown, relative to after the first lockdown.⁴⁷

A French study of chemsex behaviour during lockdown found that 64% of participants maintained (22%) or increased (42%) while 36% stopped (14%) or decreased (22%) their chemsex drug consumption during lockdown.⁴⁸ They also found that the median number of chemsex days during 6 weeks of lockdown ($n = 8$) increased significantly from the 6 weeks preceding lockdown ($n = 3$).⁴⁸ The prevalence of GHB/GBL use (52% vs 58%, $P = 0.038$) and slamming (19% vs 24%) both increased though the latter was not statistically significant.⁴⁸

Across three waves of follow-up, corresponding to three episodes of pandemic-related restrictions, between 40.4% and 46.9% of a PrEP-using cohort reported chemsex participation.⁴⁹ Of these, between 50.9% and 58.7% reported that their participation had increased during restriction periods.⁴⁹ Lastly, the prevalence of SDU in a Chinese sample presenting for HIV testing throughout the pandemic rose from 9.6% before to 11.3% after the outbreak.⁵⁰

Decreased SDU prevalence or frequency (including no participation)

Five studies reported a net decrease in SDU following the onset of the pandemic. One cohort study reported that

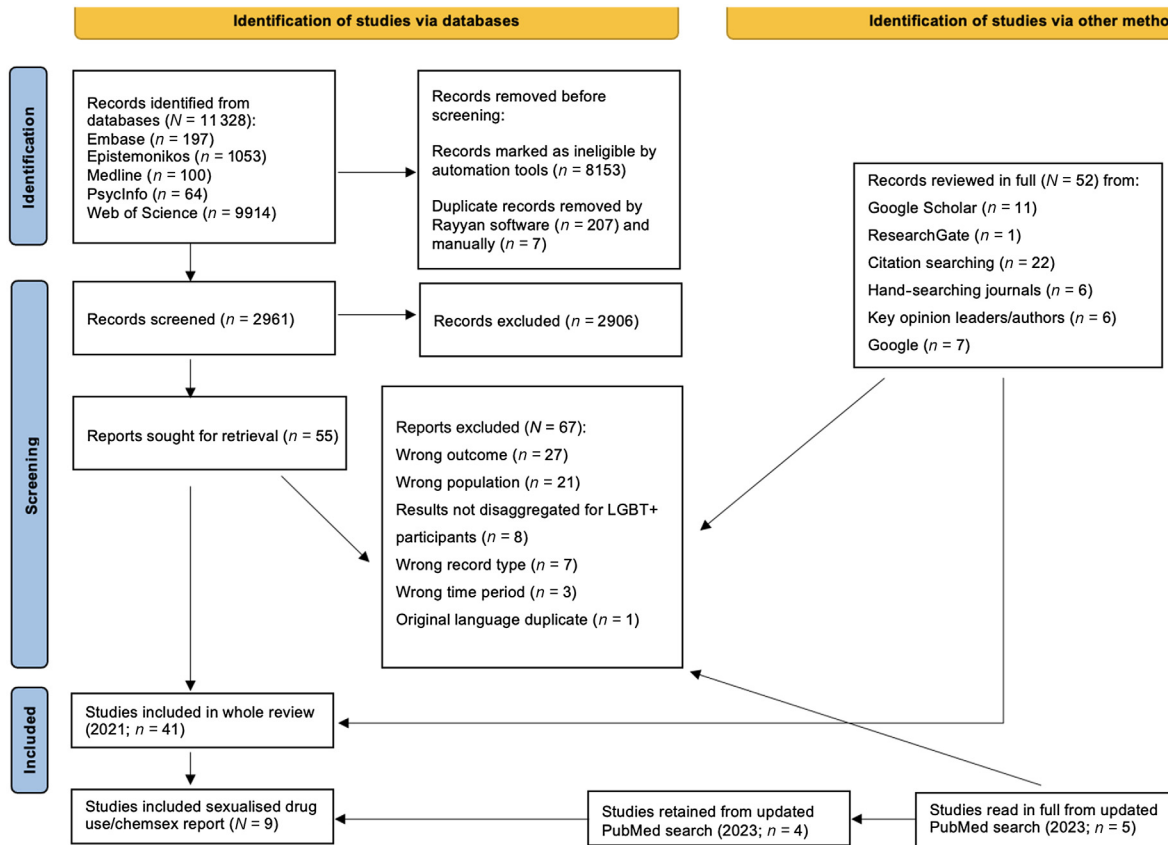


Fig. 1. PRISMA diagram.

chemsex prevalence fell from 26% to 20% during lockdown.⁵¹ A UK-based study found similarly, reporting that 20% of their sampled sexual health service attendees continued with chemsex participation. Of these, two-thirds decreased while 26.8% increased chemsex participation. A further 6.4% newly began chemsex practice.⁵²

In another article reporting lockdown-associated changes in patterns of casual sex in Israel, fewer men participated in SDU (24.6% vs 31.7%) and sexualised alcohol use (SAU; 31.8% vs 41.5%) during social restrictions than before.⁵³ A German study asked MSM to report SDU for each quarter of 2018 (72.0–73.9%) and 2020 (55.9–67.4%). Each measure of SDU decreased in frequency in 2020, relative to 2018.⁵⁴ In the sole qualitative report, there was no mention of increased SDU during the pandemic. However, one participant disclosed ‘We cannot interact in any other ways other than online...for us gay guys we definitely use drugs for sex, because of COVID we are not able to meet up there’s a lot of restrictions, we are only using it at our own end’ (RKJ Tan, unpubl. data).

Factors associated with changes in SDU following the onset of the pandemic

PrEP use was associated with SDU in two studies.^{49,52} In one, chemsex participation during lockdown was associated with

using PrEP (16.2% vs 6.1%, $P < 0.01$). This study also found chemsex to be a strong motivator for sex outside the household (reported by 14.1% of participants). In another, where each wave of follow-up took place after a period of pandemic-related restrictions, chemsex was associated with unchanged or increased PrEP use in waves one (adjusted odds ratio (aOR) 2.79, $P < 0.001$) and three (aOR 2.19, $P < 0.020$).⁴⁹

SDU was reported to be twice as common and SAU 60% more common among those having casual sex during a lockdown period.⁵³ Lastly, experiencing loneliness (OR 3.53, 95% CI 1.16–10.74, $P = 0.03$) or cravings (OR 4.51, 95% CI 1.38–14.72, $P = 0.01$) and working (OR 3.82, 95% CI 1.05–13.96, $P = 0.04$) were all associated with maintained or increased chemsex participation during COVID-19 social restrictions. Fear of COVID-19 was associated with decreased chemsex participation (OR 0.25, 95% CI 0.07–0.90, $P = 0.03$).⁴⁸

Discussion

Key findings

In the context of a need for total lockdown to limit the spread of COVID-19, four studies estimated that ~20% participants

Table 1. Characteristics of included studies.

Authors (year)	Country	Primary aim	SDU definition	Sampling method	Sample size and characteristics	Age (years)	Study design
Chow <i>et al.</i> (2021) ⁴⁷	Australia	To understand if MSM changed their PrEP use and sexual behaviour in July–August 2020 (second lockdown) compared with May–June 2020 (post-first lockdown)	Drug use before and/or during sex (chemsex)	Convenience (clinical)	<i>N</i> = 192; 60% born in Australia; med time taking PrEP was 35 (IQR 17–47) months	Med: 38 IQR: 32–49	Cross-sectional
de la Court <i>et al.</i> (2022) ⁴⁹	Netherlands	To assess if the pandemic impacted MSM's return to clinic for PrEP and STI care during COVID-19-related restrictions	Any drug use during sex (chemsex)	Purposive	The AMPPrEP participants included in the analysis (<i>n</i> = 305) were mainly highly educated, white and exclusively MSM	Med: 45 IQR: 38–53	Prospective cohort
Hyndman <i>et al.</i> (2021) ⁵²	United Kingdom	To understand the influence of COVID-19 on sexual behaviour of SHS-engaged MSM signed up to an online HIV risk-reduction service	Sexualised recreational drug use (chemsex)	Convenience (clinical)	<i>N</i> = 814 (612 PrEP users; 157 chemsex participants). 83.3% white	Med: 40 IQR: 33–48	Cross-sectional
L'Yavanc <i>et al.</i> (2022) ⁴⁸	France	To measure changes in chemsex participation among MSM after the second lockdown (30/10/2020 to 15/12/2020) and factors associated with continued or increased chemsex practice	Use of drugs, including cathinones, GHB/GBL, methamphetamine, cocaine, or other drugs, during or just before sex (chemsex)	Convenience	<i>N</i> = 86 MSM with a history of chemsex participation (<i>n</i> = 61, 66% LWVHIV; <i>n</i> = 15, 15% HCV positive; <i>n</i> = 30, 33% stable relationship; <i>n</i> = 52, 56% recent group sex; <i>n</i> = 31, 33% used chemsex drugs alone)	Med: 38 IQR: 33–48	Prospective cohort
Shilo and Mor (2020) ⁵³	Israel	To assess mental health and sexual behaviour of MSM during social distancing and to compare behaviours before and during COVID-19 social restrictions	Alcohol/other drug use before or during sex	Convenience (app ^A /social network)	<i>N</i> = 2562 (<i>n</i> = 1970, 76.9% gay; <i>n</i> = 551, 21.5% bisexual; <i>n</i> = 41, 1.6%, HMSM)	\bar{x} : 37 s.d.: 11.3	Cross-sectional
Tan <i>et al.</i> (unpubl. data)	Singapore	To understand the impact of COVID-19 on mental health, substance use and sexual health among MSM	NR	Purposive	<i>N</i> = 16 (<i>n</i> = 14 gay; <i>n</i> = 1 bisexual; <i>n</i> = 1 queer)	NR	Qualitative (IDI)
Uhrmacher <i>et al.</i> (2022) ⁵⁴	Germany	To understand the relationship between the pandemic onset and PrEP uptake and sexual behaviour	Psychoactive substances consumed during sex	Convenience (clinical)	<i>N</i> = 138 PrEP-using MSM (<i>n</i> = 7 MSMW; <i>n</i> = 124, 90% employed/in education; <i>n</i> = 119, 86.2% Germany-born; <i>n</i> = 86, 63.3% prev. STI)	\bar{x} : 33.9 s.d.: 10.1	Prospective observational
van Bilsen <i>et al.</i> (2021) ⁵¹	Netherlands	To measure the impact of COVID-19 social restrictions on sexual behaviour and HIV/STI acquisition among ACS participants	Use of GHB/GBL, (meth) amphetamine, mephedrone, ketamine, cocaine, ecstasy, 2,5-dimethoxy-4-bromophenethylamine, or 4-fluoroamphetamine around sex (chemsex)	Convenience (from cohort)	<i>N</i> = 353 (<i>n</i> = 304, 86% born in NL; <i>n</i> = 275, 78% college education; <i>n</i> = 236, 67% in relationship; <i>n</i> = 11, 3% living with HIV)	Med: 47 IQR: 38–53	Cross-sectional

(Continued on next page)

Table 1. (Continued).

Authors (year)	Country	Primary aim	SDU definition	Sampling method	Sample size and characteristics	Age (years)	Study design
Zhang et al. (2022) ⁵⁰	China	To report the different HIV testing techniques used by MSM across three time periods, including before and during COVID-19-related restrictions	Use of ketamine, methamphetamine, cocaine, cannabis, ecstasy, Dormicum/Halcion/Erimin 5/non-prescription hypnotic drugs, heroin, cough suppressant (not for curing cough), GHB/GBL, 5-methoxy-N,N-diisopropyltryptamine (Foxy), or mephedrone before or during sex (SDU)	Purposive and respondent-driven	N = 595 (n = 427, 72% homosexual, n = 117, 20% bisexual; n = 18 3% HMSM; n = 33, 6% uncertain of orientation; 453, 75.9% 18–30 years; 481, 80.2% single; 433, 72.8% employed full-time; 394, 66.2% tertiary education)	Mode: 18–30 years (n = 452, 75.9%)	Cross-sectional

ACS, Amsterdam cohort study; HIV, human immunodeficiency virus; IDI, in-depth interviews; IQR, interquartile range; Med, median; GHB/GBL, γ -hydroxybutyrate/ γ -butyrolactone; HCV, hepatitis C virus; (LW)HIV, (living with) human immunodeficiency virus; (H)MSM, (heterosexual) men who have sex with men; MSMW, men who have sex with men and women; NL, Netherlands; NR, not reported; OR, odds ratio; PrEP, pre-exposure prophylaxis; s.d., standard deviation; SHS, sexual health service; STI, sexually transmitted infection.

^AGeospatial networking application.

engaged in SDU, including chemsex, during social restrictions.^{47,51–53} Several studies reported a significant increase in SDU participation during lockdown with one investigating chemsex-practicing MSM finding that more than 60% maintained or increased this practice. One study reported the number of chemsex events attended, suggesting sex with non-cohabitant partners.⁴⁹ However, the context of SDU is not specified in other studies. This is a significant omission because the risk of COVID-19, STI and HIV acquisition when participating in SDU with new partners outside the home was much greater than SDU practice with a regular partner in a shared household or with partners on videoconferencing software.⁵⁵

Few correlates were identified. However, two identified that PrEP use was associated with chemsex participation. Given the prevalence of PrEP use among the whole sample, it is possible that these studies provide an inflated estimate of chemsex participation during the pandemic.⁵² In another study, loneliness, craving and working during the pandemic were all strongly associated with chemsex participation.⁴⁸ Conversely, those reporting greater fear of COVID-19 were less likely to participate in chemsex.⁴⁸

Findings in context

The wider literature confirms that chemsex practice did not cease during the pandemic with studies reporting prevalence (but not change) suggesting significant participation in Portugal (20.2%) and Brazil (39.1%), throughout lockdown periods, consistent with the findings of this review.^{56–58} This may be, in part, related to the perceived increase in difficulty getting help with crystal reduction among those using in a sexualised context⁵⁹ or simply a consequence of the pandemic-associated freedoms (i.e. time away from work)

facilitating more frequent drug use.⁶⁰ The exact cause is likely multifactorial and individual-specific.

To the best of the authors' knowledge, SDU has not been investigated in the context of other natural disasters, nor among cisgender and heterosexual couples during the COVID-19 pandemic. However, the impact of COVID-19 on the use of other drugs has been investigated. Participants in these studies were also more likely to report an increase (9.9%) than decrease (6.8%) in use of other illicit drugs⁶¹ and there were reports of substantial increases in cannabis⁶² and alcohol use,^{63–65} with one study reporting an 82.6% increase in number of drinks participants consumed in the 30 days preceding assessment.⁶⁴ Contrary to findings of this review, fear of COVID-19 was associated with near 20-fold increased probability of increased alcohol use.⁶⁶ It is possible that COVID-19-related fear resulted in different patterns of alcohol consumption and SDU because of the differing risk of COVID-19 acquisition in their respective contexts.

Strengths and limitations

This review was adherent to a pre-specified protocol and informed by the PRISMA 2020 statement and both PRISMA-P and PRISMA-S extensions.^{42–44} The primary search strategy was comprehensive, peer reviewed, had no restrictions and was informed by input from KOLs. However, the heterogeneity in sample composition (e.g. all PrEP users or men with a history of chemsex participation) and its poor generalisability precluded quantitative meta-synthesis.

Implications for research, policy, and practice

Overall, there was little research reporting changes in SDU during the pandemic. SDU was a secondary outcome in all but one study which investigated participants with a history of

Table 2. Key findings from included studies.

Authors (year)	Study findings
Increased or unchanged SDU prevalence or frequency	
Chow <i>et al.</i> (2021) ⁴⁷	Most men did not participate in chemsex (79%). Of those who did, 3% increased the number of chemsex events they attended in the second lockdown relative to immediately after the first. 6% decreased. 12% reported no change in the frequency of chemsex participation
de la Court <i>et al.</i> (2022) ⁴⁹	Almost half of survey respondents in wave 1 (15/03/20–15/06/20; <i>n</i> = 82, 40.4%), wave 2 (until 15/09/20; <i>n</i> = 75, 46.9%) and wave 3 (until 31/12/20; <i>n</i> = 73, 45.6%) reported chemsex participation during COVID-19 restrictions and more than half the respondents reported that chemsex participation had escalated (wave 1: <i>n</i> = 57, 50.9%; wave 2: <i>n</i> = 44, 58.7%; wave 3: <i>n</i> = 41, 56.2%)
L'Yavanc <i>et al.</i> (2022) ⁴⁸	Compared to 6 weeks before lockdown, <i>n</i> = 31 (36%) participants declared they had stopped (<i>n</i> = 12, 14%) or decreased (<i>n</i> = 19, 22%) their chemsex participation, during 6 weeks of lockdown. Most (<i>n</i> = 55, 64%) reported they maintained (<i>n</i> = 19, 22%) or increased (<i>n</i> = 36, 42%) their drug use during lockdown. During lockdown, there was a significant increase in GHB/GBL consumption (52% to 58%, <i>P</i> = 0.038) and the number of days participants consumed chemsex drugs over the 6 weeks before (med 3, IQR 2–6) and during (med 8, IQR 3–15) lockdown (<i>P</i> < 0.001). Slamming prevalence increased from 19% to 24% (n.s.). Loneliness (OR 3.53, 95% CI 1.16–10.74, <i>P</i> = 0.03), cravings (OR 4.51, 95% CI 1.38–14.72, <i>P</i> = 0.01) and working (OR 3.82, 95% CI 1.05–13.96, <i>P</i> = 0.04) during the lockdown were associated with maintained or increased chemsex participation during lockdown. Fear of COVID-19 was associated with decreasing chemsex frequency (OR 0.25, 95% CI 0.07–0.90, <i>P</i> = 0.03). In order of decreasing prevalence of use: cathinones, GHB/GBL, cocaine, methamphetamine were most commonly reported chemsex drugs
Zhang <i>et al.</i> (2022) ⁵⁰	SDU prevalence increased from <i>n</i> = 57 (9.6%) before COVID-19 (November 2019–January 2020) to <i>n</i> = 67 (11.3%) following onset of COVID restrictions (February–July 2020)
Decreased SDU prevalence or frequency (including no participation)	
Hyndman <i>et al.</i> (2021) ⁵²	19.3% participated in chemsex during lockdown. Compared with usual (i.e. pre-pandemic), 26.8% had more and 66.9% had less chemsex during lockdown. 6.4% began chemsex participation during lockdown. Participants who used PrEP during lockdown were significantly more likely to have chemsex than those who did not (<i>P</i> = 0.01). 14.1% of participants said their reason for sex outside household was seeking chemsex
Shilo and Mor (2020) ⁵³	SDU was reported by fewer MSM during social distancing (<i>n</i> = 249, 24.6%) than before (<i>n</i> = 321, 31.7%). SAU was reported by fewer MSM during social distancing (<i>n</i> = 322, 31.8%) than before (<i>n</i> = 420, 41.5%). SDU was twice as common among MSM who had casual sex during lockdown. MSM who had casual sex were 60% more likely to report SAU than those who did not.
Tan <i>et al.</i> (unpubl. data)	Suggestion that SDU frequency decreased: 'We cannot interact in any other ways other than online ... for us gay guys we definitely use drugs for sex, because of COVID we are not able to meet up there's a lot of restrictions, we are only using it at our own end.'
Uhrmacher <i>et al.</i> (2022) ⁵⁴	Across four quarters of 2020, 55.9–67.4% PrEP users reported SDU. SAU was most common (32.0–43.6%), then poppers (27.1–31.9%), cannabis (12.7–17.9%), PDE5i (11.9–17.9%) and ecstasy (4.0–7.6%). In 2020, 0.8–4.2% consumed a chemsex drug. In 2018, 72–73.9% reported any SDU: alcohol (45.5–51.4%), poppers (47.8–60.3%), PDE5i (27.3–35.9%), cannabis (13.6–21.7%), ketamine (up to 6.5%). 12.1% reported use of ecstasy, cocaine and GHB/GBL. SDU declined during pandemic (2020) compared with pre-pandemic (2018).
van Bilsen <i>et al.</i> (2021) ⁵¹	92 (26%) reported chemsex in the pre-COVID-19 period and 69 (20%) during COVID-19

CI, confidence interval; GHB/GBL, γ -hydroxybutyrate/ γ -butyrolactone; IQR, interquartile range; MSM, men who have sex with men; n.s., not significant; OR, odds ratio; PDE5i, phosphodiesterase 5 inhibitors; PrEP, pre-exposure prophylaxis; SAU, sexualised alcohol use; SDU, sexualised drug use.

chemsex participation.⁴⁸ Only one unpublished, qualitative report was identified (RKJ Tan, unpubl. data). Further qualitative work is required to understand motivations for SDU participation and abstinence during the COVID-19 pandemic and to identify targets for intervention. The association between PrEP use and SDU represents a potential concern and further work is required to understand if this association is bidirectional. If so, SDU screening and harm reduction interventions may be required on PrEP initiation and follow-up. Additional work is required to understand the nature of pandemic-associated changes in SDU in terms of drugs used, routes of administration and harms experienced so that existing interventions can be adapted, as required. Pandemic-related changes may suggest a need for trauma-informed interventions moving forward.

At the height of the COVID-19 pandemic, there was reduced testing for STIs and access to, particularly parenteral, treatment.⁶⁷ Since high-risk behaviour continued, policymakers and clinicians should consider providing STI chemoprophylaxis (i.e. doxycycline P(r)EP) to those at greatest risk in the event of future similar disasters.^{68,69} Postal needle exchange and STI testing services should be evaluated to inform future provision.

People living with HIV who participate in SDU are more likely to report sub-optimal anti-retroviral therapy (ART) adherence and therefore require additional support.⁷⁰ Widespread disruptions to HIV service delivery reported during the pandemic⁷¹ may have exacerbated difficulties engaging with ART care among a population reporting high-risk sex and intravenous drug use. HIV transmission may have

increased among SDU participants. Assertive outreach is required to ensure people who have disengaged in testing or ART care due to SDU participation are re-engaged.

Conclusion

Chemsex practice continued, and for some MSM increased, throughout COVID-19 pandemic lockdowns. This may have contributed to increased COVID-19 transmission and severity among these potentially vulnerable people.

Supplementary material

Supplementary material is available [online](#).

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Data availability. The data that support this study will be shared upon reasonable request to the corresponding author.

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