Sexualised drug use among LGBT people: a mixed methods study of reasons for engagement and associations with physical and psychological wellbeing

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Abstract

Background

Sexualised drug use has previously been researched among men who have sex with men (MSM) in relation to sexual health and sexual risk behaviours. The topic has received more attention due to the emergence of chemsex as a public health issue, which is a particular form of sexualised drug use, but little research has been conducted to understand any possible relationship with psychological health. Additionally, motivations suggested for engaging in sexualised drug use and chemsex among MSM also apply to women who have sex with women (WSW) and trans people, but these groups have been under-researched comparatively.

Aim

The aim of this programme of research was to investigate sexualised drug use among all LGBT people, reasons for engagement, as well as associations with physical and psychological health.

Methodology

A sequential mixed methods design was used across three studies. For Study 1, a systematic review investigating sexualised drug use among LGBT people within the recent context of chemsex was conducted, and how this behaviour is associated with sexual health and health behaviours. In Study 2, a cross-sectional online survey was used (The LGBT+ Sex and Lifestyles Survey) that recruited 3,507 LGBT people (1,663 MSM, 1,152 WSW, and 500 trans people; groups not mutually exclusive). Multivariable logistic regression analyses were conducted to explore associations with drug use, sexualised drug use, and chemsex. In Study 3, semi-structured interviews were conducted with 13 MSM service users and 16 sexual health service providers to further explore how engaging in sexualised drug use can impact physical and psychological health, as well as the standard of care received by people engaging in sexualised drug use. Interviews were analysed using thematic analysis. Findings from all three studies were triangulated and discussed in relation to the research objectives.

Results

The findings showed that LGBT people beyond MSM do engage in sexualised drug use, but chemsex was observed mostly among MSM. Engaging in chemsex among MSM appeared to be associated with greater sexual risk compared to other sexualised drug use. There was some evidence that drug use and sexualised drug use may be associated with physical and

psychological problems such as lower satisfaction with life and sexual assault, but not all of those engaging in sexualised drug use were experiencing negative associations with physical and psychological health. Sexual health services appeared to provide an adequate level of care for MSM engaging in sexualised drug use, but barriers to care existed within sexual health services (e.g. funding, access) and when engaging in other types of healthcare (e.g. mental health services).

Discussion

Overall, a harm reduction approach to sexualised drug use is needed to help those who engage in sexualised drug use reduce potential for physical and psychological harms, and support services should be available for those who need help managing or stopping their use. Additionally, LGBT people more broadly than MSM should be included in sexual health and drug research where appropriate.

What was previously known on this topic?

- MSM have been engaging in sexualised drug use for some time, but the topic has become a more prominent area of research due to the emergence of chemsex as a public health issue
- Whilst associations with sexual health are documented, it is unknown whether sexualised drug use among MSM is associated with any psychological health problems
- Reasons suggested for engaging in sexualised drug use and chemsex (internalised homophobia, experiencing discrimination, living with HIV) may also apply to WSW and trans people, but these groups have received little research in comparison

What has this research added?

- Sexualised drug use was observed among all LGBT people and was associated with a number of sexual and psychological health problems
- MSM who engaged in chemsex appeared to be at greater risk of sexual health problems than MSM who engage in other forms of sexualised drug use
- Whilst sexual health services appeared satisfactory from a service user and service provider perspective, MSM engaging in sexualised drug use who sought help outside sexual health settings experienced a number of barriers to care

Presentations and publications

Presentations

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT+ Sex and Lifestyles Survey. *Harm Reduction 19.* (Oral presentation).

Hibbert, M. P. (2019) Sexualised drug use among LGBT people: reasons for engagement and impact on psychological wellbeing. *Doctoral Training Alliance for Applied Biomedical Sciences Summer School.* (Oral presentation – prize winner).

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). P059 Pre-exposure prophylaxis (PrEP) use, STI diagnoses and sexualised drug use among men who have sex with men in the UK. *International Journal of STD & AIDS*, 30(75), 49. (Poster presentation).

Hibbert, M. P., Wolton, A., Ross, M., Weeks, H., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). P156 Associations with recent sexual health clinic attendance and ever having an HIV test among trans people in the United Kingdom. *International Journal of STD & AIDS*, 30(75), 49. (Poster presentation).

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Findings from the LGBT+ sex and lifestyles survey. *Drugs: North West Inaugural Conference.* (Poster presentation – runner-up prize winner).

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Findings from the LGBT+ sex and lifestyles survey. *LJMU PhD Symposium 2019: Living longer, healthier and happier.* (Poster presentation).

Hibbert, M. P. (2020) Sexualised drug use among LGBT people: reasons for engagement and impact on psychological wellbeing. *LJMU LGBT+ History Month.* (Oral presentation).

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2020). Preaching to the choir about SEX: findings from the UK LGBT+ Sex and Lifestyles Survey. *International Congress of Psychology: Preach 2020 pre-conference.* (Oral presentation – postponed due to COVID-19).

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Service provision and barriers to care for men who have sex with men engaging in chemsex and sexualised drug use in the North and West Midlands of England. *LJMU PhD Symposium 2020: Population Health.* (Poster presentation – postponed due to COVID-19).

Publications

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Psychosocial and sexual characteristics associated with sexualised drug use and chemsex among men who have sex with men (MSM) in the UK. *Sexually transmitted infections*; *95,* 342-250.

Hibbert, M. P., Porcellato, L. A., Brett, C. E., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT+ Sex and Lifestyles Survey. *International Journal of Drug Policy*, *74*, 292-298.

Hibbert, M. P., Wolton, A., Weeks, H., Ross, M., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Psychosocial and sexual factors associated with recent sexual health clinic attendance and HIV testing among trans people in the UK. *BMJ Sexual & Reproductive Health*. *46*(2), 116-125.

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2020). STI diagnoses, sexualised drug use and associations with PrEP use among men who have sex with men in the UK. *International Journal of STDS & AIDS*, 31(3), 254-263.

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (*under review*). Image and performance enhancing drug use among men who have sex with men and women who have sex with women in the UK. *International Journal of Drug Policy.*

Hibbert, M. P., Hillis, A., Brett, C. E., Porcellato, L. A., & Hope, V. D. (*under review*). A systematic review of sexualised drug use and sexual health outcomes among LGBT people with meta-analyses. *International Journal of Drug Policy.*

Hibbert, M. P., Germain, J., Brett, C. E., Hope, V. D., Van Hout, M.C, & Porcellato, L. A. (*under review*). Service provision and barriers to care for men who have sex with men engaging in chemsex and sexualised drug use in the North and West Midlands of England. *Sexually transmitted infections*.

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Abbreviations and definitions

aOR	adjusted Odds Ratio
ART	Antiretroviral therapy
BASHH	British Association for Sexual Health and HIV
BHIVA	British HIV Association
Chemsex	Usually referring to the use of crystal methamphetamine, GHB/GBL, ketamine and/or methedrone immediately before or during sex to enhance the experience unless specified otherwise
GHB/GBL	γ-hydroxybutyrate/ γ-butyrolactone
GP	General Practitioner
GUM	Genitourinary Medicine
HIV	Human immunodeficiency virus
LGBT	Lesbian, Gay, Bisexual and Trans
LGB	Lesbian, Gay, Bisexual
LJMU	Liverpool John Moores University
MSM	Men who have sex with men
NHS	National Health Service
ONS	Office of National Statistics
OR	Odds Ratio
PEP	Post-exposure prophylaxis
PHE	Public Health England
Poppers	Amyl nitrates/inhalants
PPI	Patient and Public Involvement
PrEP	Pre-exposure prophylaxis
Sexualised drug use	The use of drugs to facilitate the sexual experience, which is inclusive of chemsex, but includes other drugs as well (e.g. cannabis, cocaine, poppers)
Trans	An umbrella term that refers to anyone whose gender identity is different to the gender they were assigned at birth (trans woman, trans man, genderqueer, non-binary)
UK	United Kingdom
USA	United States of America
WSW	Women who have sex with women
YOLO	You only live once

Chapter 1: Introduction

Overview of the thesis

This programme of research aims to explore sexualised drug use among LGBT people: why people engage in the behaviour, and the impact this may have on physical and psychological wellbeing. Previous research regarding sexualised drug use has mostly focused on men who have sex with men (MSM), especially with the emergence of chemsex as a public health issue among MSM. Chemsex is the intentional use of certain drugs (crystal methamphetamine, GHB/GBL, ketamine) to prolong and intensify the sexual experience. This programme of research aims to understand if sexualised drug use and chemsex is also observed among other LGBT people, such as women who have sex with women (WSW) and trans people. This chapter will provide the background and context to drug use and sexualised drug use among LGBT people, discuss research detailing the emergence of chemsex among MSM, and then detail how this may relate to LGBT people more generally. It will discuss the aims of this programme of research, the research questions developed, and the rationale behind this research topic as based on previous research. An overview of the research approach will be given and the position of the researcher will be explored. In addition, the contribution to research will be considered. This chapter concludes with an overview of the subsequent chapters in the thesis.

Drug use and LGBT people

The exact population size of lesbian, gay and bisexual (LGB) people in the UK is currently unknown. However, it is estimated that 2.5% of the population identifies as lesbian, gay or bisexual (van Kampen, Fornasiero, Lee, & Husk, 2017), although this does not account for various other LGBT identities (e.g. trans, queer), and does not account for people who may engage in sex with someone of the same gender but does not identify as lesbian, gay, or bisexual. The Office of National Statistics (ONS) found that gay and bisexual adults were more likely to report illicit drug use in the last year compared to heterosexual adults (28% vs. 8%), and this difference was observed for most drugs (cannabis, cocaine powder, ecstasy, hallucinogens, amphetamines, methamphetamine, cannabis, tranquilisers, ketamine and amyl nitrate (poppers)) (Office of National Statistics, 2014). It was also observed that the prevalence of illicit drug use

was greater for gay and bisexual men compared to heterosexual men (33% vs. 11%), as well as for gay and bisexual women compared to heterosexual women (23% vs. 5%), with gay and bisexual men statistically more likely to use amyl nitrite, cocaine powder, ecstasy and ketamine compared to gay and bisexual women (Office of National Statistics, 2014). Additionally, research has found that young adults in the UK who identify as LGB reported more binge drinking, solvent use, cannabis and other drugs, compared to heterosexual young adults (Booker, Rieger, & Unger, 2017). This research also found that LGB young adults were more likely to have worse mental functioning, health satisfaction, and overall life satisfaction, when compared to heterosexual young adults, but it was not clear whether this was related to drug and substance use (Booker et al., 2017).

Similar to LGB people, the population size of trans people in the UK is also unknown. Estimates of the proportion of people in the UK who identify as trans do not exist, but research conducted in other Western countries such as the USA have estimated that 0.6% of the population identify as trans (Flores, Herman, Gates, & Brown, 2016). Trans is an umbrella term that refers to people whose current gender identity differs from the gender they were assigned at birth, and/or differs from the traditional cultural male-female binary (e.g. transgender, trans male, trans female, gender queer/ non-binary) (Sevelius, Reznick, Hart, & Schwarcz, 2009). Although little research has been conducted in the UK to investigate trans peoples' drug and alcohol use, the Trans Mental Health Study found high levels of illicit drug use (24%), with the most common drugs being cannabis, poppers (amyl nitrates), and ecstasy (McNeil, Bailey, Ellis, Morton, & Regan, 2012). In addition, 62% of respondents to the Trans Mental Health Study had scores that indicated dependent alcohol use or abuse when using the Alcohol Use Disorders Identification Test (AUDIT-C; Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). It is known that MSM in the UK have a high prevalence of HIV compared to the general population (O'Halloran et al., 2019); however, little research exists on trans women's sexual health. This is despite a systematic review estimating that 19% of trans women internationally are living with HIV (Baral et al., 2013), although this may be reflective of the countries included in the review having poor access to HIV treatment and high-levels of survival sex work.

Findings that lesbian, gay, bisexual, and trans (LGBT) people have high levels of alcohol and drug use are not exclusive to the UK. A high level of alcohol and drug use among young LGBT people has been observed in Australia (Kelly, Davis, & Schlesinger, 2015), among women who have sex with women (WSW) in Botswana, Namibia, South Africa, and

Zimbabwe (Muller & Hughes, 2016), lesbian and bisexual women in Israel (Mor et al., 2015), as well as transgender youth and transgender adults in the USA (Day, Fish, Perez-Brumer, Hatzenbuehler, & Russell, 2017; Gonzalez, Gallego, & Bockting, 2017). For men who have sex with men (MSM), and to some extent trans women (Herrera et al., 2016), much of the research into alcohol and drug use focuses on substances used in a sexual and/or party context (Bourne & Weatherburn, 2017), which has been observed internationally (Bourne, 2012).

Chemsex and sexualised drug use

Drug use has been researched among MSM alongside the HIV epidemic due to MSM having additional risk factors for HIV acquisition, such as condomless anal intercourse, but also because of behaviours associated with some methods drug use that may increase the risk of HIV acquisition, like needle sharing (Halkitis, Parsons, & Stirratt, 2001; Stall & Purcell, 2000). Therefore, the association between drugs and sex has been a topic of research for some time (Leigh & Stall, 1993). Sexualised drug use can be defined as the intentional use of drugs to facilitate the sexual experience and increase arousal, which has also been a historical area of research among MSM due to its associations with condomless sex (Mattison, Ross, Wolfson, Franklin, & HNRC Group, 2001). However, sexualised drug use has become a more prominent area of interest due to the emergence of 'chemsex' as a public health issue. Chemsex (sometimes referred to as 'party and play') is a particular form of sexualised drug use among men engaging in sex with other men for long periods of time, with multiple sexual partners, and taking crystal methamphetamine, γ-hydroxybutyrate/ γ-butyrolactone (GHB/GBL), methedrone, cocaine, and/or ketamine immediately before or during sex (Bourne, Reid, Hickson, Torres Rueda, & Weatherburn, 2014).

The rise of chemsex as a public health issue may be due to an increase in the number of people engaging in the behaviour, reported both by clinicians (Stuart, 2013), and men who engage in chemsex (Ahmed et al., 2016), both suggesting that geospatial networking apps and online sites to meet sexual partners have enabled this increase. However, a review of sexualised drug use and chemsex in the UK found that prevalence estimates for both behaviours differed substantially, due to the variations in definitions used and the method of participant recruitment (Edmundson et al., 2018). Quantitative research has also found a higher use of 'barebacking' (condomless sex) sexual networking applications among MSM engaging in chemsex (Hegazi et al., 2017). The European MSM Internet Survey (EMIS) found that the three European cities

with the highest prevalence of drug use that is associated with chemsex (defined as the use of crystal methamphetamine, GHB/GBL, ketamine and/or mephedrone) were Brighton (16.3%), Manchester (15.5%) and London (13.2%) (Schmidt et al., 2016).

Behaviourally, engaging in chemsex has been associated with having more sexual partners, group sex, condomless anal intercourse, fisting, sharing sex toys, injecting drug use, and higher alcohol consumption (Bourne et al., 2014; Glynn et al., 2018; Hegazi et al., 2017). When specifying particular drug use, GHB, crystal methamphetamine, erectile dysfunction drugs (EDD), and poppers have been associated with condomless anal intercourse among MSM in England (Melendez-Torres, Hickson, Reid, Weatherburn, & Bonell, 2017). The proportion of MSM reporting sexualised drug use including chemsex drugs, has been found to be higher among MSM diagnosed with a bacterial STI whilst attending a sexual health clinic in London (Ottaway, Finnerty, Amlani, et al., 2017), and a high proportion of MSM diagnosed with *Shigella* in England reported engaging in chemsex (Gilbart et al., 2015). Among sexual health clinic attendees in Dublin, MSM who engaged in chemsex were more likely to report having been treated for gonorrhoea in the past 12 months (Glynn et al., 2018). MSM reporting chemsex have been found to be more likely to be living with HIV, but MSM who do not have HIV and report engaging in chemsex are more likely to have accessed post-exposure prophylaxis (PEP), medication taken after possible exposure to HIV to reduce likelihood of acquisition (Hegazi et al., 2017; Ottaway, Finnerty, Buckingham, & Richardson, 2017). In Amsterdam, a higher proportion of MSM engaging in chemsex were taking pre-exposure prophylaxis (PrEP) compared to MSM not engaging in chemsex, a preventative medication taken to reduce likelihood of HIV acquisition (Druckler, van Rooijen, & de Vries, 2018), although this is yet to be investigated in the UK. Among MSM living with HIV, drug use has been associated with reduced antiretroviral therapy (ART) adherence and a detectable viral load, which makes the transmission of HIV possible (Daskalopoulou, Rodger, & Phillips, 2014; Pufall et al., 2018). Additionally, polydrug use (multiple drugs used on one occasion) among MSM living with HIV has found to be associated with increased condomless anal intercourse with a serodiscordant partner (Daskalopoulou et al., 2014).

Whilst the term chemsex tends to be used to describe this behaviour in European and English speaking countries, sexualised drug use and the use of chemsex drugs among MSM have been observed internationally in countries such as Argentina (Balán et al., 2017), Peru (Ludford et al., 2013), China (Wang et al., 2015), and Israel (Brosh-Nissimov et al., 2012). Therefore, sexualised drug use, and in particular crystal methamphetamine use, is not exclusive

to Western cultures; however, collecting data from Western countries may be more easily facilitated due to similar gay cultural identities (Bryant et al., 2017). In addition, it can be argued that research regarding LGBT health issues may be easier to conduct in these countries due to more liberal values and beliefs.

Sexualised drug use and psychological wellbeing

Although researching sexualised drug use with a focus on its implications for sexual health is understandable in terms of health protection and health promotion, attempting to understand the impact on mental health and psychological wellbeing has been somewhat neglected (Desai, Bourne, Hope, & Halkitis, 2018). Research in Australia found that drug use among MSM was not associated with depression or anxiety, but drug use was not measured in a sexual context (Prestage et al., 2018). During qualitative interviews with MSM engaging in chemsex in London, it was reported that chemsex was having an impact on some men's personal relationships and professional conduct (Bourne et al., 2015). In Dublin, a quarter of MSM attending a sexual health clinic reported that chemsex was having a negative impact on their lives, 17% reported losing consciousness whilst engaging in chemsex, and 6% stated their partners had lost consciousness (Glynn et al., 2018). Related to the loss of consciousness, MSM have reported in qualitative interviews that they have felt uncomfortable in situations due to issues regarding a person's ability to consent to sex, and some participants expressed they had experienced non-consensual sexual contact because of chemsex (Bourne et al., 2015).

In terms of help and support, MSM have stated a preference for drug services within sexual health clinics (Bourne et al., 2014; Evers et al., 2020; Tomkins, Vivancos, Ward, & Kliner, 2018). This preference for integrated sexual health and drug and alcohol services over specific drug and alcohol support has been suggested to be due to a believed lack of understanding from drug and alcohol services, as well as a fear among some MSM of disclosing their sexuality or sexual behaviours (Bourne et al., 2015). It has been suggested that sexual health clinics should adapt services for MSM engaging in sexualised drug use and chemsex, in addition to promoting existing services (Frankis & Clutterbuck, 2017; Stuart, 2014; Tomkins, Vivancos, et al., 2018). However, due to reduced funding for sexual health services over the past decade (BASHH/BHIVA, 2018), this may have negatively impacted any potential service development. London has received much of the research attention for chemsex due its high prevalence, and has developed a highly successful chemsex support clinic integrated into

sexual health services (Stuart & Weymann, 2015). However, a high prevalence of chemsex in other regions in the UK has also been observed (Schmidt et al., 2016), with prevalence of broader sexualised drug use likely to be higher (Edmundson et al., 2018; Tomkins, Vivancos, et al., 2018). Service user perspectives are needed to understand how to develop services for MSM engaging in chemsex and sexualised drug use, but service provider perspectives are also needed to understand what services are currently being provided, as well as any barriers to service development like funding constraints.

Minority Stress Model

To understand LGBT mental health and psychological wellbeing in the context of sexualised drug use, the Minority Stress Model (Meyer, 2003) provides a conceptual framework to understand how minority stressors that are unique to LGB people lead to risk behaviours and poor health outcomes. It proposes three processes by which stressors can impact on health behaviours and outcomes: environmental stressors (general stressors not unique to minority status e.g. job loss); distal minority stressors (prejudice events such as discrimination or violence); and proximal minority stressors (internalised negative attitudes of minority status leading to hyper vigilance, expectations of discrimination, and internalised homophobia). The Minority Stress Model has also been extended to incorporate experiences resulting from gender identity and gender expression among trans people, such as increased risk of physical and sexual violence and internalised transphobia (Hendricks & Testa, 2012).

Whilst evidence has provided support for the model in explaining mental health problems among LGB people (Kuyper & Fokkema, 2011; Shilo & Mor, 2014), it has also been suggested that the model does not account for environmental and genetic familial factors related to mental health, which can independently contribute to the increased risk of psychiatric disorders (Frisell, Lichtenstein, Rahman, & Langstrom, 2010). Although research has found minority stress factors to be associated with psychological distress and suicide attempts among LGB people, associations between minority stress factors and club drug use (cocaine, crystal methamphetamine, GHB, ketamine, speed) were not found (Lea, de Wit, & Reynolds, 2014). Additionally, an association between minority stress factors and engagement in condomless anal intercourse whilst using club drugs was not found (Dentato, Halkitis, & Orwat, 2013). However, findings from qualitative interviews with MSM engaging in chemsex found that some minority stress factors, such as internalised homophobia, have been suggested as

motivations for engagement in chemsex, in addition to HIV stigma and the intense sexual experience of chemsex (Weatherburn, Hickson, Reid, Torres-Rueda, & Bourne, 2017). Quantitative research recruiting MSM through Facebook advertising did not find an association between internalised homophobia, experiences of discrimination, and sex under the influence of alcohol and drugs in the UK, although the drugs used were not specified and alcohol was grouped with drugs (Chard, Metheny, Sullivan, & Stephenson, 2018). Therefore, the Minority Stress Model can be used to partially explain some of the variance in mental health inequalities experienced by LGBT people, but it is not yet fully understood what additional factors may contribute to substance use and sexualised drug use among LGBT people.

Minority stress factors that have been suggested as reasons for engaging in sexualised drug use, such as internalised homophobia, also apply to women who have sex with women (WSW). However, little research has been conducted attempting to understand drug use and sexualised drug use among WSW compared to MSM. A UK survey of people who inject drugs found that WSW were more likely than heterosexual women to report use of those drugs associated with chemsex among MSM, such as non-injected mephedrone and non-injected ketamine, but it was not asked if this was sexualised drug use (Heinsbroek, Glass, Edmundson, Hope, & Desai, 2018). Among lesbian, bisexual, and queer women in Australia, women who identified as queer or bisexual reported a higher proportion of recent illicit drug use, and higher proportions of sexual coercion since 16 years old compared to women who identified as lesbian/gay (Germanos, Deacon, & Mooney-Somers, 2015). In Australia, sexualised drug use has been observed among WSW, with 8% of those using methamphetamine, 9% of those using ecstasy, and 10% of those using cocaine having taken these drugs before or during sex (Mooney-Somers, Deacon, Scott, Price, & Parkhill, 2018). Whilst the focus on MSM may be important in terms of sexual risk, it should not be ignored that WSW can still be at greater sexual risk as well depending on the gender of their sexual partner. Research among LGB youth found that reporting a greater number of sexual partners was associated with cannabis use, but drug use was not specified to be during sex and data were not available specific to WSW (Zhang & Wu, 2017).

There is a lack of research regarding sexualised drug use among trans and non-binary people. Although research into sexual risk behaviours among trans women has considered drug use, especially in the context of sex work (Hoffman, 2014; Reback & Fletcher, 2014), the topic is relatively understudied in comparison to MSM and the potentially high global prevalence of HIV among trans women (Baral et al., 2013). Additionally, research has suggested that over

60% of trans men identify as men who have sex with men (MSM) (Bauer, Redman, Bradley, & Scheim, 2013), but trans MSM are often excluded from research regarding MSM, despite potentially engaging in high-risk sexual behaviour like condomless anal intercourse (Wolton, Cameron, Ross-Turner, & Suchak, 2018).

Research aims and objectives

So far, research has established an association between sexualised drug use and sexual risk taking behaviours among MSM. However, because of a focus on sexual risk, reasons for engagement in sexualised drug use and its broader impact on health and wellbeing have been somewhat neglected. Furthermore, where reasons for engagement have been suggested, these motivations apply to the whole LGBT community, but research into sexualised drug use among WSW and trans people is under-researched in comparison to MSM. When WSW and trans people are included, data is often grouped with MSM so any differences that may exist within the LGBT community are unclear. In addition to this, wellbeing is also not considered when WSW and trans people are included. Furthermore, research into chemsex has focused on Western countries but the drugs used for chemsex, as well as in other forms sexualised drug use, has been observed in a sexual context in non-Western countries. Due to the recent focus on chemsex, research on other drugs and substances used in a sexual context (e.g. cannabis, EDD, poppers/amyl nitrates) may have been neglected, but these drugs may still be associated with greater sexual risk. Therefore, the aim of this programme of research is to investigate sexualised drug use among LGBT people, with a particular focus on reasons for engagement, as well as the potential impact on physical health and psychological wellbeing.

Therefore, the objectives for this programme of research are:

1. To investigate the occurrence of general sexualised drug use in the context of chemsex among MSM and the wider LGBT community.
2. To measure quantitatively the psychological reasons as to why some MSM engage in chemsex and/or sexualised drug use, and also investigate possible reasons for engagement in the wider LGBT community.
3. To understand what potential impact engaging in sexualised drug use has in terms of sexual and physical health, and psychological wellbeing.

4. To investigate what services are currently available for LGBT people engaging in sexualised drug use and what service development is needed.

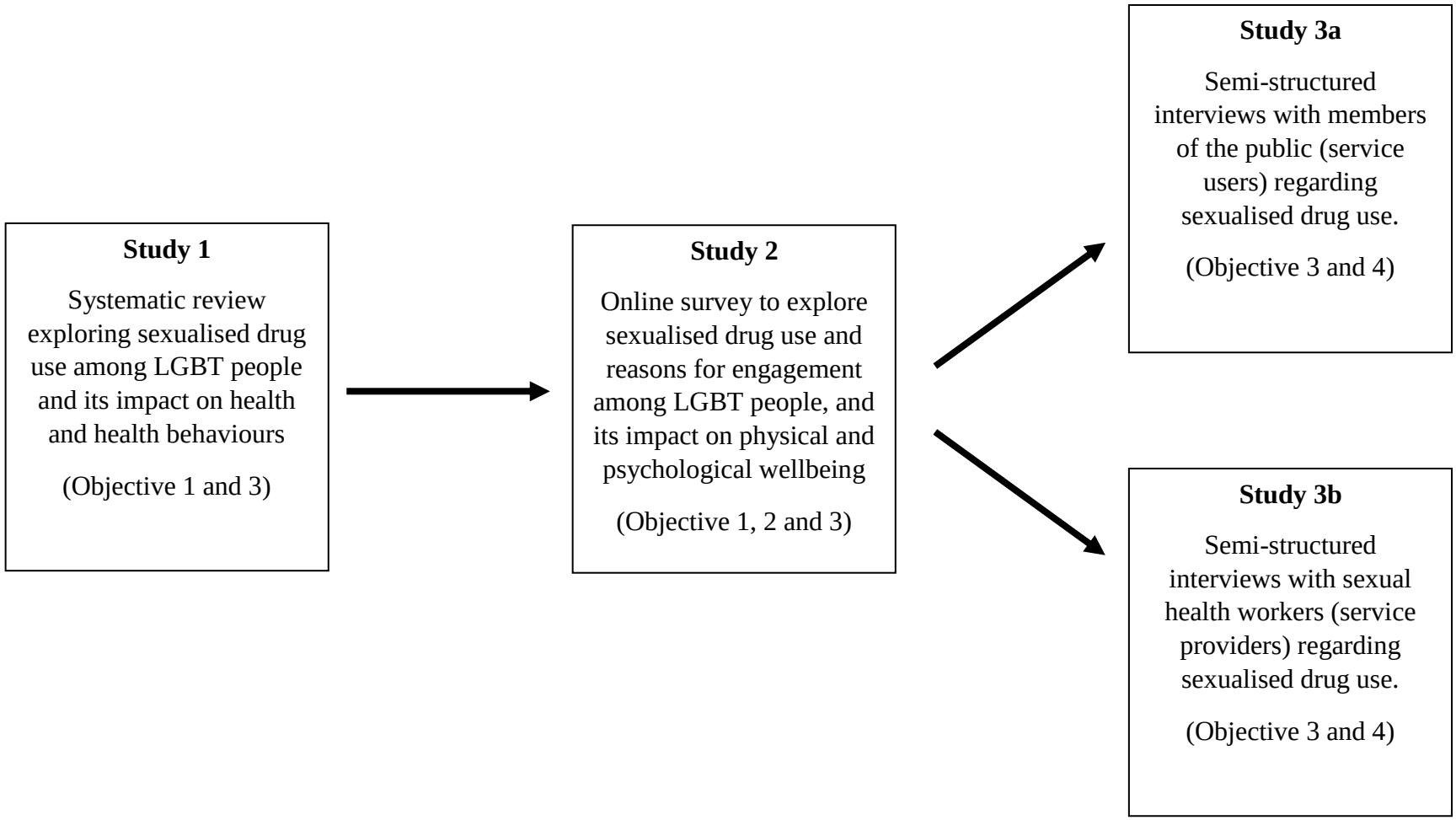
There is some debate regarding appropriate terminology for LGBT people (Everett, 2013; Savin-Williams & Vrangalova, 2013; Young & Meyer, 2005). It is argued that terms like MSM and WSW erases identity, relationships, and community relating to sexual orientation (Young & Meyer, 2005). However, it is common practice in epidemiology, specifically epidemiology focusing on sexual behaviour, to group individuals by that behaviour as that is inclusive terminology for the risk being investigated (Levi, Tseng, & Landovitz, 2014; Mercer et al., 2016; Mimiaga et al., 2011). There is evidence to suggest that heterosexually identifying MSM and WSW are distinct categories relating to sexual behaviour and risk, and therefore the role of identity in sexual behaviour cannot be ignored (Everett, 2013; Savin-Williams & Vrangalova, 2013). Therefore, the terms MSM and WSW were deemed appropriate for this research as the primary focus was sexual behaviour, but identity relating to sexual orientation was measured and accounted for in analyses. Being trans is based upon gender identity and because no common sexual behaviour can group trans people (Sausa, Sevelius, Keatley, Iniguez, & Reyes, 2009), the identity term of trans was chosen for this research.

Research design

A mixed methods design utilising three studies was adopted to address these objectives for the programme of research (Figure 1). Study 1 was a systematic review examining the extent to which sexualised drug use among LGBT people has been researched internationally. This study also assessed the health outcomes and behaviours that have been researched in relation to sexualised drug use. A systematic review was chosen as opposed to a traditional literature review, because as seen in the introduction, this topic has been studied historically for some time, and there was sufficient evidence to conduct a systematic review with potential for meta-analyses. Additionally, the systematic review helped detail quantitative methods used for measuring drug use and health outcomes, which informed measurements in Study 2. An explanatory sequential design (QUAN→qual) was then used for Study 2 and 3 (Morse, 2003). Study 2 was a quantitative online cross-sectional survey conducted in the UK that investigated sexualised drug use and chemsex among LGBT people, reasons for engagement, and impact on psychological wellbeing. A cross-sectional survey was chosen as it is a quick and relatively

inexpensive method to obtain a large sample. The findings from Study 2 were then used to inform semi-structured interviews with service users and service providers to investigate service provision for people engaging in sexualised drug use. Sexual health service providers were included in Study 3 to provide a more holistic understanding of the standard of service delivery to MSM engaging in sexualised drug use by analysing multiple perspectives. Due to findings from each stage informing the subsequent stage in this programme of research, the method, results, and discussion for each stage were outlined separately, then the results from each stage combined using a triangulation method (Farmer, Robinson, Elliott, & Eyles, 2006) in the final chapter.

Figure 1. Research design



Pragmatic approach

Pragmatism provides an epistemological position in which mixed methods research is conducted based upon the researcher's logic in answering the research questions (Johnson, Onwuegbuzie, & Turner, 2007). Therefore, the research design and methods were developed as the most appropriate solution to answering the research questions (Johnson & Onwuegbuzie, 2004). An explanatory sequential design was chosen as it was deemed most appropriate to achieve the research aims and objectives, due to these being mostly quantitative in nature and therefore the findings from the quantitative study can then be explored further in qualitative interviews with service users and service providers (Creswell & Clark, 2010). This allows for a comprehensive analysis of a topic, where the qualitative stage compliments the quantitative stage (Morse, 2003), and a broader range of research questions can be investigated without committing to a single research method (Johnson & Onwuegbuzie, 2004). Additionally, due to the cross-sectional nature of Study 2 causation cannot be inferred. Although the qualitative stage has a much smaller sample, participants provided a perspective on the cause and effect of psychological factors, drug use, and health behaviours. The generic qualitative research approach was used to guide the qualitative stage of this programme of research, due to its appropriateness to the research question and for use in mixed methods research (Caelli, Ray, & Mill, 2003). Findings from all three studies were then integrated using a triangulation method in the final chapter (Farmer et al., 2006).

Patient and public involvement

Patient and public involvement (PPI) aims to conduct research with rather than on members of the public, with the aim of improving healthcare provision (Thornton, 2008). It was the aim of this research to involve members of the public as researchers (Forbat, Hubbard, & Kearney, 2009), to ensure this research would be beneficial to the LGBT community and useful in terms of advocating for improvement of services. This approach is argued to be empowering for individuals, as opposed to being tokenistic, and broadens the impact of the research to individuals and organisations (Ocloo & Matthews, 2016). To ensure this, contacts at community organisations and known members of the public were contacted before the start of Study 2, and those that were interested were involved in the design, delivery, interpretation and dissemination of the research findings of Study 2. Details regarding how the PPI group

were involved in Study 2 can be found in the methodology chapter for this study (Chapter 3). It was aimed that the same level of public involvement be applied to Study 3; however, due to a limited number of organisations and a lack of capacity, this could not be implemented.

Position of the researcher

Before commencing this programme of research, I reflected upon my personal background coming into this research, and how this could potentially impact the current research. Before starting this PhD, I had been a researcher and epidemiologist in public health for two years, specifically HIV research. Through this experience I had worked on a number of sexual and LGBT health projects. Furthermore, I am aware that I am researching a community that I am a part of, and that itself comes with an awareness of LGBT health issues, as well as personal opinions regarding LGBT issues. Therefore, I had both personal and professional knowledge regarding the topic before commencing this research. Although this knowledge had the potential to frame the research and reduce the exploratory nature of the study, several steps were taken to ensure this previous experience did not influence the current research and to demonstrate transparency as a researcher. These included:

- A research protocol for Study 1 was published at PROSPERO before the systematic review commenced and this protocol was followed (Chapter 2).
- A PRISMA statement for conducting and reporting systematic reviews (Study 1) was followed (see Appendix 1).
- Analyses for Stage 2 were discussed with the supervisory team and formulated before data had been analysed.
- Personal reflections highlighting positionality and providing reflective commentary are included after Studies 2 and 3 (Chapters 5 and 8 respectively).
- A framework for trustworthiness of qualitative research is outlined for Study 3 (Chapter 6).
- A protocol for the triangulation process was produced before triangulation of findings commenced (Chapter 9).
- Presentation of the research at conferences, as well as publications in peer-reviewed journals, provided the opportunity for feedback from the scientific community.

- All three members of the supervisory team reviewed all stages of the research at regular intervals, including the design, analyses, interpretation of findings, and triangulation.

The stages taken to ensure transparency as a researcher provide evidence of how previous experience was accounted for and documented, but maintaining scientific integrity was prioritised at all times during this programme of research.

Contribution to research

This research was the first fully inclusive investigation into sexualised drug use among LGBT people. The systematic review (Study 1) was the first attempt to analyse the inclusion of WSW and trans people in the sexualised drug use literature. It also attempted to understand the scope of sexualised drug use internationally, and its associated health conditions and behaviours. The LGBT+ Sex and Lifestyles Survey (Study 2) conducted across the UK made numerous novel contributions to the research of sexualised drug use among LGBT people. Study 2 was the first research to quantitatively measure psychological reasons for engagement and psychological associations of engagement in chemsex among MSM, and placed this in the context of wider sexualised drug use. Secondly, whilst high rates of drug use among WSW have been observed previously, the online questionnaire was the first to compare sexual and psychosocial factors that are associated with drug use and those who engage in sexualised drug use among WSW. Thirdly, although there has been some research regarding trans women and sexualised drug use, Study 2 included not only trans women, but trans men and non-binary people as well. Additionally, very little UK research existed regarding trans people and drug use, therefore Study 2 helped to address this gap in the literature. Qualitative interviews with both service users (Study 3a) and service providers (Study 3b) gave an insight into service provision from both perspectives, and provided an understanding of possible barriers to care. Together, this programme of research highlighted a number of potential harms associated with drug use, sexualised drug use, and chemsex among LGBT people. This new understanding of the topic can be used to inform service providers of potentially compounding health factors associated with drug use, sexualised drug use, and chemsex among LGBT people, and highlighting any barriers to care can help to improve service provision and potentially reduce associated harms.

Overview of thesis chapters

Chapter 1: Introduction. This chapter places the thesis in the context of current research regarding sexualised drug use and chemsex, outlining the aims and objectives of this thesis and the approach to achieving these.

Chapter 2: Systematic review. This chapter describes the systematic review conducted, assessing the extent of research into sexualised drug use among LGBT people and its associated health behaviours.

Chapter 3: Methodology for Study 2. This chapter outlines the methodology used to conduct the online quantitative survey (The LGBT+ Sex and Lifestyles Survey) that investigated sexualised drug use among LGBT people.

Chapter 4: Results for Study 2. This chapter provides the data collected and the analyses that were conducted to investigate reasons for engagement in sexualised drug use among LGBT people, and its potential associations with physical health and psychological wellbeing.

Chapter 5: Discussion and reflection on Study 2. This chapter discusses the findings from The LGBT+ Sex and Lifestyles Survey, how this relates and adds to previous literature, and provides personal reflection on the experience of conducting Study 2.

Chapter 6: Methodology for Study 3. This chapter outlines the rationale and methodology for qualitative semi-structured interviews with service users (Study 3a) and service providers (Study 3b), how Study 2 helped inform the interviews and the analysis technique used.

Chapter 7: Results for Study 3. This chapter describes the themes emerged from qualitative interviews with service users and service providers.

Chapter 8: Discussion and reflection on Study 3. This chapter compares the themes from interviews with service users and service providers in relation to the study aims, places these findings in the context of previous research, discusses the strengths and limitations of Study 3, and provides personal reflection on conducting Study 3.

Chapter 9: Discussion and triangulation of findings. This chapter combines findings from all three studies in the relation to the aims for this programme of research, placing the findings context of existing literature, describing contributions to research this programme of research has made, and making recommendations for future research.

Chapter 2: A systematic review and meta-analyses investigating sexualised drug use among LGBT+ people

Rationale and overview

Systematic reviews are an effective means of synthesising published data regarding a topic by limiting the influence of bias and providing data for informed decision making (Mulrow, 1994). Therefore, it was deemed appropriate to systematically synthesise previous research on sexualised drug use among LGBT people to help inform the design of Study 2. This chapter will outline the rationale for the systematic review, the method of searching for literature, findings of the systematic review and meta-analyses, and finally the discussion, which includes how these findings were used to help inform the next stage of the research programme.

The ways of measuring sexualised drug use and health related outcomes can be grouped into three categories: global association, situational association, and event-level associations (Leigh & Stall, 1993). A global association is where general drug use is measured over a specific period (e.g. in the past 12 months) and sexual behaviour is measured over a specific period, and an analysis between the two is conducted. A situational association is where the drug use is measured in relation to sex over a specific period and sexual behaviour is measured over a specific period, and an analysis between the two is conducted. An event-level association is where drug use and sexual behaviour are asked about a specific sexual event (e.g. the last time you had sex using a drug, did you use a condom?). Despite the fact that causation cannot be inferred from any of these analyses, a systematic review concluded that greater use of event-level associations is needed when researching sexualised drug use, as they provide more contextual information (Vosburgh, Mansergh, Sullivan, & Purcell, 2012).

The introduction highlighted that chemsex was an emerging area of research among MSM, but historically sexualised drug use has been researched among MSM for some time (Mattison et al., 2001). Additionally, reasons suggested for engaging in sexualised drug use and chemsex provided by previous research (Weatherburn et al., 2017) and the Minority Stress Model (Meyer, 2003) also apply to WSW and trans people, but comparatively little research has been conducted on the latter groups. Furthermore, the term chemsex is usually used in a Western context, but the sexualised drug use of these specific drugs has been observed internationally (Bourne & Weatherburn, 2017).

Therefore, the primary aim of this review was to:

- Investigate how representative research into sexualised drug use is of the whole LGBT population in relation to health outcomes.

Secondary aims of this review were to:

- Investigate the associations between sexualised drug use and health outcomes (HIV status, STI diagnoses and condom use), and conduct meta-analyses if there is sufficient data.
- Analyse what methods are used to measure sexualised drug use and chemsex (global association, situational association or event-level association).
- Investigate which countries have reported sexualised drug use among LGBT people, and in particular, which countries have investigated the use of a chemsex drug.

Method

To enable transparency in the aims and methods of the systematic review, a protocol was registered at PROSPERO International Register of Systematic Reviews (ID CRD42018084366,). The protocol was designed and registered prior to the review commencing and is available at: www.crd.york.ac.uk/prospero/display_record.php?RecordID=84366. To ensure appropriate reporting of the systematic review, the PRISMA Statement (Moher, Liberati, Tetzlaff, & Altman, 2010) was used during the write up and can be seen in Appendix 1.

Suitable search terms were gained from systematic reviews on similar topics (Choi, Wong, & Fong, 2017; Vosburgh et al., 2012). A preliminary search was then conducted using these terms on MEDLINE, where suitable articles were retrieved to find additional search terms. A modified version of the PICO (Population, Intervention, Comparison, Outcome) framework was used to form the search strategy (Methley, Campbell, Chew-Graham, McNally, & Cheraghi-Sohi, 2014), where the category 'Intervention' was replaced with 'Exposure'. Therefore, the PECO framework for the search strategy was as follows:

- Population – LGBT people (MSM, WSW, and trans people)
- Exposure – Sexualised drug use

- Comparison – Between those engaging in sexualised drug use and those not
- Outcome – Sexual health and sexual health behaviours

The final list of search terms was discussed with a librarian to check for validity. Search terms were grouped into three concepts: "LGBT terms", "Drug terms", and "Sex terms" (Table 1). Search terms within concepts were combined using the Boolean operator 'OR' and concepts were combined using the Boolean operator 'AND', so that searches used the string: "LGBT terms" AND "Drug terms" AND "Sex terms". The search string was used to search MEDLINE, PsycINFO, CINAHL Plus, and Web of Science (EBSCO MEDLINE from 1879 to 31st March 2018, ProQuest PsycINFO from 1806 to 31st March 2018, EBSCO CINAHL Plus from 1981 to 31st March 2018, Web of Science Core Collection from 1900 to 31st March 2018). Where studies were not published in English, an attempt to find a translation was made. A period limit of 1st January 2010 to 31st March 2018 (inclusive) was imposed due to the end date of a previous systematic review on a similar topic (Vosburgh et al., 2012), although this systematic review was specific to MSM engaging in sexualised drug use and event-level condom use. A limit was also set on the period of data collection (January 2010-March 2018) to ensure that the review represented recent patterns of sexualised drug use. Chemsex drugs were defined as the '4 chems' (crystal methamphetamine, GHB/GBL, ketamine and mephedrone) as in Schmidt et al. (2016), and are commonly accepted as drugs associated with chemsex (Bourne et al., 2014). An attempt to find grey literature from relevant community organisations and public health organisations was made, but no reports provided sufficient detail to be included.

There were four stages involved when identifying studies for inclusion in the review: identification, screening, eligibility, and inclusion (Moher et al., 2010). A data extraction form with quality assessment was adapted from The Cochrane Public Health Group Data Extraction and Assessment Template, The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies, and the Center for Evidence-Based Management (CEMa) critical appraisal checklist for surveys. This form was created using online survey software Qualtrics (www.qualtrics.com). Crosstabs data regarding drug use and outcomes (HIV status, STI diagnoses, condom use) were collected, and where data was not available, unadjusted odds ratios were collected. Inverse variance meta-analyses were produced using RevMan v5.3. Screening and eligibility was conducted by two researchers independently and a third researcher was used for any disagreements. Data extraction was completed by one researcher and then checked by a second researcher. Quality assessment was conducted by two researchers independently and a third researcher was used for any disagreements.

Table 1. Results generated from each search term used for each database, April 2018.

Database	Keywords			Articles retrieved
	LGBT terms	Drug terms	Sex terms	
Medline	Homosexuality (MH) Homosexuality, female (MH) Homosexuality, male (MH) Homosexual* Gay Lesbian* Bisexual* Transexual* Transsexual* Transgender* Trans Transgender persons (MH) Genderqueer "Non binary" "Men who have sex with men" "Sexual minorit*" Sexual minorities (MH) LGBT*	Substance-related disorders (MH) "Substance use" Alcohol drinking (MH) Alcohol "Drug use" Chemsex "Party and play" Marijuana GBL GHB Ecstasy Cocaine Crack Methamphetamine Methadone Poppers "Amyl nitrate*" Ketamine Viagra "Erectile dysfunction drug*" "Sildenafil Citrate" (MH)	"Sexual health" Reproductive health (MH) "Sexual behavior" "Sexual behaviour" Sexual behavior (MH) "Sexual risk" Risk-taking (MH) Unsafe sex (MH) "Unsafe sex"	1,264
PsycINFO	Homosexuality (SH) Homosexuality, female (SH) Homosexuality, male (SH) Homosexual* Gay Lesbian* Bisexual* Transexual* Transsexual* Transgender* Trans Transgender persons (SH) Genderqueer "Non binary" "Men who have sex with men" "Sexual minorit*" Sexual minorities (SH) LGBT*	Substance-related disorders (SH) "Substance use" Alcohol drinking (SH) Alcohol "Drug use" Chemsex "Party and play" Marijuana GBL GHB Ecstasy Cocaine Crack Methamphetamine Methadone Poppers "Amyl nitrate*" Ketamine Viagra "Erectile dysfunction drug*"	"Sexual health" Reproductive health (SH) "Sexual behavior" "Sexual behaviour" Sexual behavior (SH) "Sexual risk" Risk-taking (SH) Unsafe sex (SH) "Unsafe sex"	1,064

		"Sildenafil Citrate" (SH)		
CINAHL Plus	Homosexuality (MH) Homosexuality, female (MH) Homosexuality, male (MH) Homosexual* Gay Lesbian* Bisexual* Transexual* Transsexual* Transgender* Trans Transgender persons (MH) Genderqueer "Non binary" "Men who have sex with men" "Sexual minorit*" Sexual minorities (MH) LGBT*	Substance-related disorders (MH) "Substance use" Alcohol drinking (MH) Alcohol "Drug use" Chemsex "Party and play" Marijuana GBL GHB Ecstasy Cocaine Crack Methamphetamine Methadone Poppers "Amyl nitrate*" Ketamine Viagra "Erectile dysfunction drug*" "Sildenafil Citrate" (MH)	"Sexual health" Reproductive health (MH) "Sexual behavior" "Sexual behaviour" Sexual behavior (MH) "Sexual risk" Risk-taking (MH) Unsafe sex (MH) "Unsafe sex"	452
Web of Science	Homosexual* Gay Lesbian* Bisexual* Transexual* Transsexual* Transgender* Trans Genderqueer "Non binary" "Men who have sex with men" "Sexual minorit*" LGBT*	Substance-related disorders "Substance use" Alcohol "Drug use" Chemsex "Party and play" Marijuana GBL GHB Ecstasy Cocaine Crack Methamphetamine Methadone Poppers "amyl nitrate*" Ketamine Viagra "Erectile dysfunction drug*" "Sildenafil Citrate"	"Sexual health" "Sexual behavior" "Sexual behaviour" "Sexual risk" "Risk-taking" "Unsafe sex"	938

MH – Medical Subject Heading (MeSH). SH – Subject Heading

Inclusion criteria:

1. A measure of drug use and sexual health risk (HIV status, STI diagnoses, condomless sex) within the same population.
2. An association analysis conducted between the drug behaviour and the sexual behaviour and/or health risk.
3. Population studied includes a sexual and/or gender minority population.
4. Studies published and data collected in the date range January 2010 to March 2018 (inclusive).

Exclusion criteria:

1. Articles not published in English and no translation available.
2. Studies including children (aged equal to or less than 15 years).
3. Articles that are not accessible through LJMU libraries or interlibrary loans.
4. Studies that are not relevant to the research question (e.g. heterosexual populations only, medical drug trail studies).
5. Qualitative research.

Results

The search yielded 1,971 unique citations, 1,220 of which were removed during title and abstract screening, 704 removed during full-text review, leaving 47 studies eligible for data extraction (Figure 2). The majority of studies were cross-sectional (n=45), one study was a cohort study, and one was a case-control study.

Of the 47 studies included, 42 researched MSM and 5 researched trans women, across 53 countries (Table 2). No studies researching sexualised drug use among WSW or trans men/non-binary people met the inclusion/exclusion criteria. The countries of included studies in which sexualised drug use had been researched among MSM or trans women or both are shown in Figure 3.

Figure 2 Flow diagram of the identification process.

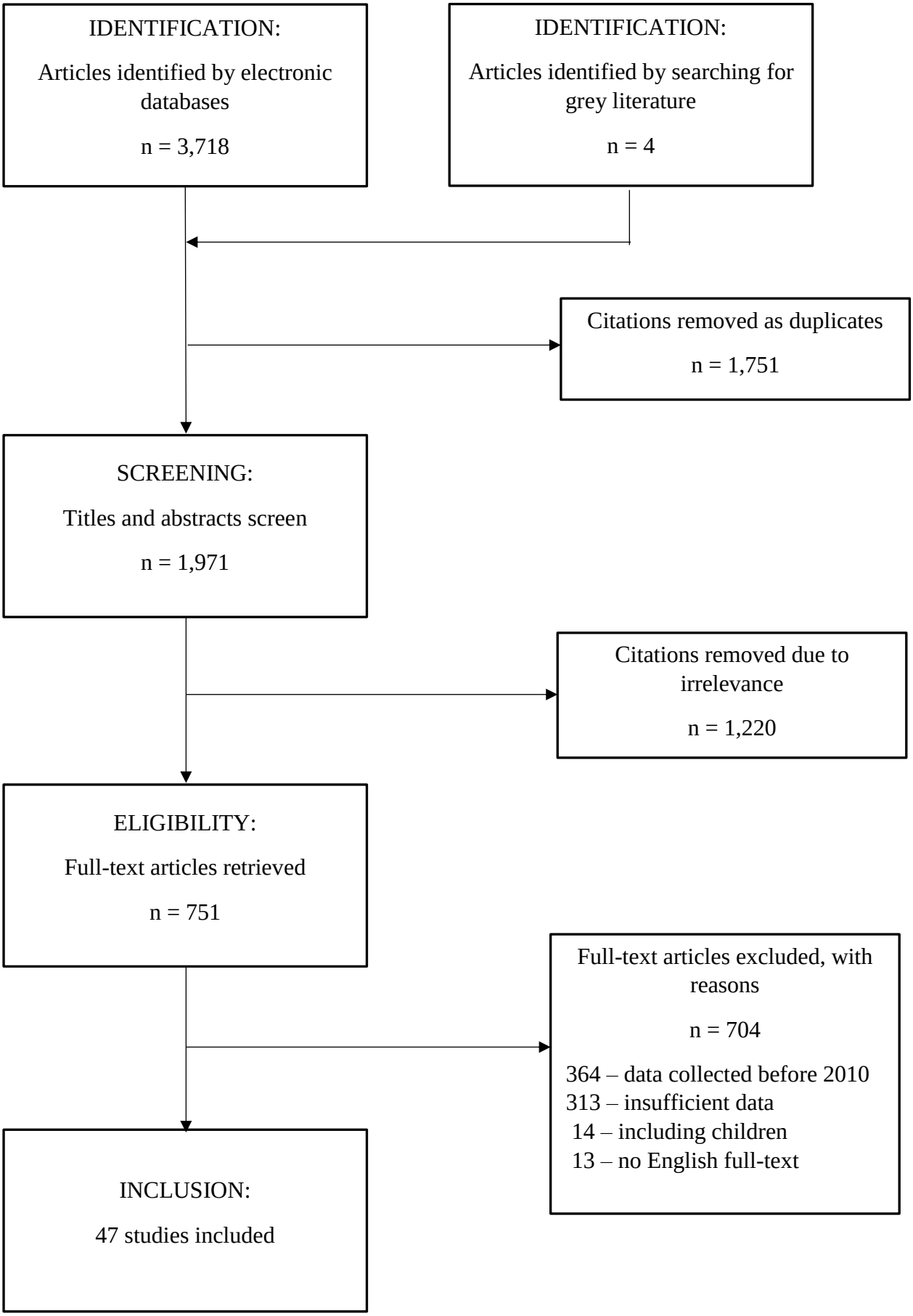


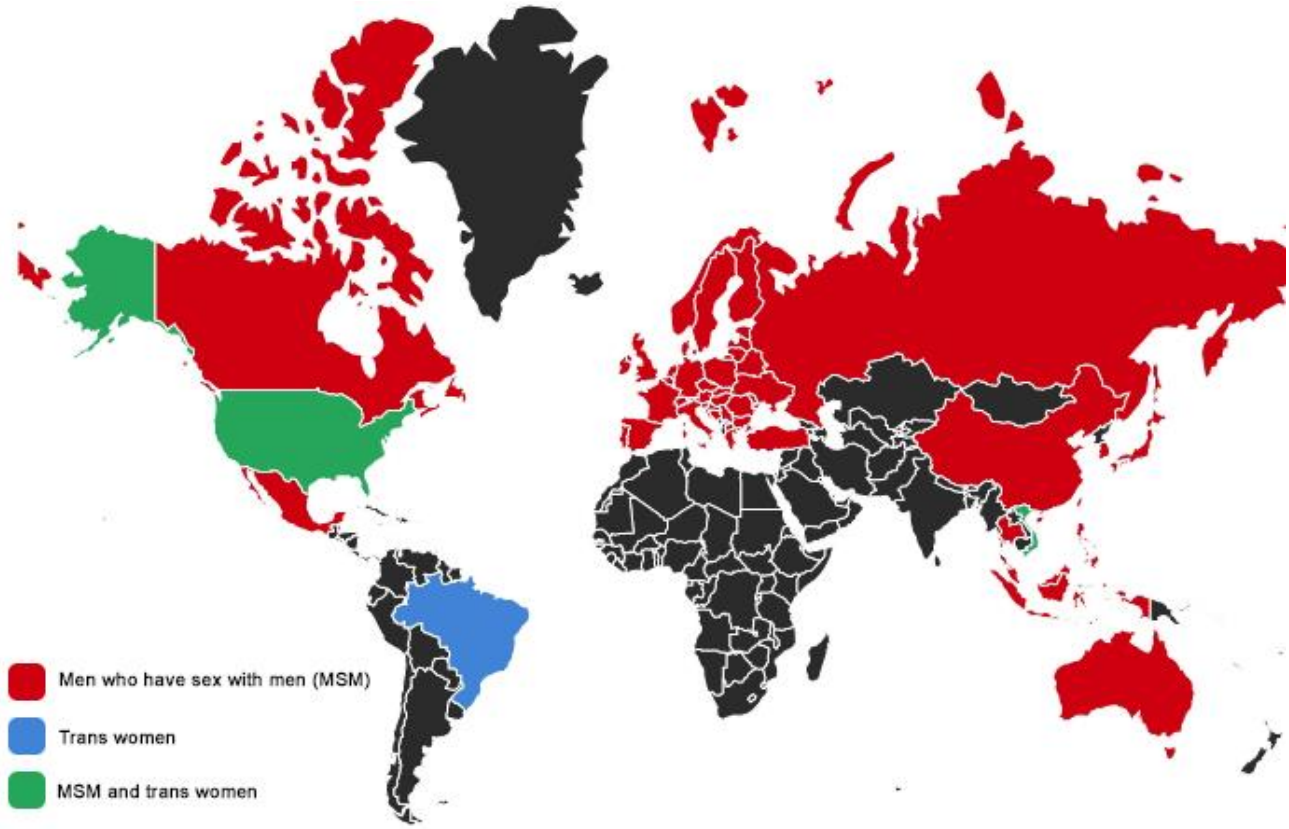
Table 2. Summary of the characteristics of the included studies.

Study	Country (region if not national)	Participants	Drugs included	Sexual health outcomes	Analysis conducted
Men who have sex with men					
Barron-Limon et al. (2012)	Mexico (Tijuana)	260 MSM	Amphetamine (speed), Cannabis, Cocaine, Ecstasy, Heroin, Poppers	Condom use	Situational association
Bowden-Jones et al. (2017)	UK (London)	407 MSM attending a specialist drug clinic	Crystal methamphetamine, Mephedrone	HIV	Global association
Card et al. (2017)	Canada (Vancouver)	774 MSM	Cannabis, Crystal methamphetamine, Ecstasy, EDD, GHB/GBL, Poppers	Condom use	Event-level association
Daskalopoulou et al. (2014)	UK	2,248 MSM living with HIV	Cannabis, Cocaine, Crystal methamphetamine, EDD, Poppers	Condom use	Global association
Duan et al. (2017)	China (Shenzhen)	1,935 MSM	Cocaine,Crystal methamphetamine, Poppers	Condom use, HIV, STIs (Syphilis)	Global association
Eaton et al. (2015)	USA (Atlanta)	544 Black MSM	Cocaine, Crystal methamphetamine, Ecstasy, EDD, Poppers	HIV	Global association
Eaton et al. (2016)	USA (Atlanta)	271 Black MSM	Cannabis	HIV	Global association
M. P. Fisher, Ramchand, Bana, and Iguchi (2013)	USA	228 MSM	Cannabis, Crystal methamphetamine, Ecstasy, EDD, GHB/GBL, Ketamine, Poppers	HIV	Global association
Frankis, Flowers, McDaid, and Bourne (2018)	Ireland, UK (Northern Ireland, Scotland, Wales)	2,428 MSM	Chemsex/party drugs grouped (Crystal methamphetamine, GHB/GBL, Ketamine, Mephedrone)	Condom use, HIV	Situational association
Gilbart et al. (2015)	UK (England and Wales)	34 MSM diagnosed with Shigella	Chemsex/party drugs grouped (Crystal methamphetamine, GHB/GBL, Mephedrone)	HIV	Global association
Glynn et al. (2018)	Ireland (Dublin)	486 MSM	Chemsex/party drugs grouped (Cocaine, Crystal methamphetamine, Ketamine, GHB/GBL, Mephedrone, NPS and other stimulants (including speed/amphetamine/ecstasy/eros/nexus/ smiles))	Condom use, HIV, STIs (Chlamydia, Gonorrhoea, Syphilis)	Situational association
Goedel and Duncan (2016)	USA (New York)	174 MSM	Cannabis	Condom use	Global association
González-Baeza et al. (2018)	Spain (Madrid)	742 MSM living with HIV	Chemsex/party drugs grouped (Amphetamines, Cocaine, Crystal methamphetamine, Ecstasy, GHB/GBL, Ketamine, Mephedrone or similar cathinones)	Condom use, STIs (Chlamydia, Gonorrhoea, Hepatitis C, Syphilis)	Situational association
Halkitis et al. (2012)	USA (New York)	199 MSM living with HIV	Cannabis , Poppers	Condom use	Global association
Hammoud et al. (2017)	Australia	2,250 MSM	EDD	Condom use, HIV	Global association
Hammoud et al. (2018)	Australia	3,190 MSM	GHB/GBL	Condom use, HIV	Global association
He et al. (2014)	China (Shanghai)	200 MSM living with HIV	Poppers	STIs (Syphilis)	Situational association

Heinsbroek et al. (2018)	UK (England, Wales and Northern Ireland)	299 MSM who inject drugs	Heroin, Ketamine, Mephedrone	HIV	Global association
Kahler et al. (2015)	USA (Boston)	109 MSM living with HIV	Cannabis	Condom use	Global association
Kecojevic, Silva, Sell, and Lankenau (2015)	USA (Philadelphia)	191 MSM aged 18-29 years old	Cannabis, Cocaine, Crystal methamphetamine, Ectasy, EDD	Condom use	Global association, Situational association
Kelly, DiFranceisco, St Lawrence, Amirkhanian, and Anderson-Lamb (2014)	USA (Milwaukee, Cleveland, Miami)	178 Black MSM	Cannabis	Condom use	Event-level association
Kelly, St Lawrence, Tarima, DiFranceisco, and Amirkhanian (2016)	USA (Milwaukee, Cleveland, Miami)	445 Black MSM	Cannabis	Condom use	Global association
Kramer et al. (2016)	Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of Macedonia, Republic of Moldova, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, UK	91,477 MSM	EDD, Poppers, Chemsex/party drugs grouped (Amphetamines, Cocaine, Crystal methamphetamine, Ecstasy, GHB/GBL, Ketamine, Mephedrone)	Condom use	Global association
Kupprat, Krause, Ompad, and Halkitis (2017)	USA (New York)	169 MSM living with HIV >=50 years old	Cannabis	Condom use	Global association
Lachowsky et al. (2016)	Canada (Vancouver)	436 self-reported HIV-negative MSM	Cannabis, Crystal methamphetamine, Ecstasy, EDD GHB/GBL, Poppers	Condom use	Event-level association
Li & McDavid (2014)	UK (Scotland)	639 MSM	EDD, Poppers	Condom use, HIV	Situational association
Li et al. (2014)	China	400 MSM	Poppers	Condom use, HIV, STIs (Syphilis)	Global association
Lim et al. (2015)	Malaysia	1,235 MSM	Chemsex/party drugs grouped (Crystal methamphetamine, Ecstasy, GHB/GBL, Ketamine)	Condom use, HIV, STIs (unspecified)	Global association
Martinez et al. (2017)	USA (New York)	240 Latino MSM	Cannabis	Condom use	Global association
Melendez-Torres, Hickson, Reid, Weatherburn, and Bonell (2016)	UK (England)	321 MSM	Cannabis, Cocaine, Crystal methamphetamine, Ecstasy, EDD, GHB/GBL, Ketamine, Mephedrone, Poppers	Condom use	Event-level association
Melendez-Torres et al. (2017)	UK (England)	2,142 MSM	Cannabis, Cocaine, Crystal methamphetamine, Ecstasy, EDD GHB/GBL, Ketamine, Poppers	Condom use	Event-level association
Mitchell, Pan, and Feaster (2016)	USA	722 MSM	Cannabis, Cocaine, Crystal methamphetamine, Ecstasy, EDD, GHB/GBL, Ketamine, Poppers	Condom use	Event-level association

Morgan et al. (2016)	USA (Chicago)	202 Black MSM	Cannabis	Condom use, HIV	Situational association
Pylli, Middleton, Charalambous, and Raftopoulos (2014)	Cyprus (Limassol, Paphos, Larnaca, Nicosia)	200 MSM	Cocaine	Condom use	Global association
Rendina, Moody, Ventuneac, Grov, and Parsons (2015)	USA (New York)	371 MSM	Cannabis	Condom use	Global association
Sewell et al. (2017)	UK	1,484 HIV-negative or undiagnosed MSM	Chemsex/party drugs grouped (Crystal methamphetamine, GHB/GBL, Mephedrone)	Condom use, STIs (Chlamydia, Gonorrhoea, LGV, Syphilis)	Global association
Theodore, Durán, and Antoni (2014)	USA (Florida)	197 MSM	Cannabis , Cocaine, Crystal methamphetamine, Ecstasy, GHB/GBL, Ketamine, Poppers	HIV	Global association
Tieu et al. (2014)	USA (New York)	1,458 MSM	Cannabis, Cocaine, Crack cocaine, Crystal methamphetamine, Poppers	Condom use	Global association
Tomkins, Ahmad, et al. (2018)	UK (Manchester)	357 MSM	Chemsex/party drugs grouped (Crystal methamphetamine, GHB/GBL, mephedrone)	HIV, STIs (Gonorrhoea, Hepatitis C, Syphilis)	Global association
Wei, Guadamuz, Lim, Huang, and Koe (2012)	China, Hong Kong, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Thailand, Vietnam, Taiwan	10,861 MSM	Cannabis, Cocaine, Crystal methamphetamine, Ecstasy, EDD, GHB/GBL, Ketamine, Poppers	HIV	Global association
Wu, Shen, Chiou, Fang, and Lo (2018)	Taiwan	79 MSM living with HIV	Cannabis, Crystal methamphetamine, Ecstasy, EDD, GHB/GBL, Ketamine, Mephedrone, Poppers, Chemsex/party drugs grouped (Crystal methamphetamine, GHB/GBL, Mephedrone)	STIs (Shigella)	Global association, Situational association
Zhang et al. (2016)	China (Bejing)	3,588 MSM	Poppers	Condom use, HIV, STIs (Syphilis)	Global association
Trans women					
Benotsch et al. (2016)	USA (Mid-Atlantic region)	104 trans women	Prescription drugs	Condom use	Global association, Situational association
Colby et al. (2016)	Vietnam (Ho Chi Minh City)	205 trans women	Heroin	HIV, STIs (Syphilis)	Global association
Grinsztejn et al. (2017)	Brazil (Rio de Janerio)	345 trans women	Cocaine	HIV	Global association
Santos et al. (2014)	USA (San Francisco)	314 trans women	Cocaine, Crack cocaine, Crystal methamphetamine	HIV	Global association, Situational association
Turner, Santos, Arayasirikul, and Wilson (2017)	USA (San Francisco)	263 trans women aged 16-24 years old	Crystal methamphetamine, Poppers	Condom use	Global association

Figure 3. Map of countries that have included studies on sexualised drug use among men who have sex with men (MSM), trans women, or both, and those that have reported chemsex drug use.



Men who have sex with men

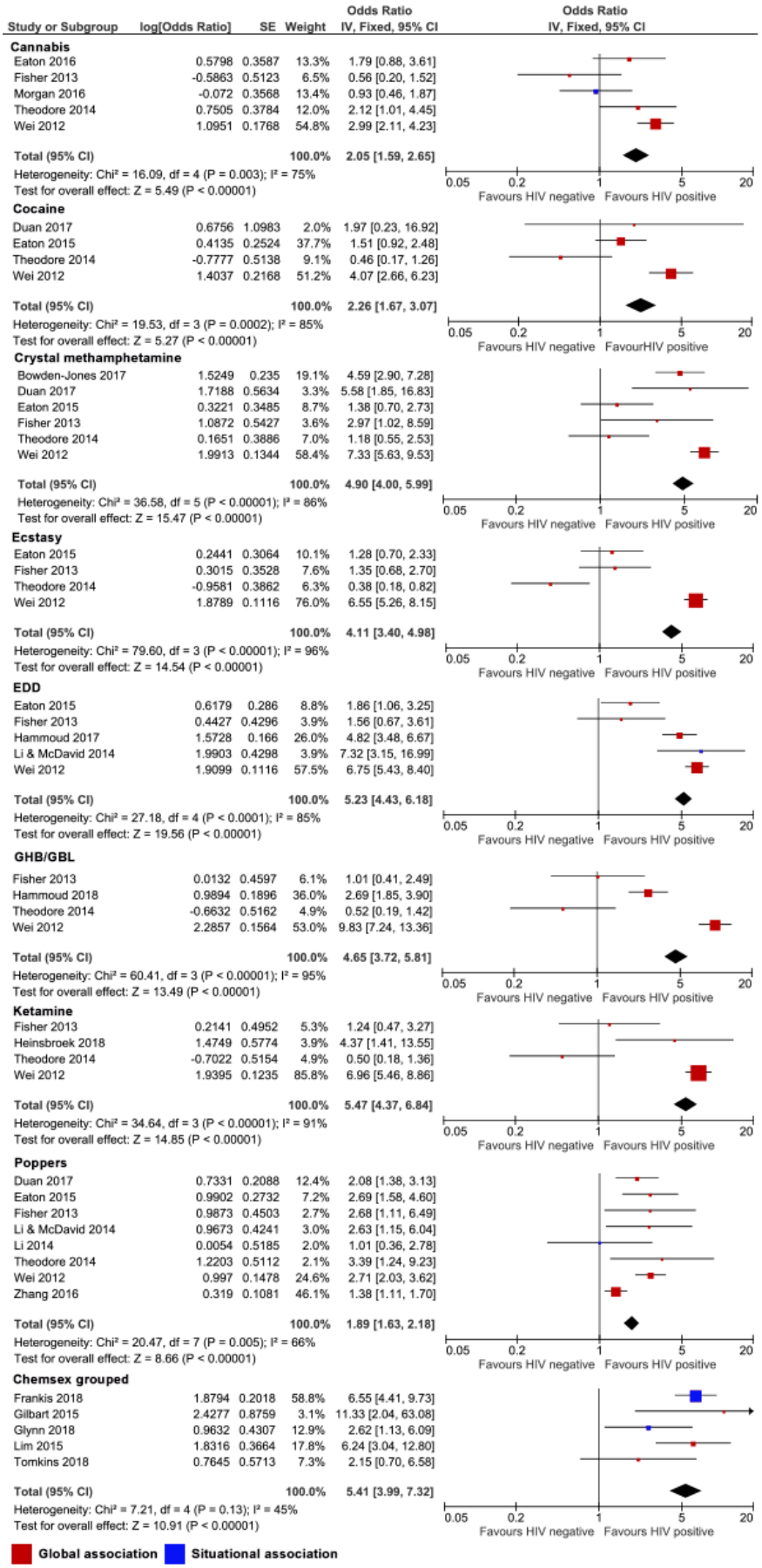
The most common drug studied among MSM was cannabis (n=23), followed by amyl nitrates/poppers (n=20), crystal methamphetamine (n=15), EDDs (n=14), cocaine (n=12), ecstasy (n=11), GHB/GBL (n=10), and ketamine (n=8). Other less studied drugs were mephedrone (n=4), heroin (n=2), and amphetamine and crack cocaine (n=1). Condom use for anal intercourse was the most common health outcome (n=31), with 18 studies conducting global association analyses, 6 conducting situational association analyses, 6 event-level association analyses, and one study using both global and situational association analyses depending on the drug measured. In 19 studies the outcome examined was HIV prevalence (15 global association analyses, 4 situational association analyses), and 10 studies examined STI incidence (6 global association analyses, 3 situational association analyses, 1 global and situational association analyses). Over a third of studies among MSM were conducted in the USA (n=15, 36%), and around a quarter were conducted in the UK (n=10, 24%).

Nine studies grouped drugs into chemsex/party drugs. The specific drugs grouped as chemsex/party drugs varied considerably, but crystal methamphetamine and GHB/GBL were included in all chemsex groups, and eight out of nine studies included crystal methamphetamine, GHB/GBL, and mephedrone. Four studies included the four drug commonly associated with chemsex (crystal methamphetamine, GHB/GBL, ketamine, mephedrone) in their chemsex group, although only one study exclusively included these four drugs in their chemsex group. At least one drug associated with chemsex had been investigated in the majority of countries (n=33/53, 62%; Figure 3).

Meta-analyses were conducted to determine the association between specific drug use and HIV status, STI diagnoses, and condom use for anal intercourse. If three studies or more had investigated a specific drug in relation to the outcome then a meta-analysis was conducted. It was found that all drugs were associated with being HIV-positive (Figure 4). However, in some meta-analyses the findings were based on a small number of studies, and in four of the meta-analyses one larger study (Wei et al., 2012) weighted the outcome (cocaine, ecstasy, GHB/GBL and ketamine).

Meta-analyses for the association of drug use on STI diagnoses were conducted if the STI measured was chlamydia, gonorrhoea, syphilis, or a combination of these. There were only enough studies for poppers and chemsex to be investigated in relation to STI diagnoses (Figure 5). The association of poppers on STI diagnoses was minimal, with all four studies

Figure 4. Meta-analyses of specific drug use and HIV status among men who have sex with men.



investigating the association between poppers and syphilis in China. An association was observed between chemsex and STI diagnoses.

One study (Kramer et al., 2016) heavily weighted the analyses for EDDs, poppers and chemsex meta-analyses, and due to the number of studies in these meta-analyses it was excluded. A consistent association between drug use and condomless sex was found across meta-analyses for global and situational associations (Figure 6). Similarly, a consistent association between drug use and condomless sex was found across meta-analyses for event-level associations (Figure 7), although the effect of cannabis was marginal and fewer studies were included in these analyses.

Trans women

Among the five studies that researched trans women, a range of drugs were investigated (cocaine, crack cocaine, crystal methamphetamine, heroin, prescription drugs, poppers). Three studies conducted global association analyses and two studies conducted a combination of global and situational analyses. Three studies were conducted in the USA, one in Brazil, and one in Vietnam. There was not enough homogeneity of data for meta-analyses to be conducted, but bivariate associations were found between crystal methamphetamine and prescription drug use and condomless sex, as well as cocaine and methamphetamine use and HIV status. No association was found between heroin use and HIV status or syphilis diagnosis.

Figure 5. Meta-analyses for specific drug use and STI diagnosis among men who have sex with men.

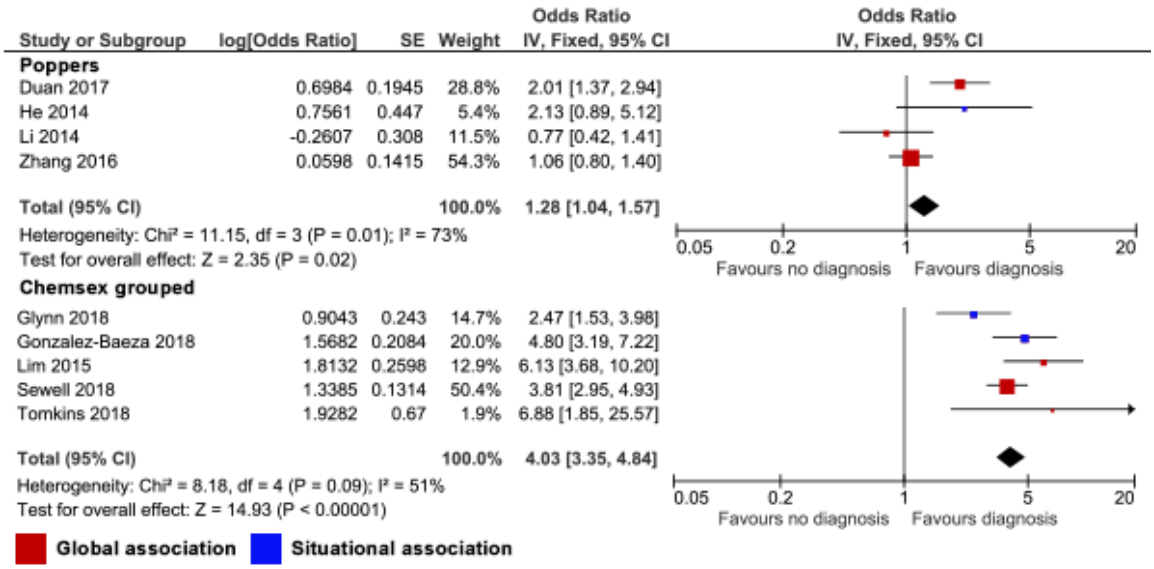


Figure 6. Meta-analyses for specific drug use and condomless anal intercourse (global and situational associations) among men who have sex with men.

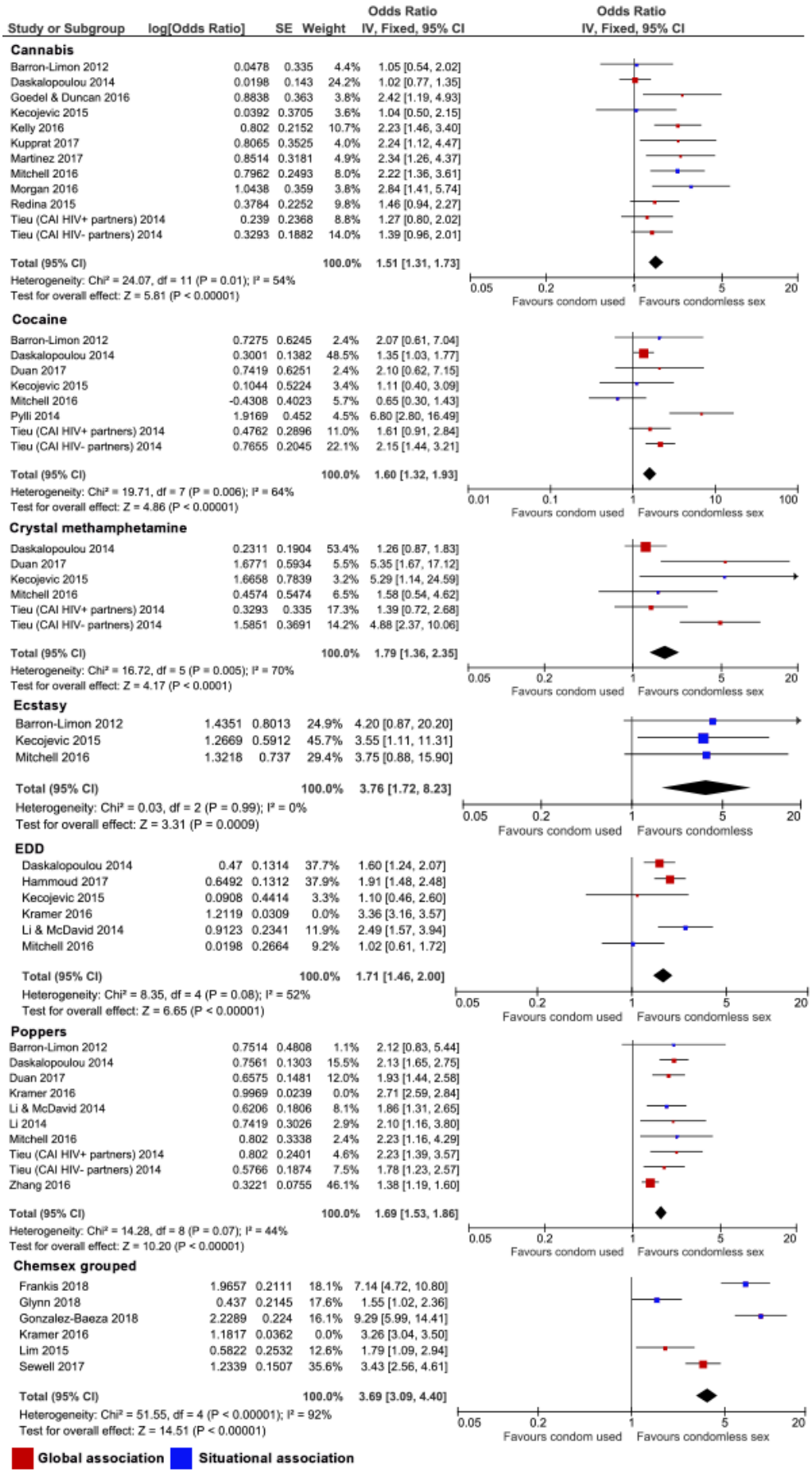
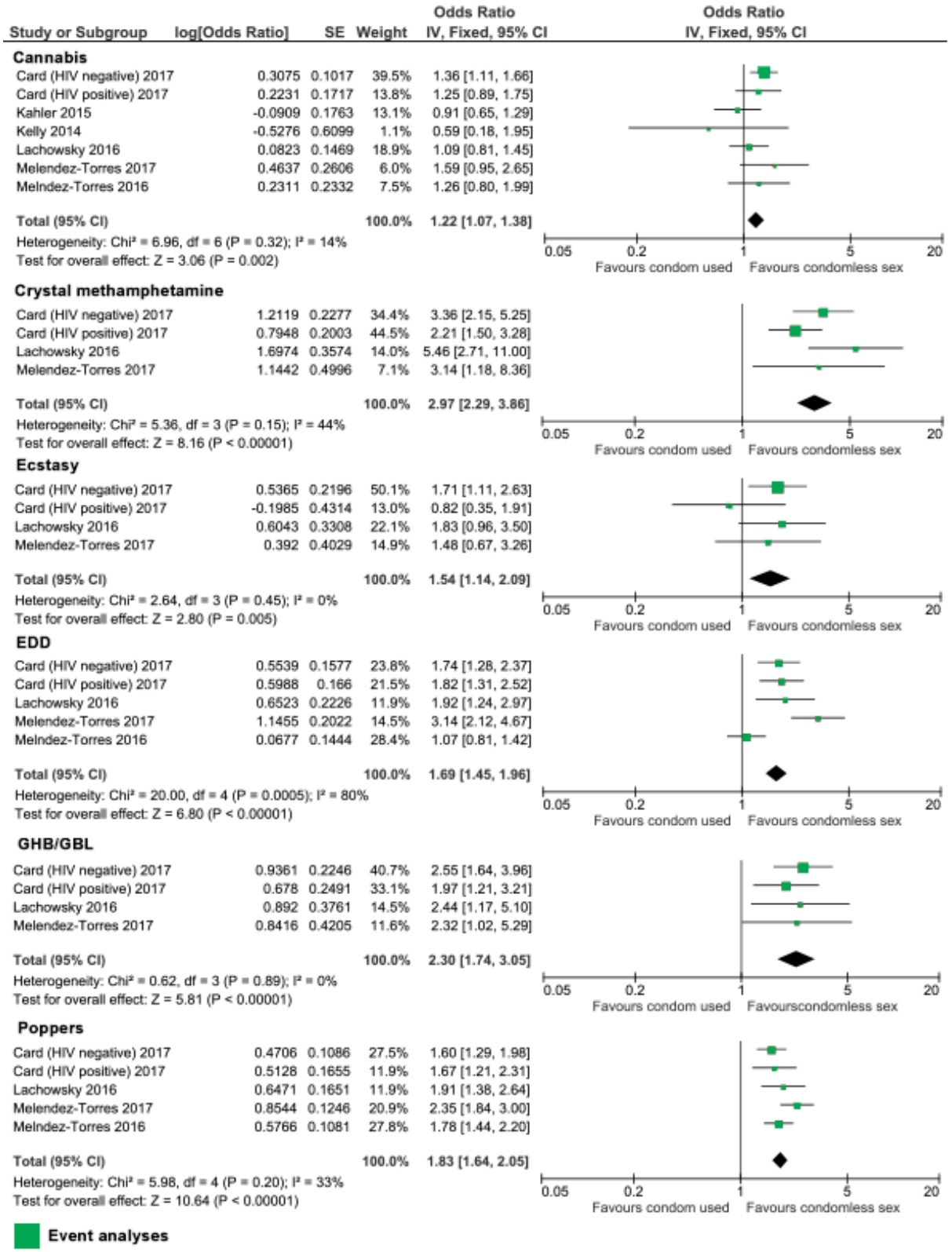


Figure 7. Meta-analyses for specific drug use and condomless anal intercourse (event-analyses) among men who have sex with men.



Quality assessment of the included studies

The results from the quality assessment can be found in Appendix 2. The majority of studies had an overall rating of weak (n=20/47, 43%), 17 studies (36%) were rated as moderate, and 9 (19%) were rated as strong. The weakest sections tended to be the reporting of withdrawals and dropouts, where 20 studies (43%) were rated as weak, as well as the confounders section, where 17 studies (36%) were rated as weak.

Discussion

This systematic review aimed to investigate the extent to which sexualised drug use had been researched among LGBT people in relation to health outcomes, and it was found that the vast majority of research has been conducted among MSM. A smaller number of studies had been conducted among trans women; however, no studies were found that reported sexualised drug use among trans men or WSW. It should be noted that some studies among WSW were found, but they did not meet the inclusion criteria of this review due to data comparing WSW with heterosexual women. These few studies identified that WSW may be more likely to use ketamine (Heinsbroek et al., 2018), as well as cannabis and cocaine, compared to heterosexual women (Bauer, Jairam, & Baidoobonso, 2010), but these were not measured in a sexual context. One study did find that lesbian and bisexual women were more likely to engage in sexualised drug use (Estrich, Gratzer, & Hotton, 2014), but data were not available exclusively for WSW with regards to sexual risk and sexualised drug use. Further research is needed to understand sexualised drug use among WSW, and whether it is associated with greater sexual risk. Whilst a few studies were found researching trans women, due to the potentially high risk of HIV among trans women (Baral et al., 2013), more studies are needed to explore sexualised drug use and its related sexual and health implications among trans women.

Associations between sexualised drug use among MSM and trans women was researched in 53 countries among the included studies. A narrative systematic review published after this review was conducted found that sexualised drug use among MSM had been researched in 43 countries (Tomkins, George, & Kliner, 2019). Due to the inclusion and exclusion criteria used in this review, sexualised drug use among LGBT people may have been researched in more countries, but the data provided demonstrates the range of countries this behaviour has been studied in. Additionally, the use of at least one of the drugs associated with chemsex among MSM has been observed in 33 of these countries spanning North America,

Europe, Asia, and Australasia. Therefore, describing chemsex as a Western behaviour may be limiting to research, because although research in Asia has not been as detailed as in Western countries, the sexualised use drugs associated with chemsex has been observed and examined in relation to sexual health outcomes. Similar to a literature review of sexualised drug use and chemsex in the UK (Edmundson et al., 2018), it was found that the definition of chemsex varied greatly, but crystal methamphetamine and GHB/GBL were common to all chemsex definitions. This variation in the definition of chemsex may be because the drugs used for chemsex differ internationally, or that the research had been conducted before a definition of which drugs used specifically constitute as chemsex. A consensus of what drugs constitute as chemsex may be hard to reach due to emerging new drugs, local availability of specific drugs, or personal preferences for the type of drugs use for chemsex. Therefore, an international definition of what drugs constitutes as chemsex may not be appropriate and instead more local definitions may be more suitable. However, it is useful to see which drugs are common internationally, so harm reduction and drug safety information can be shared across countries.

A narrative systematic review regarding chemsex among MSM that was published after this review was conducted found that chemsex was associated with condomless anal intercourse and living with HIV (Maxwell, Shahmanesh, & Gafos, 2019), similar to a review regarding broader sexualised drug use among MSM (Tomkins et al., 2019). However, both of these reviews did not conduct meta-analyses. The meta-analyses conducted were secondary aims and therefore caution is needed in drawing conclusions from the data, because a more specific review for the sexual health outcomes may have yielded more results. However, it is of note that nearly all drugs were associated with greater sexual risk, regardless of the drug or outcome in question. This does give researchers some justification to group drugs as general drug use. Although, it is unclear the influence polydrug use may have on these findings, for example, whether individuals who use multiple drugs during the same sexual encounter then engage in greater risk taking. Certain patterns of drug use, such as chemsex, may be associated with HIV prevalence, STI diagnoses, and condomless anal intercourse more than other patterns of drug use, as observed when the outcome was HIV prevalence, and global and situational measurements of condomless anal intercourse. This may be because sex under the influence of chemsex drugs may lower inhibitions, and therefore impact on behaviour to a greater extent than other types of sexualised drug use, or social norms associated with chemsex may influence risk taking. Additionally, it could be that grouping drugs creates a more powerful analysis due to a greater number of observations included, and therefore this is why chemsex appears to be associated with greater risk.

There were similar associations between event-level analyses and global and situational associations for condom use, but a large number of studies relied on global associations of drug use and health outcomes, even when researching chemsex, which is by definition in a sexual context. Therefore, if future research is aiming to investigate sexualised drug use, situational and event-level analyses should be utilised for a potentially more accurate measurement. However, due to the nature of researching sexualised drug use, causation cannot be inferred regardless of the measurement method chosen, and it is possible another factor is influencing these associations between drug use and sexual risk behaviours.

Strengths and limitations

There may be a publication bias in the data, due to most studies finding an association with the health outcome researched. An attempt was made to find grey literature on the topic; however, no reports or publications were found where information had not already been published in peer-review journals, or that met the inclusion/exclusion criteria. Additionally, it was not possible to control for confounding variables that may influence drug use and HIV, STI diagnoses, and condom use, such as age and sexual identity, due to the heterogeneity among control variables in multivariable analyses. Collating data is also difficult due to different window periods of measurement (e.g. three months/six months/twelve months), and variability in the grouping of drugs associated with sex. Although the meta-analyses were secondary aims of this systematic review, and therefore caution is needed when drawing conclusions from these findings, the finding that sexualised drug use among MSM was associated with HIV prevalence, STI diagnoses, and condomless anal intercourse is still important when considering service delivery, as well as harm reduction services. This is due to the potentially confounding factors a person may experience (i.e. drug harms, living with HIV, greater sexual risk taking) when engaging in sexualised drug use.

Conclusion

Meta-analyses among MSM revealed that for the majority of drugs examined, drug use was associated with living with HIV, STI diagnoses, and condomless sex where data were available. However, the measurement of sexualised drug use often relied on global associations between drug use and risk and so may be subject to misclassification bias. Therefore, more accurate measurements of sexualised drug use should be used. Definitions of what constitutes

chemsex varied across studies, making conclusions with regards to associated risks with chemsex difficult. The definition of what constitutes chemsex may be even more difficult when considering the behaviour internationally, as the availability of certain drugs will differ across countries, depending upon legal categorisation and common illicit drug markets.

There is a lack of research on sexualised drug use among WSW, and while comparing to heterosexual women is useful to understand differences in behaviour, to further understand sexualised drug use and its associated behaviours and health implications among WSW, analyses exclusively among WSW are needed. Whilst there has been some research among trans women regarding sexualised drug use, due to the suspected high prevalence of HIV among this group, further research is needed to understand this behaviour and any potential risk of HIV transmission. Additionally, no studies indicated including trans men and non-binary people. Where trans men do identify as MSM, they are most often not included in analyses among men (Chard et al., 2018). Therefore, further research is needed among trans people generally to understand if sexualised drug use exists, and if so, whether it is associated with sexual risk.

The systematic review identified gaps in the literature in relation to the lack of data regarding WSW and trans people. Whilst the focus on sexual risk is important for providing sexual health care, it is also equally important to consider psychological associations with these behaviours to provide a more holistic understanding of LGBT people and sexualised drug use. This could identify any other possible harms beyond sexual risk associated with sexualised drug use. The following chapter details how these gaps in the literature were addressed by Study 2, as well as how appropriate methods for measuring sexualised drug use (situational and event-level) were utilised.

Chapter 3: Methodology for an online survey researching sexualised drug use among LGBT+ people.

Findings from this study (Study 2) have been published in the following peer-reviewed publications:

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Psychosocial and sexual characteristics associated with sexualised drug use and chemsex among men who have sex with men (MSM) in the UK. *Sexually transmitted infections*; *95,* 342-250.

Hibbert, M. P., Porcellato, L. A., Brett, C. E., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT+ Sex and Lifestyles Survey. *International Journal of Drug Policy*, *74*, 292-298.

Hibbert, M. P., Wolton, A., Weeks, H., Ross, M., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Psychosocial and sexual factors associated with recent sexual health clinic attendance and HIV testing among trans people in the UK. *BMJ Sexual & Reproductive Health*. *46*(2), 116-125.

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2020). STI diagnoses, sexualised drug use and associations with PrEP use among men who have sex with men in the UK. *International Journal of STDS & AIDS*, 31(3), 254-263.

Where data presented in this thesis has been published, the reference to the publication can be found in the footer of that page.

The systematic review (Study 1) provided useful insights into the measurement tools used for drug use and health behaviours, and highlighted a lack of research regarding WSW and trans people. This information was used to inform the methodology for Study 2. This chapter will describe how The LGBT+ Sex and Lifestyles Survey was designed, how participants were recruited, and describe the psychological and health measures used within the survey, as well as the statistical analysis plan.

Design

A national convenience sample was used to recruit participants to take part in The LGBT+ Sex and Lifestyles Survey. This cross-sectional anonymous online survey was aimed at LGBT people and was developed using online survey software Qualtrics (www.qualtrics.com). Ethical approval for this study was obtained by the Liverpool John Moores University Research Ethics Committee (approval reference:18/PHI/011). To take part, participants had to be aged 18 years or over, currently live in the UK, and self-identify as MSM, WSW, or trans.

Participants

Minimum sample size was calculated using the Raosoft.com sample size calculator with a margin of error at 5% and 95% confidence interval. For each sample group (MSM, WSW, trans), a sample size calculation was performed based upon estimates of the number of that population in the UK. Accurate and reliable data on the number of MSM or WSW living in the UK does not exist. Therefore, using the latest ONS data on the number of men and women aged 18 or over living in the UK in 2016 (Office of National Statistics, 2017), and the Public Health England (PHE) estimate that 2.5% of the population in England are LGB (van Kampen et al., 2017), the minimum sample size for both MSM and WSW was 384. The figures used to calculate this sample size does not include heterosexually identifying MSM and WSW as this population is hard to differentiate. However, due to the large target sample of LGBT people nationally, it is unlikely that including heterosexually identifying MSM and WSW in population estimates would have had a significant effect the minimum sample size. In addition, accurate and reliable data on the number of trans people living in the UK does not exist. Therefore, using the latest population estimate of number of people living in the UK in 2016 (Office of National Statistics, 2017), and the estimate that 0.6% of the adult population in the USA self-identify as trans (Flores et al., 2016), the minimum sample size for trans people was also 384. The target sample size for each group was rounded up to 400, giving a total target sample size of 1,200 (see Table 3).

Table 3. Recommended sample size with margin of error at 5% and 95% confidence intervals.

Sample	Estimated UK population†	Minimum sample size	Target sample size
Men who have sex with men (MSM)	627,343	384	400
Women who have sex with women (WSW)	652,565	384	400
Trans people	307,178	384	400

† Calculated using ONS general UK population estimate, and the PHE 2.5% estimate for proportion of LGB people in England, and Flores et al. (2016) 0.6% estimate for proportion of trans people in the USA.

Recruitment

The survey was open from 12th April – 30th June 2018. Participants were recruited through social media using two methods. The first method was using LGBT organisations to share a link to the survey on their social media accounts (Facebook, Twitter, and Instagram). These organisations were part of the community organisations recruited for the PPI group due to work around drug and alcohol use among LGBT people (London Friend, Chemsex Open Access Support Team (COAST), Gay Men's Health Collective (GMHC)), or because of work regarding trans inclusion in research (LGB&T Partnership). In their posts, organisers would specify that the research was regarding the sex and lifestyles of LGBT people, aged 18 or over, and currently living in the UK. Organisations were sent some suggested text and an image to use for their social media posts that can be found in Appendix 3. The term 'LGBT+' varied depending on the organisation e.g. organisations for men only were suggested to use the term 'men who have sex with men'.

The second method of recruitment was to use paid Facebook and Instagram advertising. A Facebook page was designed for the survey that hosted four adverts targeting MSM, WSW, trans people and LGBT+ people generally. Clicking on the advert directed participants to the Qualtrics page with the information sheet (Appendix 4). Alternatively, participants could click on the Facebook group title "The Sex and Lifestyles Survey" to be directed to the Facebook page. Previous UK research into sexualised drug use among MSM has mostly recruited participants via sexual health clinics or geospatial dating apps (Edmundson et al., 2018), which may bias the data as these methods may recruit individuals of a higher sexual risk. Facebook advertising was used as it has been found be a useful tool for recruiting participants for health research (Whitaker, Stevelink, & Fear, 2017), and studies using Facebook advertising have

shown samples to be representative of drug and alcohol users (Bauermeister et al., 2012), and sexual history and relationships (Jones, Saksvig, Grieser, & Young, 2012). Additionally, Facebook advertising has been used to research a similar topic among MSM in the UK (Chard et al., 2018), and given that LGBT people are not a substantial proportion of the general population, Facebook is a useful tool to recruit this hard to reach population. Also, Facebook may be a useful tool to recruiting MSM who are not attending sexual health clinics or on geospatial dating apps, as well as WSW and trans people, who may be less likely to engage in sexual health services.

The MSM advert was targeted at males, aged 18-65 years and over, who lived in the UK, and showed interest in one of a number of LGBT or gay topics on Facebook (e.g. Gay pride, LGBT history, LGBT culture, Gay bar, etc.). The WSW advert was targeted at females, aged 18-65 years and over, who lived in the UK, and showed interest in one of many LGBT or lesbian topics on Facebook (e.g. Gay pride, LGBT history, Lesbian pride, etc.). The trans advert was targeted at people aged 18-65 years and over, who lived in the UK and had shown interest in a trans related topic (e.g. transgenderism, transgender activism) on Facebook. The LGBT+ advert targeted a predetermined audience of LGBT+ people on Facebook. An additional MSM advert was created to target MSM in London, Brighton, and Manchester, due to these being cities with a high prevalence of chemsex drug use among MSM (Schmidt et al., 2016), using the same topics on Facebook as for the previous MSM advert. The total cost of advertising was £1102.05. A full breakdown of advertising methods can be found in Appendix 3.

An incentive of a prize draw for a £50 Amazon voucher, or one of two £25 Amazon vouchers, was used as an incentive to aid recruitment. Once participants completed the questionnaire, the debrief page contained a link to a separate survey where participants could then enter their details for the prize draw. A separate questionnaire was used so that participants' details could not be linked to their answers. This additional questionnaire also asked participants if they would be interested in taking part in future research in the North West of England.

Measures

The survey was divided into three areas: demographics, sexual health and drug use, and psycholgical wellbeing (Appendix 4). Two screening questions asked potential participants if they currently lived in the UK and were aged 18 or over. An attempt was made to measure how participants had been recruited; however, this was deemed to be inaccurate as a significant

proportion of participants had selected community organisations before any community organisation recruitment had commenced. Where participants were forced to give a response, a prefer not to say option was offered.

Gender identity

An adapted version of a two-step questioning was used for participants to report their current gender identity and gender at birth (Sausa et al., 2009). The adapted version was revised with discussions between Public Health England, CliniQ, LGBT Foundation, Action for Trans Health, and The National LGB&T Partnership for the purpose of HIV monitoring in England (Jaspal, Nambiar, Delpech, & Tariq, 2018). The revised questions were as follows:

Which of the following options best describes how you think of yourself?

- Male (including trans man)
- Female (including trans woman)
- Non-binary
- In another way, please specify:
- Prefer not to say

Is your gender identity the same as the gender you were given at birth?

- Yes
- No
- Prefer not to say

Participants were grouped as trans if they reported having a gender that was different than the gender they were given at birth and selected a gender for the first question.

Ethnicity

Ethnicity was reported using the NHS standard category codes from the 2001 census (www.datadictionary.nhs.uk/data_dictionary/attributes/e/end/ethnic_category_code_de.asp), with the addition of Hispanic/Latino to include the Hispanic/Latino LGBT community living in the UK (Rawson et al., 2019).

Sexual orientation and behaviour

Participants were asked their sexual orientation and the gender of people they have sex with. Questions were adapted from previous UK research (Pufall et al., 2018), and from suggestions from the PPI community members. Men who have sex with men (MSM) and Women who have sex with women (WSW) were identified by their gender and the gender of people they have sex with.

Sexual health and sexualised drug use

Questions regarding sexual health, such as genitourinary medicine (GUM) clinic attendance, HIV testing, STI diagnoses, PrEP use, sexual behaviour, and sexualised drug use were adapted from research on similar topics (Mercer et al., 2016; Weatherburn et al., 2013). Aligned with previous research, drug use and sexualised drug use were asked with regards to specific drugs, with individuals drugs listed rather than grouped, as this is likely to elicit more accurate reporting (Ryan et al., 2018). Participants were first asked if they had taken any of the 14 listed drugs (including alcohol) in the past 12 months. Drug use was grouped as taking any of the listed drugs except alcohol. Sexualised drug use was grouped as participants who had stated they had been under the influence of cannabis during sex in the past 12 months, or stated having taken amphetamine, cocaine, crack cocaine, crystal methamphetamine, ecstasy, heroin, GHB/GBL, ketamine, mephedrone, Viagra or other erectile dysfunction drugs (EDDs), poppers, or another unspecified drug just before or during sex in the past 12 months. Chemsex was grouped as having taken crystal methamphetamine, GHB/GBL, ketamine, and/or mephedrone just before or during sex.

Event-level condom use data was collected for each drug among MSM and trans women. For alcohol and cannabis, participants were asked: "thinking of the last time you were under the influence of any of the following during anal intercourse, did you use a condom? (Yes, all of the time/Yes, some of the time/No, none of the time/Not sure/I did not have anal intercourse)." For all other drugs, participants were asked: "Thinking of the last time you had the following just before or during anal intercourse, did you use a condom? (Yes, all of the time/Yes, some of the time/No, none of the time/Not sure/I did not have anal intercourse)". If participants stated they did not have anal intercourse, they were excluded from event-level analyses. Consistent condom use (Yes, all of the time) was compared to all other responses (Yes, some of the time/No, none of the time/Not sure), due to the latter groups expressing some degree of sexual

risk.

Motivations for sexualised drug use

Motivations for engaging in sexualised drug use were adapted from motivations and attitudes towards chemsex questions (Glynn et al., 2018). Participants were asked seven questions regarding engaging in and attitudes towards sexualised drug use that were measured on a 5-point Likert scale (Strongly disagree/Disagree/Neither agree nor disagree/Agree/Strongly agree). These questions were then modified and repeated for people who had engaged in sex while under the influence of alcohol. Participants who answered "strongly agree" or "agree" were compared to those who answered "strongly disagree", "disagree", or "neither agree or disagree".

Self-efficacy for sexual safety

Questions regarding self-efficacy for sexual safety were asked to participants who stated having sex with men, due to the measurement tool used (Alvy et al., 2011) being designed for assessing sexual risk among MSM (e.g. condom use). Seven questions assessed a participant's confidence in practicing safe sex, including questions regarding the influence of drugs and alcohol, on a 5-point Likert scale (Strongly disagree/Disagree/Neither agree nor disagree/Agree/Strongly agree) (Cronbach's Alpha = 0.81). As instructed in the scale development, participants who answered "strongly disagree" or "disagree" to over half the questions were coded as having low self-efficacy for sexual safety.

Sexual satisfaction scale

Sexual satisfaction was measured using an adapted version of the New Sexual Satisfaction Scale (Stulhofer, Busko, & Brouillard, 2010). The 12 items were measured on a 5-point scale (Not at all satisfied/A little satisfied/Moderately satisfied/Very satisfied/Extremely satisfied). The questions were adapted by replacing "my partner" with "the person I have sex with" to measure sexual satisfaction in general, and not specific to one partner (Cronbach's Alpha = 0.92). Furthermore, the scale was pretexted with "If you have had sex with more than one person in the past 12 months, in the following questions, please think of 'the person I have sex with' as overall, rather than one person". Higher scores on the New Sexual Satisfaction Scale indicated greater sexual satisfaction.

Consensual sex

An adapted measure of a question asked in a GP setting was used to assess whether participants had experienced any sexual contact that was not consensual (Coxell, King, Mezey, & Gordon, 1999). The measure was adapted after a discussion with an LGBT sexual violence charity to the following: "In the past 12 months has a person(s) done sexual things to you or made you do sexual things without your consent? (Yes/No/Not sure/Prefer not to say)".

Internalised homophobia

The Internalised Homophobia (IHP) scale (Herek, Cogan, Gillis, & Glunt, 1998) was used to measure internalised stigma among MSM and WSW. A systematic review of measures of internalised homophobia found IHP as well as the Internalized Homonegativity Inventory (IHNI; Mayfield, 2001) to be the most widely used and validated (Grey, Robinson, Coleman, & Bockting, 2013). Therefore, due to the shorter length and the inclusion of a social theme that was deemed appropriate for the questionnaire, in addition to the fact that the scale was originally developed and validated for use with both men and women, the IHP scale was chosen. The IHP contains nine items measured on a 5-point Likert scale (Strongly disagree/Disagree/Neither agree nor disagree/Agree/Strongly agree). Because the scale was asked to men and women who identify as LGB and anyone who has had sex with someone of the same gender regardless of sexual identity, "gay/bisexual" was replaced with "attracted to men" and "lesbian/bisexual" was replaced with "attracted to women". In line with the categorisation used in the scale development (Herek et al., 1998), if a participant responded "strongly disagree" or "disagree" to any of the nine items, they were coded as high internalised homophobia (Cronbach's Alpha MSM = 0.89; WSW = 0.86).

Internalised transphobia

Internalised transphobia (referred to from now on as self-stigma) was measured using an adapted version of the Internalised Transphobia Scale (ITS) originally developed from the Internalised Homophobia Scale (IHS; Ross & Rosser, 1996). The original scale contains 24 items measured on a 4-point Likert scale (Strongly disagree/Disagree/Agree/Strongly agree) with four subscales: public identification; perception of stigma; social comfort with transgender people, and religious acceptability. Similarly to previous research (Mizock & Mueser, 2014), a

modified version of the scale was used without the religious acceptability subscale, due to a lack of relevance to the research question (Cronbach's Alpha = 0.82). The scale was adapted for use in the UK by replacing the term "transgender" with "trans" and the question was pretexted with "The term trans will be used in the following questions, but please think of this term in whatever way you feel is the best fit (i.e. non-binary, gender variant, gender non-conforming, etc.)." Higher scores on the ITS indicated a greater level of self-stigma.

Body dissatisfaction

To measure body image satisfaction, a modified version of the Objectified Body Consciousness scale (OBC; McKinley & Hyde, 1996) was used. A scale developed for use with preadolescent and adolescent youth (OBC-Youth; Hyde & McKinley, 2006) was chosen due to the simplification of the language used, so the scale was easier for participants who do not have English as a first language or those who might have poor reading comprehension. The 14 items were measured on a 7-point Likert scale (Strongly disagree/Disagree/Somewhat disagree/Neither agree nor disagree/Somewhat agree/Agree/Strongly agree/Not applicable to me). The OBC-Youth has three factors: body surveillance; body shame, and control beliefs. Due to the lack of relevance to the research question, questions regarding control beliefs were not included, and therefore nine items were included in the questionnaire (Cronbach's Alpha = 0.90). Higher scores on the OBC-Youth scale indicated greater body dissatisfaction.

Image and performance enhancing drug use

To measure image and performance enhancing drug use, a question was adapted from Public Health England's 'Unlinked Anonymous Monitoring Survey of People Who Inject Drugs' (Public Health England, 2016). Participants were asked "Have you taken any image or performance enhancing drugs in the last 12 months (e.g. anabolic steroids, growth hormone, hCG, Melanotan)? (Yes/No/Prefer not to say)".

Discrimination

An adapted version of the Krieger and Sidney (1996) measure of discrimination was used. The measure asks participants if they have experienced discrimination in various settings. The measure was adapted to account for more modern situations of discrimination (Krieger,

Smith, Naishadham, Hartman, & Barbeau, 2005) and for use with LGBT people (Burgess, Tran, Lee, & van Ryn, 2007). For discrimination based on sexuality, participants were asked: "In the last 12 months, have you experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your sexuality (please tick all that apply)?" To measure discrimination based on gender identity "sexuality" was replaced with "gender". The situations participants could select were: school; getting hired or getting a job; at work; getting housing; getting medical care; getting service in a store or restaurant; getting credit, bank loans, or a mortgage; on the street or in a public setting; from the police or in the courts; other (please specify), and none of the above.

Loneliness

Loneliness was measured using a short 3-item scale, adapted for use within large questionnaires and correlates well with longer measures of loneliness and social isolation (Hughes, Waite, Hawkley, & Cacioppo, 2004). Responses to the three questions asking "how often do you feel…" were measured on three points (Hardly ever/Some of the time/Always) (Cronbach's Alpha = 0.82).

Perceived health

To measure perceived health, a modified single item measure was used (Idler & Kasl, 1991), which asked "How do you rate your health at this present time?" and responses were measured on a 5-point scale (Very Poor/Poor/Fair/Good/Very Good). A binary variable was created comparing participants who rated their health as good or very good, with those who rated their health very poor, poor or fair.

Psychological wellbeing

Two scales were used to measure psychological wellbeing: the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), and the Kessler Psychological Distress Scale (K10; Andrews & Slade, 2001). The SWLS (Cronbach's Alpha = 0.90) was used as a stable measure of wellbeing generally, where higher scores indicated a greater satisfaction with life. The K10 psychological distress scale (Cronbach's Alpha = 0.94) was used as a measure of current psychological wellbeing, as this measure was specific to feelings over the

past 30 days. Psychological distress scores were categorised into normal (<=15), moderate (16-21), high (22-29) and very high (30-50), as in previous research (Stallman, McDermott, Beckmann, Kay Wilson, & Adam, 2010).

Patient and public involvement (PPI)

The survey was circulated to PPI community members, and recommended changes around wording for trans sexual health measures were incorporated, as well as adding queer as an option to the sexual orientation question. The survey was then piloted on 16 LGBT colleagues and community members to test for clarity, question routing, and survey flow, which resulted in changes made to question routing, and wording of questions that were misinterpreted, and any typos and spelling errors were corrected. The median time taken for participants to compete the survey was 10 minutes. This was used to inform participants the survey would take around 15 minutes to complete.

Statistical analysis

Analyses are presented in the next chapter, and were conducted using SPSS 25 (IBM, New York). Forward stepwise multivariable logistic regression analyses were used to explore factors associated with drug use, sexualised drug use, and chemsex (entry $p<0.05$, removal $p>0.10$). Factors approaching significance at the bivariate level ($p<0.10$) were included in the multivariable model.

For MSM, forward stepwise multivariable logisic regression analyses were conducted comparing MSM who reported sexualised drug use with those who did not, and those who reported engaging in chemsex with those who reported engaging in sexualised drug use. Chi-square analyses and Fisher-exact tests (where cell values were <=5) were used to compare categorical outcomes of motivations for and effects of engaging in chemsex, other sexualised drug use and sex under the inlfuence of alcohol for MSM. Additionally, Chi-square analyses and Fisher-exact tests (where cell values were <=5) were used to compare drug use, sexualised drug use and event-level condom use under the influence of drugs between those who reported PrEP use and those who did not.

Due to the small number of WSW and trans people who reported chemsex, forward stepwise multivariable logisic regression analyses were conducted comparing those who had

engaged with drug use with those who had not, and those who had engaged in sexualised drug use with those who had engaged in general drug use among WSW and trans people seperately. Similarly, due to the small number of WSW and trans people who reported chemsex, Chi-square analyses and Fisher-exact tests (where cell values were <=5) were used to compare motivations for and effects of engaging in intentional sexualised drug use, sex under the influence of cannabis, and sex under the influence of alcohol among WSW and trans people seperately.

Chapter 4: Results from The LGBT+ Sex and Lifestyles Survey

This chapter will present the findings from The LGBT+ Sex and Lifestyles Survey (Study 2). Firstly, where data were available, participants who completed the survey were compared to those who did not. Secondly, the demographics of the MSM, WSW, and trans people were explored, as well as descriptive data regarding drug use, sexualised drug use, and chemsex. Thirdly, the bivariate and multivariable analyses as outlined in the methodology were conducted for MSM, WSW, and trans people seperately.

Of the 4,690 surveys started, 53 participants were excluded for not living in the UK, 43 participants were excluded for being aged under 18 years, and 1,014 did not complete the survey sufficiently to be included in analyses (completion rate of 76%). Completion was defined by answering answering all questions on the last scale (the Satisfaction With Life Scale). A further 73 did not fit into MSM, WSW, or trans categories, because they either identified as heterosexual and did not report engaging in sex with someone of the same gender, or identified as asexual and did not report having sex with someone of the same gender, and were therefore excluded from analyses. Of the 3,507 participants included, 1,663 participants were grouped as MSM, 1,513 participants were grouped as WSW, and 500 participants were grouped as trans (groups not mutually exclusive). Table 4 compares participants' demographics of those who completed the survey and those who did not where data were avaliable. Participants who completed the survey differed on gender, sexuality, education, and relationship status compared to those who did not. The median time taken to complete the survey was 12 minutes.

Table 5 displays demographics for MSM, WSW, and trans participants. Statistical analyses could not be conducted between these three groups because being trans was not mutually exclusive with being a MSM or WSW. A higher proportion of WSW identified as bisexual and a higher proportion of trans participants identified as heterosexual. A higher proportion of trans participants also reported a younger age and were currently a student. The majority of participants were of white ethnicity, with similar proportions across participant categories, and a higher proportion of MSM and trans participants reported being single. Figure 8 displays the geographic distribution across the UK of the participants. Although the proportion of participants recruited from each local authority displayed in Figure 8 will vary, this figure demonstrates that participants were recruited from across the UK.

Table 4. Demographics of participants who completed the survey and those who did not.

	Not completed (n=734)	%	Completed survey (n=3,507)	%
Gender* **				
Male (including trans man)	391	53%	1706	49%
Female (including trans woman)	287	39%	1536	44%
Non-binary	45	6%	244	7%
In another way	8	1%	21	0.6%
Prefer not to say	3	0.4%	0	0%
Trans status				
Cisgender	635	87%	3007	86%
Trans	96	13%	500	14%
Sexuality* **				
Gay/lesbian/homosexual	435	59%	2333	67%
Bisexual	151	21%	705	20%
Straight/heterosexual	22	3%	36	1%
Queer	36	5%	223	6%
Asexual	20	3%	42	1%
In another way	30	4%	166	5%
Prefer not to say	2	0.3%	2	0.1%
Age band				
18-25	303	41%	1280	36%
25-34	263	36%	1338	38%
35-49	123	17%	693	20%
>=50	38	5%	188	5%
Ethnicity				
White	697	95%	3363	96%
Person of colour	32	4%	138	4%
Country of Birth				
UK	617	84%	3076	88%
Not UK	80	11%	352	10%
Education* **				
University or higher	352	48%	1953	56%
Qualifications at 18	265	36%	1123	32%
Qualifications at 16	92	13%	333	9%
Primary School or lower	5	0.7%	13	0.4%
Work Status				
Full time	370	50%	1938	55%
Part time	74	10%	331	9%
Student	154	21%	688	20%
Unemployed	38	5%	126	4%
Other (sick leave, retired, carer)	88	12%	390	11%
Relationship status* **				
Living with partner	235	32%	1310	37%
Relationship not living with partner	143	19%	816	23%
Relationship with multiple	29	4%	103	3%
Single	321	44%	1274	36%
UK Region				
East Midlands	38	5%	199	6%
East of England	30	4%	200	6%
London	93	13%	383	11%
North East	28	4%	167	5%
North West	128	17%	649	19%
South East	78	11%	408	12%
South West	59	8%	273	8%
West Midlands	48	7%	227	6%
Yorkshire and Humber	49	7%	298	8%
Northern Ireland	28	4%	100	3%
Scotland	97	13%	377	11%
Wales	41	6%	202	6%
Prefer not to say	11	1%	22	0.6%

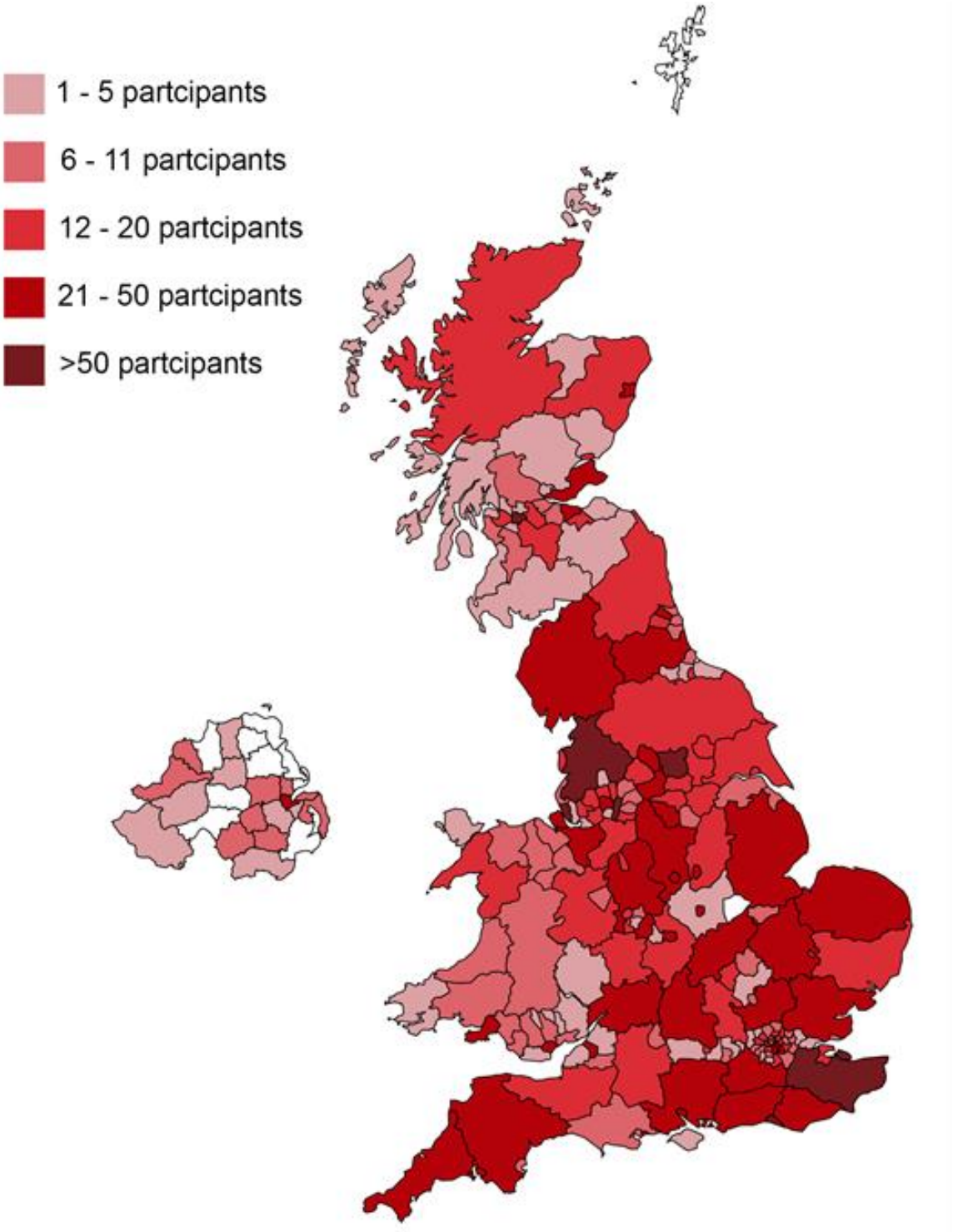
*p<0.05
**p<0.01
***p<0.001

Table 5. Demographics for MSM, WSW and trans participants.

	MSM (n=1,663)	%	WSW (n=1,512)	%	Trans (n=500)	%
Sexuality						
Gay/lesbian/homosexual	1423	86%	848	56%	105	21%
Bisexual	153	9%	499	33%	113	23%
Straight/heterosexual	1	0.1%	5	0.3%	30	6%
Queer	50	3%	80	5%	131	26%
Asexual	7	0.4%	9	0.6%	33	7%
In another way	29	2%	72	5%	87	17%
Prefer not to say	0	0%	1	0.1%	1	0.2%
Age band						
18-25	538	32%	574	38%	260	52%
25-34	646	39%	588	39%	145	29%
35-49	364	22%	280	19%	74	15%
>=50	112	7%	87	6%	18	4%
Ethnicity						
White	1584	95%	1469	97%	474	95%
Person of colour	76	5%	43	3%	24	5%
Country of Birth						
UK	1446	87%	1346	89%	442	88%
Not UK	182	11%	131	9%	45	9%
Education						
University or higher	984	59%	819	54%	212	42%
Qualifications at 18	473	28%	508	34%	225	45%
Qualifications at 16	157	9%	148	10%	47	9%
Primary School or lower	7	0.4%	4	0.3%	3	0.6%
Work Status						
Full time	1049	63%	782	52%	164	33%
Part time	116	7%	175	12%	55	11%
Student	266	16%	334	22%	138	28%
Unemployed	61	4%	39	3%	41	8%
Other (sick leave, retired, carer)	161	10%	166	11%	92	18%
Relationship status						
Living with partner	589	35%	629	42%	135	27%
Relationship not living with partner	321	19%	403	27%	136	27%
Relationship with multiple	35	2%	44	3%	34	7%
Single	715	43%	436	29%	195	39%
UK Region						
East Midlands	78	5%	98	6%	38	8%
East of England	81	5%	96	6%	36	7%
London	266	16%	94	6%	36	7%
North East	62	4%	85	6%	25	5%
North West	350	21%	255	17%	63	13%
South East	203	12%	163	11%	63	13%
South West	103	6%	142	9%	43	9%
West Midlands	101	6%	104	7%	30	6%
Yorkshire and Humber	108	6%	160	11%	47	9%
Northern Ireland	42	3%	51	3%	9	2%
Scotland	172	10%	163	11%	67	13%
Wales	87	5%	90	6%	36	7%
Prefer not to say	8	0.5%	12	1%	7	1%

Statistical comparisons could not be made between groups as groups are not mutually exclusive.

Figure 8. Geographic distribution of The LGBT+ Sex and Lifestyle Survey participants.



Questions regarding drugs and alcohol was completed by 1,649 MSM, 1,507 WSW, and 496 trans participants. The proportion of participants reporting taking alcohol or drugs, being under the influence of these during sex, or having taken these just before or during sex in the past 12 months for MSM, WSW, and trans people are given in Table 6. Drug use excluding alcohol was reported among 55% of MSM, 39% of WSW, and 45% of trans people, and sexualised drug use was reported by 41% of MSM, 17% of WSW, and 21% of trans people. The use of chemsex drugs for sex were more frequently reported among MSM (6%), but a small proportion of WSW (0.6%) and trans people (1%) also reported taking these drugs. Among MSM, the proportion of those who had taken crystal methamphetamine and GHB/GBL that had taken them before or during sex was high (>80%). Two out of the three trans and WSW taking GHB/GBL stated taking the drug before or during sex. Viagra and other erectile dysfunction drugs (EDDs) were largely taken before or during sex across participant groups, but more frequently reported among MSM. Poppers were most frequently reported by MSM and a large proportion used them for sex. Similar proportions of MSM, WSW, and trans people had been under the influence of cannabis during sex, but a slightly lower proportion of trans participants reported being under the influence of alcohol for sex than MSM and WSW.

Sexualised drug use and chemsex among MSM

The majority of MSM identified as gay/homosexual (86%), were of white ethnicity (95%), with a median age of 28 years (IQR=23-36, range 18-76), and 43% stated they were single/not in a relationship (Table 5). Half of participants (n=825/1636) had attended a GUM clinic in the past 12 months, 4% (n=74/1648) were living with HIV, 6% (n=99/1648) were taking PrEP, and 5% (n=78/1634) reported having had sexual contact without consent in the past 12 months. There was no statistical difference between London (45%, n=121/264) and outside of London (39%, n=545/1375) for sexualised drug use, and no statistical difference between MSM reporting recent chemsex between London (11%, n=30/263) and other densely populated areas (9%, n=25/287).

The majority of MSM had drank alcohol in the past 12 months (94%), and 71% of these (66% of the total sample) had engaged in sex under the influence of alcohol (Table 6). Among the 41% of MSM reporting sexualised drug use: 28% of MSM had taken amyl nitrates (poppers) immediately before/during sex; 13% had been under the influence of cannabis during sex; 12%

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Psychosocial and sexual characteristics associated with sexualised drug use and chemsex among men who have sex with men (MSM) in the UK. *Sexually transmitted infections*; *95*, 342-250.

Table 6. Alcohol and drug use, sexualised drug use, and engagement in chemsex among MSM, WSW and trans people.

	MSM (n=1,649)					WSW (n=1,507)					Trans (n=496)				
Reported use in the past 12 months	No. taken	%	No. sexualised drug use	%	% of drug taken†	No. taken	%	No. sexualised drug use	%	% of drug taken†	No. taken	%	No. sexualised drug use	%	% of drug taken†
Alcohol	1553	94%	1095	66%	71%	1411	94%	947	63%	67%	442	89%	231	47%	52%
Amphetamine	64	4%	18	1%	28%	41	3%	11	0.7%	27%	12	2%	4	0.8%	33%
Cannabis	488	30%	221	13%	45%	495	33%	206	14%	42%	194	39%	82	17%	42%
Cocaine	359	22%	159	10%	44%	165	11%	47	3%	28%	45	9%	10	2%	22%
Crack cocaine	7	0.4%	4	0.2%	57%	1	0.1%	0	0%	0%	2	0.4%	0	0%	0%
Ecstasy	210	13%	64	4%	30%	116	8%	26	2%	22%	45	9%	10	2%	22%
EDD	218	13%	203	12%	93%	2	0.1%	2	0.1%	100%	7	1%	6	1%	86%
Heroin	1	0.1%	0	0%	0%	0	0%	-	-	-	3	0.6%	1	0.2%	33%
Poppers	569	35%	468	28%	82%	114	8%	28	2%	25%	48	10%	24	5%	50%
Other illicit drug	39	2%	10	0.6%	26%	32	2%	14	1%	44%	28	6%	3	0.6%	11%
Chemsex drugs															
Crystal methamphetamine	39	2%	32	2%	82%	0	0%	-	-	-	1	0.2%	0	0%	0%
Ketamine	116	7%	37	2%	32%	38	3%	6	0.4%	16%	14	3%	4	0.8%	29%
GHB/GBL	67	4%	54	3%	81%	3	0.2%	2	0.1%	67%	3	0.6%	2	0.4%	67%
Mephedrone	85	5%	54	3%	64%	7	0.5%	2	0.1%	29%	2	0.4%	0	0%	0%
Any chemsex drug	190	12%	99	6%	52%	43	3%	9	0.6%	21%	16	3%	5	1%	31%
Any drug excluding alcohol	915	55%	670	41%	73%	587	39%	263	17%	45%	222	45%	105	21%	47%

†Percentage of those that had used the drug for sex among those that reported taking the drug in the past 12 months

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had taken EDD before or during sex, and 10% had taken cocaine before or during sex. Less prevalent drugs taken before or during sex were ecstacy (4%), GHB/GBL (3%), mephedrone (3%), crystal methamphetamine (2%), ketamine (2%), amphetamines (1%), and other drug not specified (0.6%). The sexualised use of crystal methamphetamine, GHB/GBL, ketamine, and mephedrone were grouped as chemsex and 99 MSM (6%) had engaged in chemsex. Those who reported chemsex (n=77/96, 80%) were signicantly more likely to report polydrug use the last time they used drugs for sex, than those who reported other sexualised drug use (n=93/285, 25%)($p<0.001$).

Table 7 displays the multivariable analysis describing sexual and psychosocial characteristics of MSM who had engaged in any sexualised drug use in the past 12 months compared to MSM who did not report any sexualised drug use. As only one MSM identified as heterosexual, this category was not included in the analysis. Due to the strong association between the number of male anal intercourse partners and number of condomless male anal intercourse partners in the past 12 months ($p<0.001$), only the latter was included in the multivariable analysis due to its greater sexual risk. There was a borderline association between psychological distress and sexualised drug use, but psychological distress was not included in the multivariable analysis due to the strong correlation between psychological distress scores and satisfaction with life scores ($r=-0.59$, $p<0.001$). Factors associated with sexualised drug use in the multivariable analysis were being aged 35 years and over, having a poor or very poor percieved health, having a recent STI diagnosis, having recently attended a GUM clinic, having a greater number of condomless male anal intercourse partners, recent image and performance enhancing drug use, having a lower satisfaction with life, and greater sexual satisfaction.

This analysis was then repeated for factors associated with chemsex compared to other forms of sexualised drug use in the past 12 months (Table 8). Factors associated with chemsex in the multivariable analysis were having a country of birth that was not the UK, living in a more densely populated area, having six or more condomless male anal intercourse partners, and having low sexual self-efficacy.

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Table 7. Bivariate and multivariable analyses for factors associated sexualised drug use in the past 12 months among MSM.

	MSM not engaged in sexualised drug use (n=978)		MSM engaged in sexualised drug use (n=670)			Bivariate	Adjusted model†
						OR (95% CI)	aOR (95% CI)
	n or *mean*	% or *SD*	n or *mean*	% or *SD*	Row %		
Sexuality							
Homosexual	824	84%	587	88%	42%	ref.	
Bisexual	108	11%	44	7%	29%	0.57 (0.40, 0.83)	
Queer	24	2%	26	4%	52%	1.52 (0.86, 2.68)	
Age group							
18-24	359	37%	174	26%	33%	ref.	ref.
25-34	403	41%	240	36%	37%	1.23 (0.97, 1.56)	1.07 (0.80, 1.43)
35-49	171	17%	186	28%	52%	2.24 (1.70, 2.96)	2.44 (1.75, 3.41)
>=50	44	4%	68	10%	61%	3.19 (2.10, 4.85)	3.73 (2.25, 6.18)
Ethnicity							
White	934	96%	637	95%	41%	ref.	
Person of colour	42	4%	32	5%	43%	1.12 (0.70, 1.79)	
Country of Birth							
UK	855	87%	577	86%	40%	ref.	
Not UK	106	11%	76	11%	42%	1.06 (0.78, 1.45)	
Education							
University or higher	578	59%	401	60%	41%	ref.	
Qualifications at 18	290	30%	176	26%	38%	0.88 (0.70, 1.10)	
Qualifications at 16 or lower	87	9%	75	11%	46%	1.24 (0.89, 1.74)	
Work Status							
Full time	615	63%	426	64%	41%	ref.	
Part time	69	7%	44	7%	39%	0.92 (0.62, 1.37)	
Student	185	19%	79	12%	30%	0.62 (0.46, 0.83)	
Unemployed	35	4%	24	4%	41%	0.99 (0.58, 1.69)	
Other (sick leave, retired, carer)	70	7%	91	14%	57%	1.88 (1.34, 2.62)	
Relationship status							
Living with partner	355	36%	232	35%	40%	ref.	
Relationship not living with partner	197	20%	120	18%	38%	0.93 (0.70, 1.23)	
Relationship with multiple	17	2%	18	3%	51%	1.62 (0.82, 3.21)	
Single	408	42%	299	45%	42%	1.12 (0.90, 1.40)	
Population density per hectare							
<5	225	23%	136	20%	38%	ref.	
5 - 20	219	22%	127	19%	37%	0.96 (0.71, 1.30)	
20 - 41	233	24%	166	25%	42%	1.18 (0.88, 1.58)	
>41	287	29%	236	35%	45%	1.36 (1.04, 1.79)	
Internalized homophobia							
Low	616	63%	444	66%	42%	ref.	
High	354	36%	213	32%	38%	0.84 (0.68, 1.03)	
Discrimination sexuality							
None	534	55%	340	51%	39%	ref.	
Any setting	414	42%	297	44%	42%	1.13 (0.92, 1.38)	
Perceived health							

Fair/good/very good	877	90%	580	87%	40%	ref.	ref.
Very poor/poor	101	10%	90	13%	47%	1.35 (1.00, 1.82)	1.54 (1.04, 2.28)
Psychological distress							
Normal	206	21%	153	23%	43%	ref.	
Moderate	220	22%	154	23%	41%	0.94 (0.70, 1.26)	
High	267	27%	152	23%	36%	0.77 (0.57, 1.02)	
Very high	275	28%	203	30%	42%	0.99 (0.75, 1.31)	
Diagnosed STI in the past 12 months							
None	903	92%	511	76%	36%	ref.	ref.
STI diagnosis	42	4%	135	20%	76%	5.68 (3.95, 8.17)	2.58 (1.67, 4.00)
Not stated	33	3%	24	4%	42%	1.29 (0.75, 2.20)	1.41 (0.74, 2.66)
Attended GUM in the past 12 months							
No	594	61%	199	30%	25%	ref.	ref.
Yes	368	38%	457	68%	55%	3.71 (3.00, 4.58)	2.48 (1.91, 3.23)
Not sure	9	1%	9	1%	50%	2.99 (1.17, 7.62)	3.62 (1.14, 11.53)
No. of men anal intercourse in the past 12 months							
0-1	622	63%	182	27%	23%	ref.	
2-5	261	27%	190	28%	42%	2.49 (1.94, 3.19)	
6-10	52	5%	126	19%	71%	8.28 (5.76, 11.90)	
>10	40	4%	171	26%	81%	14.61 (9.97, 21.40)	
No. of men without a condom anal intercourse in the past 12 months							
0-1	811	83%	362	54%	31%	ref.	ref.
2-5	137	14%	170	25%	55%	2.79 (2.16, 3.60)	1.84 (1.36, 2.49)
6-10	17	2%	63	9%	79%	8.33 (4.80, 14.43)	4.13 (2.27, 7.52)
>10	7	1%	74	11%	91%	23.75 (10.83, 52.06)	8.34 (3.63, 19.15)
Sexual contact without consent in the past 12 months							
No	925	95%	595	89%	39%	ref.	
Yes	37	4%	41	6%	53%	1.72 (1.09, 2.72)	
Unsure	12	1%	24	4%	67%	3.11 (1.54, 6.26)	
HIV status							
Negative	807	83%	496	74%	38%	ref.	
Negative, on PrEP	28	3%	71	11%	72%	4.12 (2.63, 6.48)	
Positive	19	2%	55	8%	74%	4.71 (2.76, 8.03)	
Don't know	124	13%	48	7%	28%	0.63 (0.44, 0.90)	
Sexual self-efficacy							
High	934	96%	615	92%	40%	ref.	
Low	34	3%	44	7%	56%	2.03 (1.28, 3.22)	
Taken image or performance enhancing drugs in the past 12 months							
No	959	98%	629	94%	40%	ref.	ref.
Yes	19	2%	36	5%	65%	2.89 (1.64, 5.08)	3.88 (1.89, 7.96)
Body dissatisfaction	*42.0*	*11.8*	*41.3*	*12.7*		*1.00 (0.99, 1.00)*	
Loneliness score	*5.5*	*1.8*	*5.5*	*1.8*		*1.01 (0.96, 1.07)*	
Satisfaction with life	*20.6*	*7.1*	*19.6*	*7.6*		*0.98 (0.97, 1.00)*	*0.97 (0.95, 0.99)*
Sexual satisfaction	*40.6*	*9.2*	*42.5*	*8.7*		*1.02 (1.01, 1.04)*	*1.03 (1.02, 1.05)*

† Factors included in the multivariable model: Sexuality, Age group, Work status, Population density per hectre, Internalised homophobia, Poor health, Diagnosed STI in the past 12 months, Attended GUM in the past 12 months, No. of men without a condom anal intercourse in the past 12 months, sexual contact without consent in the past 12 months, HIV status, Sexual self-efficacy, Taken image or performance enhancing drug use in the past 12 months, Satisfaction with life.

Around three quarters (74%) of the sample had engaged in any type of sexualised drug use or sex under the influence of alcohol. Figure 9 compares motivations for and effects of engaging in chemsex, other sexualised drug use, and sex under the influence of alcohol in the past 12 months. Chi-square analyses showed MSM engaging in chemsex were more likely to do so because it gave them a more intense sexual experience, allowed them to have sex for longer, were more likely to have sex without a condom, and do things they would not do sober, compared to other sexualised drug use and those having sex under the influence of alcohol. MSM engaging in chemsex were also more likely to report engagement was having a negative impact on their life and were doing so because of pressure from friends.

Due to the association between PrEP and sexualised drug use and chemsex at the bivariate level but not in multivariable analyses, event-level analyses regarding condom use under the influence of specific drugs by current PrEP use were conducted and can be seen in Table 9. Participants taking PrEP were more likely to have taken cocaine, crystal methampetamine, esctacy, GHB/GBL, mephedrone, poppers and EDDs, and were more likely to report having had sex under the influence of alcohol and cannabis, and more likely to have taken cocaine, GHB/GBL, mephedrone, and poppers immediately before or during sex. Among those participants who had engaged in anal intercourse under the influence of alcohol or cannabis, those who engaged in condomless anal intercourse were more likely to be taking PrEP. Additionally, among those who had taken poppers or EDDs immediately before or during anal intercourse, those who engaged in condomless anal intercourse were also statistically more likely to be taking PrEP.

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2019). Psychosocial and sexual characteristics associated with sexualised drug use and chemsex among men who have sex with men (MSM) in the UK. *Sexually transmitted infections*; *95,* 342-250.

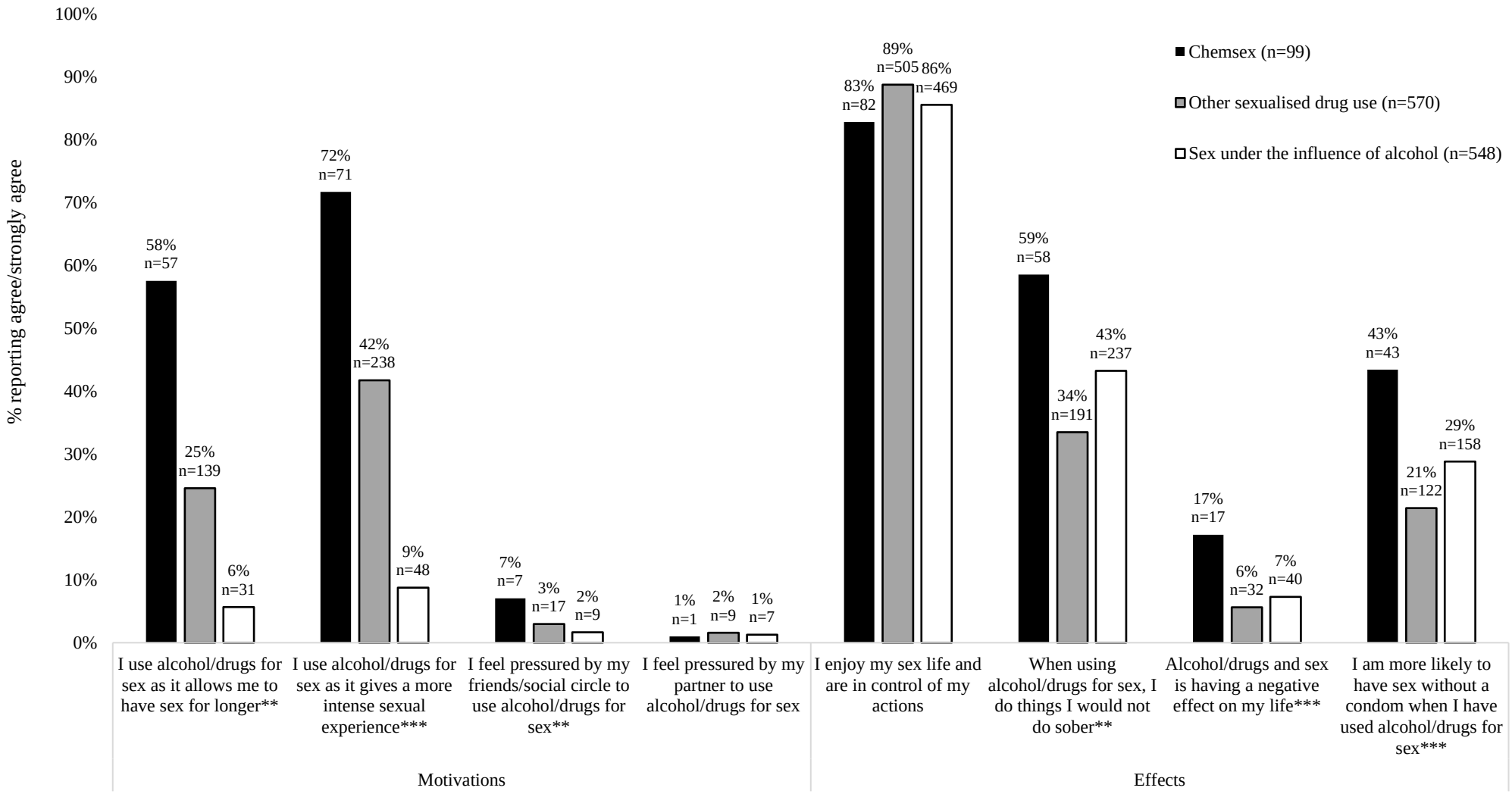
Table 8. Bivariate and multivariable analyses for factors associated with engaging in chemsex in the past 12 months compated to other sexualised drug use among MSM.

						Bivariate	Adjusted model†
	MSM engaged in other sexualised drug use (n=570)		MSM engaged in chemsex (n=99)			OR (95% CI)	aOR (95% CI)
	n or *mean*	% or *SD*	n or *mean*	% or *SD*	Row %		
Sexuality							
Homosexual	497	87%	90	91%	15%	ref.	
Bisexual	40	7%	4	4%	9%	0.55 (0.19, 1.58)	
Queer	23	4%	3	3%	12%	0.72 (0.21, 2.45)	
Age group							
18-24	154	27%	20	20%	11%	ref.	
25-34	198	35%	42	42%	18%	1.63 (0.92, 2.90)	
35-49	152	27%	34	34%	18%	1.72 (0.95, 3.13)	
>=50	65	11%	3	3%	4%	0.36 (0.10, 1.24)	
Ethnicity							
White	548	96%	89	90%	14%	ref.	
Person of colour	22	4%	10	10%	31%	2.80 (1.28, 6.11)	
Country of Birth							
UK	497	87%	80	81%	14%	ref.	ref.
Not UK	57	10%	19	19%	25%	2.07 (1.17, 3.66)	1.98 (1.04, 3.80)
Education							
University or higher	337	59%	64	65%	16%	ref.	
Qualifications at 18	154	27%	22	22%	13%	0.75 (0.45, 1.27)	
Qualifications at 16 or lower	63	11%	12	11%	16%	1.00 (0.51, 1.97)	
Work Status							
Full time	356	62%	70	71%	16%	ref.	
Part time	38	7%	6	6%	14%	0.80 (0.33, 1.97)	
Student	73	13%	6	6%	8%	0.42 (0.18, 1.00)	
Unemployed	20	4%	4	4%	17%	1.02 (0.34, 3.07)	
Other (sick leave, retired, carer)	78	14%	13	13%	14%	0.85 (0.45, 1.61)	
Relationship status							
Living with partner	202	35%	31	31%	13%	ref.	
Relationship not living with partner	105	18%	15	15%	13%	0.93 (0.48, 1.80)	
Relationship with multiple	14	2%	4	4%	22%	1.85 (0.57, 6.00)	
Single	250	44%	49	49%	16%	1.27 (0.78, 2.07)	
Population density per hectre							
<5	126	22%	10	10%	7%	ref.	ref.
5 - 20	120	21%	7	7%	6%	0.74 (0.27, 1.99)	0.60 (0.21, 1.73)
20 - 41	139	24%	27	27%	16%	2.45 (1.14, 5.26)	1.90 (0.84, 4.31)
>41	181	32%	55	56%	23%	3.83 (1.88, 7.80)	2.70 (1.27, 5.76)
Internalized homophobia							
Low	373	65%	71	72%	16%	ref.	
High	189	33%	24	24%	11%	0.67 (0.41, 1.09)	
Discrimination sexuality							
None	294	52%	46	46%	14%	ref.	
Any setting	248	44%	49	49%	16%	1.26 (0.82, 1.95)	

Perceived health							
Fair/good/very good	499	88%	81	82%	14%	ref.	
Very poor/poor	72	13%	18	18%	20%	1.54 (0.87, 2.72)	
Psychological distress							
Normal	130	23%	23	23%	15%	ref.	
Moderate	131	23%	23	23%	15%	0.99 (0.53, 1.86)	
High	133	23%	19	19%	13%	0.81 (0.42, 1.55)	
Very high	172	30%	31	31%	15%	1.02 (0.57, 1.83)	
Diagnosed STI in the past 12 months							
None	448	79%	63	64%	12%	ref.	
STI diagnosis	99	17%	36	36%	27%	2.59 (1.63, 4.12)	
Not stated	24	4%	0	0%	0%	-	
Attended GUM in the past 12 months							
No	186	33%	13	13%	7%	ref.	
Yes	374	65%	83	84%	18%	3.18 (1.72, 5.85)	
Not sure	7	1%	2	2%	22%	4.09 (0.77, 21.70)	
No. of men anal intercourse in the past 12 months							
0-1	175	31%	7	7%	4%	ref.	
2-5	171	30%	19	19%	10%	2.78 (1.14, 6.78)	
6-10	105	18%	21	21%	17%	5.00 (2.06, 12.16)	
>10	119	21%	52	53%	30%	10.92 (4.80, 24.87)	
No. of men without a condom anal intercourse in the past 12 months							
0-1	338	59%	23	23%	6%	ref.	ref.
2-5	143	25%	27	27%	16%	2.78 (1.54, 5.00)	2.17 (0.86, 5.46)
6-10	49	9%	14	14%	22%	4.20 (2.03, 8.70)	4.09 (1.63, 10.29)
>10	39	7%	35	35%	47%	13.19 (7.08, 24.56)	7.93 (3.41, 18.47)
Sexual contact without consent in the past 12 months							
No	512	90%	83	84%	14%	ref.	
Yes	34	6%	7	7%	17%	1.27 (0.55, 2.96)	
Unsure	15	3%	9	9%	38%	3.70 (1.57, 8.73)	
HIV status							
Negative	443	78%	53	54%	11%	ref.	
Negative, on PrEP	50	9%	21	21%	30%	3.51 (1.96, 6.29)	
Positive	35	6%	20	20%	36%	4.78 (2.57, 8.87)	
Don't know	43	8%	5	5%	10%	0.97 (0.37, 2.56)	
Sexual self-efficacy							
High	538	94%	77	78%	13%	ref.	ref.
Low	25	4%	19	19%	43%	5.31 (2.79, 10.10)	4.43 (2.14, 9.22)
Taken image or performance enhancing drugs in the past 12 months							
No	538	94%	91	92%	14%	ref.	
Yes	30	5%	6	6%	17%	1.18 (0.48, 2.92)	
Body dissatisfaction	*41.0*	*12.6*	*42.9*	*13.1*		*1.01 (1.00, 1.03)*	
Loneliness score	*5.5*	*1.8*	*5.5*	*1.7*		*1.00 (0.89, 1.13)*	
Satisfaction with life	*19.7*	*7.7*	*19*	*7.1*		*0.99 (0.96, 1.02)*	
Sexual satisfaction	*42.3*	*8.9*	*43.6*	*7.5*		*1.02 (0.99, 1.04)*	

† Factors included in the multivariable model: Age group, Ethnicity, Country of birth, Work status, Population density per hectre, Diagnosed STI in the past 12 months, Attended GUM in the past 12 months, No. of men without a condom anal intercourse in the past 12 months, sexual contact without consent in the past 12 months, HIV status, Sexual self-efficacy.

Figure 9. Comparing motivations for engagement and effect of chemsex, other sexualised drug use, and sex under the influence of alcohol among MSM.



*p<0.05
**p<0.01
***p<0.001

Table 9. Drug use, sexualised drug use and event-level condom use under the influence of drugs by PrEP use among MSM.

	Current PrEP use			
	No (n=1,473)		Yes (n=99)	
	n	%	n	%
Alcohol				
Taken	1388	94%	91	92%
Had sex under the influence of***	960	69%	80	88%
*Of those who had anal intercourse***				
Condom used	230	29%	8	11%
CAI	577	71%	68	89%
Cannabis				
Taken	439	30%	29	29%
Had sex under the influence of*	191	44%	19	67%
*Of those who had anal intercourse**				
Condom used	52	33%	1	6%
CAI	106	67%	15	94%
Cocaine				
Taken*	301	20%	31	31%
Taken immediately before or during sex*	122	41%	20	65%
Of those that had anal intercourse				
Condom used	23	21%	2	11%
CAI	88	79%	17	89%
Crystal meth				
Taken***	18	1%	13	13%
Taken immediately before or during sex	13	72%	11	85%
Of those that had anal intercourse				
Condom used	1	8%	0	0%
CAI	11	92%	11	100%
Ecstasy				
Taken**	176	12%	21	21%
Taken immediately before or during sex	46	26%	9	43%
Of those that had anal intercourse				
Condom used	8	21%	2	22%
CAI	30	79%	7	78%
GHB/GBL				
Taken***	37	3%	17	17%
Taken immediately before or during sex*	25	68%	16	94%
Of those that had anal intercourse				
Condom used	6	26%	0	0%
CAI	17	74%	16	100%
Mephedrone				
Taken***	55	4%	17	17%
Taken immediately before or during sex*	29	53%	14	82%
Of those that had anal intercourse				
Condom used	4	15%	0	0%
CAI	22	85%	14	100%
Poppers				
Taken***	460	31%	61	62%
Taken immediately before or during sex*	366	80%	56	92%
*Of those that had anal intercourse****				
Condom used	109	33%	4	7%
CAI	226	67%	51	93%
EDD				
Taken***	161	11%	32	32%
Taken immediately before or during sex	147	91%	31	97%
*Of those that had anal intercourse****				
Condom used	43	31%	0	0%
CAI	95	69%	31	100%

Taken percentage is of total taking/not taking PrEP. Had sex under the influence of/taken immediately before or during sex percentage is of those who reported taking the substance. Condom use/CAI (condomless anal intercourse) percentage is of those who reported sex under the influence or taken immediately before or during sex, excluding those that did not report anal intercourse.
Fisher's Exact test used where cells <=5
*p<0.05
**p<0.01
***p<0.001

Hibbert, M. P., Brett, C. E., Porcellato, L. A., & Hope, V. D. (2020). STI diagnoses, sexualised drug use and associations with PrEP use among men who have sex with men in the UK. *International Journal of STDS & AIDS*, 31(3), 254-263.

Drug use and sexualised drug use among WSW

Over half of the 1,507 WSW identified as homosexual/gay/lesbian (56%), 97% were of white ethnicity, and 29% were single/not in a relationship (Table 5). The median age was 27 years (IQR=22-34, range 18-71) and two thirds (n=994/1484) reported high or very high levels of psychological distress. Seven percent (n=101/1481) of WSW reported sexual contact without consent in the past 12 months, the majority of whom identified as bisexual (n=57/101, 56%).

The majority of WSW had drank alcohol in the past 12 months (94%), and 67% of these (63% of total sample) had engaged in sex under the influence of alcohol (Table 6). Because no WSW reported taking crystal methamphetamine, it was not included in the chemsex drug group. Overall, 39% of WSW reported taking a drug in the last 12 months, 45% of these (17% of the total sample) reported engaging in sexualised drug use. Women reporting sexualised drug use were more likely to report having sex with both men and women compared to women only (25% vs. 11%, $p<0.001$). The drug most commonly taken generally and sexually was cannabis (33% and 14% respectively). Over one-quarter of cocaine users and one-fifth of ecstacy users reported taking the drug just before or during sex. The most commonly used drug associated with chemsex was ketamine (3%), followed by mephedrone (0.5%), and GHB/GBL (0.2%). Of those who had taken a chemsex related drug, 21% reported taking that drug just before or during sex. Of the nine WSW who reported sexualised use of a chemsex related drug, seven reported having sex with both men and women.

Table 10 displays the bivariate and multivariable analyses for the psychosocial and sexual factors associated with engaging in drug use compared to no drug use. Four out of the five heterosexual identifying WSW reported engaging in sexualised drug use; however, due to the small number of WSW identifying as heterosexual, they were not included in the analyses. One WSW did not disclose a sexual orientation and was not included in the analyses. Due to the strong correlation between psychological wellbeing measures (psychological disress and satisfaction with life; $r=-0.60$, $p<0.001$), only psychological distress was included in the multivariable analyses due to this measuring recent feelings of distress (past 30 days). The factors associated with engaging in drug use with the highest odds ratios were having greater than or equal to five female sexual partners in the past 12 months and experiencing sexual contact without consent in the past 12 months. Other factors associated with engaging in drug

Hibbert, M. P., Porcellato, L. A., Brett, C. E., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT Sex and Lifestyles Survey. *International Journal of Drug Policy*, 74, 292-298.

Table 10. Bivariate and multivariable analysis for factors associated with drug use in the past 12 months among WSW.

	No drugs taken (n=918)		Taken drugs (n=583)			Bivariate	Adjusted model†
	n or *mean*	% or *SD*	n or *mean*	% or *SD*	Row %	OR (95% CI)	aOR (95% CI)
Sexuality							
Lesbian/homosexual	550	60%	297	51%	35%	ref.	ref.
Bisexual	276	30%	217	37%	44%	1.46 (1.16, 1.83)	1.19 (0.91, 1.55)
Queer	35	4%	45	8%	56%	2.38 (1.50, 3.79)	1.87 (1.08, 3.24)
In another way	57	6%	24	4%	30%	0.78 (0.47, 1.28)	0.60 (0.33, 1.07)
Age	*30.6*	*10.0*	*26.4*	*7.8*		*0.95 (0.94, 0.96)*	*0.96 (0.95, 0.98)*
Ethnicity							
White	897	98%	560	96%	38%	ref.	
Person of colour	20	2%	23	4%	53%	1.84 (1.00, 3.39)	
Country of Birth							
UK	829	90%	509	87%	38%	ref.	ref.
Not UK	67	7%	61	10%	48%	1.48 (1.03, 2.13)	1.88 (1.24, 2.85)
Education							
University or higher	517	56%	298	51%	37%	ref.	
Qualifications at 18	280	31%	226	39%	45%	1.40 (1.12, 1.76)	
Qualifications at 16 or lower	96	10%	50	9%	34%	0.90 (0.62, 1.31)	
Work Status							
Full time	526	57%	249	43%	32%	ref.	
Part time	108	12%	67	11%	38%	1.31 (0.93, 1.84)	
Student	152	17%	181	31%	54%	2.52 (1.93, 3.27)	
Unemployed	23	3%	16	3%	41%	1.47 (0.76, 2.83)	
Other (sick leave, retired, carer)	96	10%	66	11%	41%	1.45 (1.03, 2.06)	
Relationship status							
Living with partner	433	47%	193	33%	31%	ref.	
Relationship not living with partner	228	25%	170	29%	43%	1.67 (1.29, 2.17)	
Relationship with multiple	25	3%	19	3%	43%	1.71 (0.92, 3.17)	
Single	231	25%	201	34%	47%	1.95 (1.51, 2.52)	
Population density per hectare							
<5	244	27%	142	25%	37%	ref.	
5 - 20	283	31%	150	26%	35%	0.91 (0.68, 1.21)	
20 - 41	220	24%	145	25%	40%	1.13 (0.84, 1.52)	
>41	162	18%	140	24%	46%	1.49 (1.09, 2.02)	
Internalized homophobia							
Low	636	69%	355	61%	36%	ref.	
High	259	28%	221	38%	46%	1.53 (1.23, 1.91)	
Discrimination sexuality in the past 12 months							
None	486	53%	273	47%	36%	ref.	
Any setting	406	44%	288	49%	41%	1.26 (1.02, 1.56)	
Sexual contact without consent in the past 12 months							
No	861	94%	488	84%	36%	ref.	ref.
Yes	31	3%	70	12%	69%	3.98 (2.57, 6.17)	2.51 (1.51, 4.16)
Unsure	14	2%	17	3%	55%	2.14 (1.05, 4.38)	1.61 (0.64, 3.81)

Hibbert, M. P., Porcellato, L. A., Brett, C. E., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT Sex and Lifestyles Survey. *International Journal of Drug Policy*, 74, 292-298.

Number of women sexual partners in the past 12 months							
0-1	774	85%	415	71%	35%	ref.	ref.
2-4	129	14%	136	23%	51%	1.97 (1.50, 2.57)	1.76 (1.30, 2.38)
>=5	13	1%	32	5%	71%	4.59 (2.38, 8.84)	4.05 (1.93, 8.52)
Diagnosed STI in the past 12 months							
None	878	96%	556	95%	38%	ref.	
STI diagnosis	7	0.7%	13	2%	65%	2.93 (1.16, 7.40)	
Not stated	33	4%	14	2%	30%	0.67 (0.36, 1.26)	
Attended GUM in the past 12 months							
No	778	85%	411	70%	35%	ref.	
Yes	132	14%	160	27%	55%	2.29 (1.77, 2.98)	
Not sure	6	0.6%	6	7%	50%	1.89 (0.61, 5.91)	
Perceived health							
Fair/good/very good	779	85%	462	79%	37%	ref.	
Very poor/poor	139	15%	121	21%	47%	1.47 (1.12, 1.92)	
Psychological distress							
Normal	149	16%	48	8%	24%	ref.	ref.
Moderate	200	22%	93	16%	32%	1.44 (0.96, 2.17)	1.13 (0.72, 1.78)
High	226	25%	145	25%	39%	1.99 (1.35, 2.93)	1.61 (1.04, 2.49)
Very high	334	36%	289	50%	46%	2.69 (1.87, 3.86)	1.68 (1.10, 2.56)
Body dissatisfaction	*41.3*	*13.3*	*43.9*	*12.1*		*1.02 (1.01, 1.02)*	
Loneliness score	*5.3*	*1.7*	*5.8*	*1.8*		*1.20 (1.13, 1.28)*	
Satisfaction with life	*21.3*	*7.2*	*19.4*	*7.4*		*0.97 (0.95, 0.98)*	

† Factors included in the multivariable model: Sexuality, Age group, Ethnicity, Country of birth, Education, Work status, Relationship status, Population density per hectre, Internalised homophobia, Sexual contact without consent in the past 12 months, No. of women sexual partners in the past 12 months, Diagnosed STI in the past 12 months, Attended GUM in the past 12 months, Perceived health, Psychological distress, Body dissatisfaction.

Hibbert, M. P., Porcellato, L. A., Brett, C. E., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT Sex and Lifestyles Survey. *International Journal of Drug Policy*, 74, 292-298.

use were identifying as queer, having a country of birth outside of the UK, having 2-4 women sexual partners in the past 12 months, and having high or very high levels of psychological distress. Older age was associated with a decreasing liklihood of reported drug use.

These analyses were repeated to examine factors associated with sexualised drug use compared to drug use (Table 11). Factors that were associated of sexualised drug use were identifying as bisexual or in another way, having a highest level of education qualifications at age 16 or lower, and having 2 or more sexual partners in the past 12 months. Being single was associated with reduced likelihood of engaging in sexualised drug use.

Figure 10 compares the motivations for and effects of intentional sexualised drug use, sex under the influence of cannabis, and sex under the influence of alcohol. WSW who reported intentional sexualised drug use were more likely to report doing so because it gives an intense sexual experience and allows them to have sex for longer. WSW who reported engaging in sexualised drug use and those who reported engaging in sex under the influence of alcohol were more likely to report doing things they would not do sober.

Hibbert, M. P., Porcellato, L. A., Brett, C. E., & Hope, V. D. (2019). Associations with drug use and sexualised drug use among women who have sex with women (WSW) in the UK: Findings from the LGBT Sex and Lifestyles Survey. *International Journal of Drug Policy*, 74, 292-298.

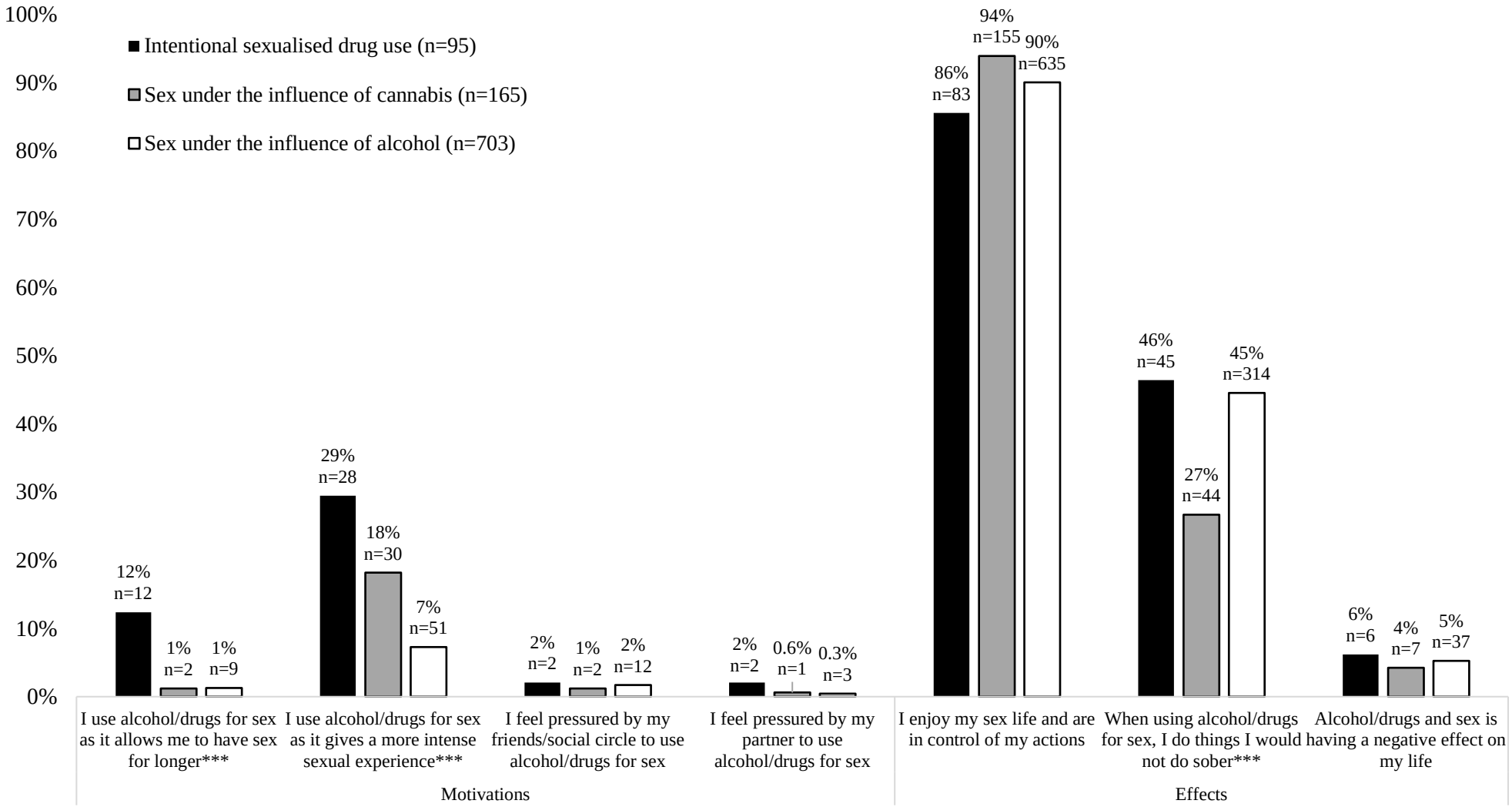
Table 11. Bivariate and multivariable analyses for factors associated with sexualised drug use in the past 12 months compared to drug use among WSW.

	Taken drugs (n=323)		Sexualised drug use (n=260)			Bivariate	Adjusted model†
	n or *mean*	% or *SD*	n or *mean*	% or *SD*	Row %	OR (95% CI)	aOR (95% CI)
Sexuality							
Lesbian/homosexual	188	58%	109	42%	37%	ref.	ref.
Bisexual	101	31%	116	45%	53%	1.98 (1.39, 2.83)	2.30 (1.56, 3.40)
Queer	25	8%	20	8%	44%	1.38 (0.73, 2.60)	1.41 (0.70, 2.83)
In another way	9	3%	15	6%	63%	2.88 (1.22, 6.79)	2.96 (1.16, 7.56)
Age	*26.7*	*8.0*	*25.9*	*7.5*		*0.99 (0.97, 1.01)*	
Ethnicity							
White	311	96%	249	96%	44%	ref.	
Person of colour	12	4%	11	4%	48%	1.15 (0.50, 2.64)	
Country of Birth							
UK	286	89%	223	86%	44%	ref.	
Not UK	30	9%	31	12%	51%	1.33 (0.78, 2.26)	
Education							
University or higher	174	54%	124	48%	42%	ref.	ref.
Qualifications at 18	124	38%	102	39%	45%	1.15 (0.81, 1.64)	0.95 (0.65, 1.39)
Qualifications at 16 or lower	19	6%	31	12%	62%	2.29 (1.24, 4.24)	2.22 (1.11, 4.40)
Work Status							
Full time	149	46%	100	38%	40%	ref.	
Part time	37	11%	30	12%	45%	1.21 (0.70, 2.08)	
Student	99	31%	82	32%	45%	1.23 (0.84, 1.82)	
Unemployed	7	2%	9	3%	56%	1.92 (0.69, 5.31)	
Other (sick leave, retired, carer)	29	9%	37	14%	56%	1.90 (1.10, 3.29)	
Relationship status							
Living with partner	107	33%	86	33%	45%	ref.	ref.
Relationship not living with partner	82	25%	88	34%	52%	1.34 (0.88, 2.02)	0.75 (0.46, 1.20)
Relationship with multiple	6	2%	13	5%	68%	2.70 (0.98, 7.39)	1.00 (0.30, 3.30)
Single	128	40%	73	28%	36%	0.71 (0.47, 1.06)	0.31 (0.18, 0.52)
Population density per hectare							
<5	77	24%	65	25%	46%	ref.	
5 - 20	87	27%	63	24%	42%	0.86 (0.54, 1.36)	
20 - 41	80	25%	65	25%	45%	0.96 (0.61, 1.53)	
>41	77	24%	63	24%	45%	0.97 (0.61, 1.55)	
Internalized homophobia							
Low	197	61%	158	61%	45%	ref.	
High	122	38%	99	38%	45%	1.01 (0.72, 1.42)	
Discrimination sexuality in the past 12 months							
None	158	49%	115	44%	42%	ref.	
Any setting	153	47%	135	52%	47%	1.21 (0.87, 1.69)	
Sexual contact without consent in the past 12 months							
No	280	87%	208	80%	43%	ref.	
Yes	31	10%	39	15%	56%	1.69 (1.02, 2.81)	
Unsure	9	3%	8	3%	47%	1.20 (0.45, 3.15)	
Number of women sexual partners in the past 12 months							
0-1	250	77%	165	63%	40%	ref.	ref.

2-4	61	19%	75	29%	55%	1.86 (1.26, 2.75)	2.14 (1.40, 3.28)
>=5	12	4%	20	8%	63%	2.53 (1.20, 5.30)	2.98 (1.36, 6.54)
Diagnosed STI in the past 12 months							
None	309	96%	247	95%	44%	ref.	
STI diagnosis	5	2%	8	3%	62%	2.00 (0.65, 6.20)	
Not stated	9	3%	5	2%	36%	0.70 (0.23, 2.10)	
Attended GUM in the past 12 months							
No	247	76%	164	63%	40%	ref.	
Yes	70	22%	90	35%	56%	1.94 (1.34, 2.80)	
Not sure	3	1%	3	1%	50%	1.51 (0.30, 7.55)	
Perceived health							
Fair/good/very good	263	81%	199	77%	43%	ref.	
Very poor/poor	60	19%	61	23%	50%	1.34 (0.90, 2.01)	
Psychological distress							
Normal	31	10%	17	7%	35%	ref.	ref.
Moderate	61	19%	32	12%	34%	0.96 (0.46, 1.99)	0.75 (0.35, 1.62)
High	89	28%	56	22%	39%	1.15 (0.58, 2.26)	0.92 (0.45, 1.90)
Very high	135	42%	154	59%	53%	2.08 (1.10, 3.93)	1.51 (0.76, 2.99)
Body dissatisfaction	*42.7*	*12.6*	*45.6*	*11.3*		*1.02 (1.01, 1.03)*	
Loneliness score	*5.7*	*1.8*	*6.0*	*1.8*		*1.10 (1.01, 1.21)*	
Satisfaction with life	*20.0*	*7.4*	*18.7*	*7.3*		*0.97 (0.95, 1.00)*	

† Factors included in the multivariable model: Sexuality, Education, Work status, Relationship status, Sexual contact without consent in the past 12 months, No. of women sexual partners in the past 12 months, Attended GUM in the past 12 months, Psychological distress, Body dissatisfaction.

Figure 10. Comparing motivations for engagement and effect of sexualised drug use, and sex under the influence of cannabis or alcohol among WSW.



*p<0.05
**p<0.01
***p<0.001

Drug use and sexualised drug use among trans people

A minority of trans participants identified as straight/heterosexual (6%) and the majority were of white ethnicity (95%)(Table 5). Median age of trans participants was 24 years (IQR=20-31, range 18-71). Over four fifths (n=398/489, 81%) of trans people reported high or very high levels of psychological distress. One participant reported living with HIV (trans man), and three were currently taking PrEP (trans man, trans woman, and non-binary trans man [self-identified]).

The majority of trans people had drank alcohol in the past 12 months (89%) and 52% of these (47% of total sample) had engaged in sex under the influence of alcohol (Table 6). Overall, 45% of trans people reported taking a drug in the last 12 months, 47% of these (21% of the total sample) reported engaging in sexualised drug use. The drug most commonly taken generally and sexually was cannabis (39% and 17% respectively). Twenty-two percent of participants who had taken either ecstacy or cocaine reported taking the drug immediately before or during sex. The most commonly taken drug associated with chemsex was ketamine (3%), followed by GHB/GBL (0.6%). Of those who had taken a chemsex related drug, 31% reported taking that drug just before or during sex. One participant reported taking crystal methamphetamine and two participants reported taking mephedrone, but did not report taking that drug just before or during sex.

Table 12 displays the bivariate and multivariable analyses for the psychosocial and sexual factors associated with engaging in drug use compared to no drug use. Due to the strong association between the number of male anal intercourse partners and number of condomless male anal intercourse partners in the past 12 months ($p<0.001$) and the small numbers in the condomless category, only the former was included in the multivariable analysis. Psychologcial distress had a borderline association with sexualised drug use, but was not included in the multivariable analysis due to the strong correlation between psychological distress and satisfaction with life scores ($r=-0.53$, $p<0.001$). Factors associated with drug use were younger age, experiencing sexual contact without consent, having 2-4 female sexual partners, and having attended a GUM clinic in the past 12 months.

These analyses were repeated to examine factors associated with sexualised drug use compared to drug use (Table 13). Factors that were associated with sexualised drug use were being a trans person of colour, having 2-4 male anal partners, having attended a GUM in the

past 12 months, and having a poor percieved health. Being single was associated with a reduced likelihood of sexualised drug use.

Figure 11 compares the motivations for and effects of intentional sexualised drug use, sex under the influence of cannabis, and sex under the influence of alcohol. Trans people who engaged in intentional sexualised drug use were more likely to report doing so because it allows them to have sex for longer and it gives a more intense experience, compared to those who engaged in sex under the influence of alcohol or cannabis.

Table 12. Bivariate and multivariable analysis for factors associated with drug use in the past 12 months among trans people.

	No drugs taken (n=274)		Taken drugs (n=222)			Bivariate	Adjusted model†
	n or *mean*	% or *SD*	n or *mean*	% or *SD*	Row %	OR (95% CI)	aOR (95% CI)
Gender							
Trans man	82	30%	63	28%	43%	ref.	
Trans woman	57	21%	31	14%	35%	0.71 (0.41, 1.22)	
Non-binary	121	44%	121	55%	50%	1.30 (0.86, 1.97)	
In another way	14	5%	7	3%	33%	0.65 (0.25, 1.71)	
Sexuality							
Homosexual	55	20%	49	22%	47%	ref.	
Bisexual	63	23%	49	22%	44%	0.87 (0.51, 1.49)	
Heterosexual	17	6%	13	6%	43%	0.86 (0.38, 1.95)	
Queer	62	23%	69	31%	53%	1.25 (0.75, 2.09)	
In another way	76	28%	42	19%	36%	0.62 (0.36, 1.06)	
Age	*28.6*	*10.3*	*25.3*	*8.4*		*0.96 (0.94, 0.98)*	0.97 (0.95, 0.99)
Ethnicity							
White	260	95%	210	95%	45%	ref.	
Person of colour	12	4%	12	5%	50%	1.24 (0.55, 2.81)	
Country of Birth							
UK	247	90%	191	86%	44%	ref.	
Not UK	21	8%	24	11%	53%	1.48 (0.80, 2.74)	
Education							
University or higher	129	47%	83	37%	39%	ref.	
Qualifications at 18	107	39%	115	52%	52%	1.67 (1.14, 2.45)	
Qualifications at 16 or lower	30	11%	20	9%	40%	1.04 (0.55, 1.94)	
Work Status							
Full time	102	37%	61	27%	37%	ref.	
Part time	31	11%	23	10%	43%	1.24 (0.66, 2.32)	
Student	64	23%	74	33%	54%	1.93 (1.22, 3.07)	
Unemployed	23	8%	17	8%	43%	1.24 (0.61, 2.50)	
Other (sick leave, retired, carer)	48	18%	43	19%	47%	1.50 (0.89, 2.52)	
Relationship status							
Living with partner	86	31%	48	22%	36%	ref.	
Relationship not living with partner	65	24%	69	31%	51%	1.90 (1.17, 3.10)	
Relationship with multiple	18	7%	16	7%	47%	1.60 (0.75, 3.41)	
Single	105	38%	89	40%	46%	1.52 (0.97, 2.39)	
Population density per hectre							
<5	81	30%	52	23%	39%	ref.	
5 - 20	66	24%	47	21%	42%	1.12 (0.67, 1.85)	
20 - 41	83	30%	64	29%	44%	1.20 (0.75, 1.94)	
>41	35	13%	53	24%	60%	2.36 (1.36, 4.09)	
Discrimination gender in the past 12 months							
None	72	26%	51	23%	41%	ref.	

Any setting	182	66%	153	69%	46%	1.19 (0.78, 1.80)	
Sexual contact without consent in the past 12 months							
No	248	91%	164	74%	40%	ref.	ref.
Yes	9	3%	41	18%	82%	6.89 (3.26, 14.55)	4.34 (1.98, 9.50)
Unsure	8	3%	7	3%	47%	1.32 (0.47, 3.72)	1.18 (0.39, 3.60)
No. of men anal intercourse in the past 12 months							
0-1	261	95%	194	87%	43%	ref.	
2-4	9	3%	17	8%	65%	2.54 (1.11, 5.82)	
>=5	4	1%	11	5%	73%	3.70 (1.16, 11.79)	
No. of men condomless anal intercourse in the past 12 months							
0-1	56	20%	46	21%	45%	ref.	
2-4	2	1%	9	4%	82%	5.48 (1.13, 26.62)	
>=5	1	0%	4	2%	80%	4.87 (0.53, 45.09)	
Number of women sexual partners in the past 12 months							
0-1	248	91%	173	78%	41%	ref.	ref.
2-4	23	8%	41	18%	64%	2.56 (1.48, 4.41)	2.20 (1.18, 4.07)
>=5	3	1%	8	4%	73%	3.82 (1.00, 14.61)	1.68 (0.39, 7.22)
Diagnosed STI in the past 12 months							
None	265	97%	207	93%	44%	ref.	
STI diagnosis	2	1%	10	5%	83%	6.40 (1.39, 29.53)	
Not stated	7	3%	5	2%	42%	0.91 (0.29, 2.92)	
Attended GUM in the past 12 months							
No	216	79%	137	62%	39%	ref.	ref.
Yes	53	19%	79	36%	60%	2.35 (1.56, 3.54)	1.87 (1.18, 2.97)
Not sure	4	1%	3	1%	43%	1.18 (0.26, 5.36)	1.11 (0.21, 5.91)
Perceived health							
Fair/good/very good	200	73%	155	70%	44%	ref.	
Very poor/poor	74	27%	67	30%	48%	1.17 (0.79, 1.72)	
Psychological distress							
Normal	19	7%	9	4%	32%	ref.	
Moderate	42	15%	21	9%	33%	1.06 (0.41, 2.73)	
High	69	25%	53	24%	43%	1.62 (0.68, 3.87)	
Very high	141	51%	135	61%	49%	2.02 (0.88, 4.62)	
Self-stigma	51.5	7.5	51	8.0		0.99 (0.97, 1.02)	
Body dissatisfaction	42.7	12.1	44.0	12.0		1.01 (0.99, 1.02)	
Loneliness score	6.17	1.7	6.4	1.7		1.07 (0.97, 1.20)	
Satisfaction with life	17.8	7.0	16.6	7.1		0.98 (0.95, 1.00)	

† Factors included in the multivariable model: Sexual orientation, Age, Education, Work status, Relationship status, Population density per hectre, Sexual contact without consent in the past 12 months, No. of men anal intercourse in the past 12 months, Number of women sexual partners in the past 12 months, Diagnosed STI in the past 12 months, Attended GUM in the past 12 months, Satisfaction with life.

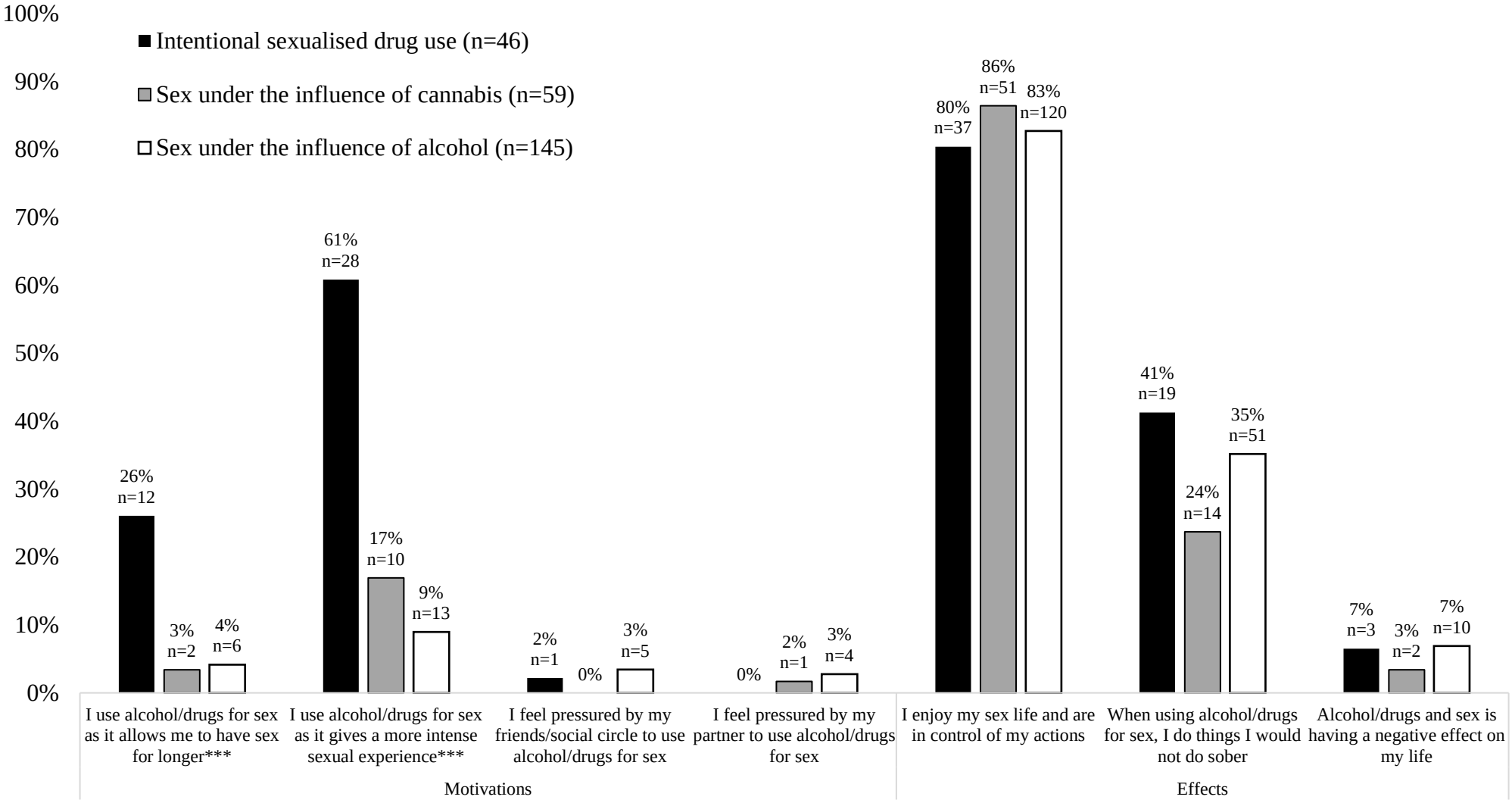
Table 13. Bivariate and multivariable analyses for factors associated with sexualised drug use in the past 12 months compared to drug use among trans people.

	Taken drugs (n=117)		Sexualised drug use (n=105)			Bivariate	Adjusted model†
	n or *mean*	% or *SD*	n or *mean*	% or *SD*	Row %	OR (95% CI)	aOR (95% CI)
Gender							
Trans man	34	29%	29	28%	46%	ref.	
Trans woman	15	13%	16	15%	52%	1.25 (0.53, 2.96)	
Non-binary	67	57%	54	51%	45%	0.95 (0.51, 1.74)	
In another way	1	1%	6	6%	86%	7.03 (0.80, 61.87)	
Sexuality							
Homosexual	30	26%	19	18%	39%	ref.	
Bisexual	21	18%	28	27%	57%	2.11 (0.94, 4.72)	
Heterosexual	7	6%	6	6%	46%	1.35 (0.40, 4.64)	
Queer	32	27%	37	35%	54%	1.83 (0.87, 3.84)	
In another way	27	23%	15	14%	36%	0.88 (0.37, 2.06)	
Age	*24.4*	*7.2*	*26.2*	*9.6*		1.03 (1.00, 1.06)	
Ethnicity							
White	115	98%	95	90%	45%	ref.	ref.
Person of colour	2	2%	10	10%	83%	6.05 (1.30, 28.30)	5.45 (1.03, 28.85)
Country of Birth							
UK	103	88%	88	84%	46%	ref.	
Not UK	10	9%	14	13%	58%	1.64 (0.69, 3.87)	
Education							
University or higher	43	37%	40	38%	48%	ref.	
Qualifications at 18	64	55%	51	49%	44%	0.86 (0.49, 1.51)	
Qualifications at 16 or lower	8	7%	12	11%	60%	1.61 (0.60, 4.35)	
Work Status							
Full time	30	26%	31	30%	51%	ref.	
Part time	12	10%	11	10%	48%	0.89 (0.34, 2.32)	
Student	47	40%	27	26%	36%	0.56 (0.28, 1.11)	
Unemployed	8	7%	9	9%	53%	1.09 (0.37, 3.20)	
Other (sick leave, retired, carer)	18	15%	25	24%	58%	1.34 (0.61, 2.95)	
Relationship status							
Living with partner	19	16%	29	28%	60%	ref.	ref.
Relationship not living with partner	34	29%	35	33%	51%	0.67 (0.32, 1.42)	0.66 (0.29, 1.51)
Relationship with multiple	7	6%	9	9%	56%	0.84 (0.27, 2.65)	0.37 (0.09, 1.48)
Single	57	49%	32	30%	36%	0.37 (0.18, 0.76)	0.29 (0.13, 0.67)
Population density per hectre							
<5	27	23%	25	24%	48%	ref.	
5 - 20	23	20%	24	23%	51%	1.13 (0.51, 2.48)	
20 - 41	42	36%	22	21%	34%	0.57 (0.27, 1.20)	
>41	22	19%	31	30%	58%	1.52 (0.70, 3.29)	
Discrimination gender in the past 12 months							
None	25	21%	26	25%	51%	ref.	

Any setting	80	68%	73	70%	48%	0.88 (0.47, 1.65)	
Sexual contact without consent in the past 12 months							
No	90	77%	74	70%	45%	ref.	
Yes	19	16%	22	21%	54%	1.41 (0.71, 2.80)	
Unsure	4	3%	3	3%	43%	0.91 (0.20, 4.21)	
No. of men anal intercourse in the past 12 months							
0-1	111	95%	83	79%	43%	ref.	ref.
2-4	4	3%	13	12%	76%	4.35 (1.37, 13.81)	7.76 (2.17, 27.70)
>=5	2	2%	9	9%	82%	6.02 (1.27, 28.59)	4.89 (0.91, 26.30)
No. of men condomless anal intercourse in the past 12 months							
0-1	20	17%	26	25%	57%	-	
2-4	0	0%	9	9%	100%	-	
>=5	0	0%	4	4%	100%	-	
Number of women sexual partners in the past 12 months							
0-1	93	79%	80	76%	46%	ref.	
2-4	19	16%	22	21%	54%	1.35 (0.68, 2.66)	
>=5	5	4%	3	3%	38%	0.70 (0.16, 3.01)	
Diagnosed STI in the past 12 months							
None	109	93%	98	93%	47%	ref.	
STI diagnosis	4	3%	6	6%	60%	1.67 (0.46, 6.09)	
Not stated	4	3%	1	1%	20%	0.28 (0.03, 2.53)	
Attended GUM in the past 12 months							
No	85	73%	52	50%	38%	ref.	ref.
Yes	30	26%	49	47%	62%	2.67 (1.51, 4.72)	3.38 (1.73, 6.59)
Not sure	1	1%	2	2%	67%	3.27 (0.29, 36.95)	4.89 (0.91, 26.30)
Perceived health							
Fair/good/very good	88	75%	67	64%	43%	ref.	ref.
Very poor/poor	29	25%	38	36%	57%	1.72 (0.97, 3.07)	2.03 (1.04, 3.95)
Psychological distress							
Normal	4	3%	5	5%	56%	ref.	
Moderate	14	12%	7	7%	33%	0.40 (0.08, 1.98)	
High	32	27%	21	20%	40%	0.53 (0.13, 2.18)	
Very high	65	56%	70	67%	52%	0.86 (0.22, 3.35)	
Self-stigma	*50.5*	*8.2*	*51.6*	*7.7*		1.02 (0.98, 1.06)	
Body dissatisfaction	*43.6*	*11.9*	*44.5*	*12.2*		1.01 (0.98, 1.03)	
Loneliness score	*6.5*	*1.7*	*6.3*	*1.7*		0.94 (0.80, 1.10)	
Satisfaction with life	*16.7*	*6.8*	*16.4*	*7.5*		0.99 (0.96, 1.03)	

† Factors included in the multivariable model: Gender, Sexuality, Age, Ethnicity, Work Status, Relationship status, No. of men anal intercourse in the past 12 months, Attended GUM in the past 12 months, Perceived health.

Figure 11. Comparing motivations for engagement and effect of sexualised drug use, and sex under the influence of cannabis or alcohol among trans people.



*p<0.05
**p<0.01
***p<0.001

Chapter 5: Discussion and reflection on The LGBT+ Sex and Lifestyles Survey

The LGBT+ Sex and Lifestyles Survey aimed to investigate sexualised drug use in the context of chemsex among all LGBT people in the UK, and whilst a higher proportion of MSM reported sexualised drug use and specifically chemsex, around one fifth of both WSW and trans people had engaged in sexualised drug use generally. Chemsex was observed among WSW and trans people as well, albeit at very small proportions. The proportion of participants reporting the use of certain drugs and substances was similar to that from previous literature, such as use of cannabis and poppers were commonly reported among MSM (Office of National Statistics, 2014), and use of cannabis was commonly reported among WSW and trans people (McNeil et al., 2012; Office of National Statistics, 2014).

The survey also aimed to investigate associations between physical and psychological health and sexualised drug use and chemsex. Association analyses for MSM, WSW, and trans people were conducted separately, due to probable differences in psychological and physical health factors, as well as the differences in the proportion of participants reporting sexualised drug use and chemsex across groups. This chapter will discuss the findings among MSM, WSW, and trans people separately, as well as the general strengths and limitations of Study 2, and then providing a conclusion on The LGBT+ Sex and Lifestyles Survey, as well as personal reflections on the study.

Men who have sex with men

The MSM findings provided novel insights into how the relationships with wellbeing and self-efficacy varied between MSM engaging in broader sexualised drug use and those engaging in chemsex. Engaging in sexualised drug use was associated with more condomless anal intercourse with male partners than those who did not engage in sexualised drug use, and engaging in chemsex was associated with more condomless anal intercourse than other types of sexualised drug use. Engaging in sexualised drug use was also associated with the use of image and performance enhancing drugs in the past 12 months, but this difference was not observed when comparing those who engage in chemsex with engaging in other sexualised drug use. This could be due to the inclusion of EDDs in the sexualised drug use category, and impotence is a well documented side effect of taking image and performance enhancing drugs

(Begley, McVeigh, & Hope, 2017). MSM may be subject to additional body image pressures such as from using gay dating apps (Filice, Raffoul, Meyer, & Neiterman, 2019), as well as community pressures relating to sex, status and competition (Pachankis et al., 2020). Therefore, sexual competition and the use of gay dating apps may be more common among MSM engaging in chemsex (Bourne et al., 2014), but further research is needed to understand any possible associations between image and performance enhancing drug use and sexualised drug use.

Similar to previous research, MSM engaging in sexualised drug use were more likely to have engaged in condomless anal intercourse (Bourne et al., 2014; Glynn et al., 2018; Hegazi et al., 2017; Melendez-Torres et al., 2017). Additionally, MSM engaging in sexualised drug use were also more likely to have attended a GUM clinic in the past 12 months and received an STI diagnosis, as previously observed (Druckler et al., 2018; Hegazi et al., 2017; Ottaway, Finnerty, Amlani, et al., 2017). However, when comparing MSM engaging in chemsex with MSM engaging in other types of sexualised drug use, this difference did not hold at the multivariable level, possibly due to the overlap with number of condomless anal intercourse partners.

MSM engaging in chemsex were more likely to be taking PrEP compared to MSM engaging in other forms of sexualised drug use, which is similar to findings in Amsterdam (Druckler et al., 2018), but possibly due to the overlap between taking PrEP and number of condomless anal intercourse partners, this was not significant at the multivariable level. When analysing event-level drug and condom use, MSM taking PrEP and engaging in sex under the influence of alcohol or cannabis, or taking poppers or EDDs immediately before or during sex, were more likely to have condomless anal intercourse. This may be unsurprising given that past condomless anal intercourse and intention to have condomless anal intercourse are criteria for accessing PrEP in England (Girometti et al., 2018). Whilst higher proportions of MSM on PrEP and using chemsex related drugs for sex had condomless anal intercourse (GHB/GBL, crystal methamphetamine, and mephedrone), these findings were not significant, possibly due to the small number of MSM reporting sexualised use of these drugs. Alternatively, these findings may not be significant, because a high proportion of MSM not on PrEP taking chemsex related drugs for sex also engaged in condomless anal intercourse.

Although the stigma of living with HIV has been suggested as motivation for engaging in chemsex (Weatherburn et al., 2017), living with HIV was not significantly associated with sexualised drug use or chemsex once other factors were controlled for. However, this could be due to an association with confounding variables such as condomless anal intercourse, and due to the higher proportion of MSM living with HIV engaging in chemsex, support services for MSM living with HIV need to be aware of the possible impacts of this behaviour. A previous

qualitative study had suggested internalised homophobia and experiences of discrimination as possible reasons for engaging in chemsex (Weatherburn et al., 2017), but this was not observed here.

Engaging in sexualised drug use was associated with lower life satisfaction and poorer perceived health, but there was no significant difference in life satisfaction or perceived health between those engaging in chemsex and those engaging in other types of sexualised drug use. Previous research has mostly focused on the sexual health effects of sexualised drug use and neglected possible psychological associations. It is unclear whether the association between poorer perceived health and sexualised drug use was related to mental, sexual, or physical health. Therefore, a more detailed exploration of this is needed. Additionally, MSM engaging in chemsex were more likely to report their sexualised drug use having a negative impact on their life. The proportion of MSM engaging in chemsex and reporting a negative impact is similar to research in Ireland (Glynn et al., 2018); however, this is the first study to investigate how this differs between chemsex, other forms of sexualised drug use, and sex under the influence of alcohol. Those engaging in sexualised drug use reported greater sexual satisfaction compared to those not engaging in sexualised drug use, but no difference was observed between engaging in chemsex and engaging in other forms of sexualised drug use. Although, MSM engaging in chemsex were more likely to report doing so because of the intense sexual experience and being able to have sex for longer. A higher proportion of MSM who engage in chemsex also reported they were less likely to use a condom compared to MSM engaging in other forms of sexualised drug use. Additionally, those engaging in chemsex had a lower sexual self-efficacy compared to MSM engaging in other forms of sexualised drug use, suggesting MSM engaging in chemsex may have less control over their sexual behaviour when engaging in chemsex. Overall, these findings suggest that the perceived benefits, risks, and possible negative impacts from engaging in sexualised drug use and chemsex are complex, and future research is needed to understand these further.

In the bivariate analyses, MSM engaging in sexualised drug use were more likely to report having experienced or being unsure of having sexual contact without consent in the past 12 months, and when comparing chemsex with other sexualised drug use, MSM engaging in chemsex were more likely to report being unsure of sexual contact without consent. These associations did not remain in the multivariable analyses, possibly due to small numbers reporting recent sexual contact without consent and this being associated with other factors. Despite this, these findings still highlight a possible issue of how consent is affected during

sexualised drug use and chemsex, which has been highlighted by previous qualitative research (Bourne et al., 2015).

These results highlighted how sexualised drug use and chemsex may be associated with the health and wellbeing of MSM and differences in motivations for engaging in these behaviours. Whilst it is encouraging to find that a higher proportion of MSM engaging in sexualised drug use and chemsex were taking PrEP, further research is needed to understand possible associations between PrEP adherence, drug interactions, and possible barriers for MSM engaging in sexualised drug use and chemsex taking PrEP, due to the elevated sexual risk associated with these behaviours. Furthermore, these results should promote awareness among clinicians around the issue of consent and sexualised drug use, and ensure referral pathways and patient safeguarding strategies are in place.

Women who have sex with women

WSW engaging in sexualised drug use had been largely neglected from previous research, and this study found variation in the types of drugs and sexualised drugs used that had not previously been investigated. Sexualised drug use was common among WSW when considering the use of a wide range of drugs in a sexual context and the most commonly reported drug used was cannabis. Higher levels of ecstasy and cocaine use for sex were observed in this sample when compared to research among Australian LBQ women (Mooney-Somers et al., 2018); however, no women in the current research reported taking crystal methamphetamine, regardless of whether it was for sexual purposes. When considering intentional sexualised drug use, reported motivations for engaging in this were similar to those reported among MSM, such as giving an intense sexual experience and having sex for longer, but these motivations were reported at much lower proportions. Similar to previous research, the use of drugs associated with chemsex was reported among WSW (Heinsbroek et al., 2018), and we found evidence that these drugs were sometimes being used in a sexual context among WSW, albeit by a very small proportion (<1%), particularly when compared to MSM.

Overall, 7% of participants reported experiencing sexual contact without consent (sexual assault) and this was associated with drug use. Although, the direction of this relationship is unclear. For example, it could be that drug use is a coping mechanism used by WSW who experience sexual assault. Alternatively, it could be that WSW who engage in drug use are more likely to experience sexual assault, as they may be more vulnerable when under

the influence of drugs. In bivariate analyses, WSW engaging in sexualised drug use were more likely to report experiencing sexual assault compared to those engaging in non-sexualised drug use. However, this was not significant in multivariable analyses, possibly because the majority of women experiencing sexual assault were bisexual, which is similar to previous research (Germanos et al., 2015) and a higher proportion of bisexual women reported sexualised drug use. It is not clear whether the sexual assault related to male or female partners, and due to the sensitive nature of the topic, it is ethically challenging to collect event-level detail regarding sexual assault. A broad measure of sexual assault was used in our study, because diverse populations were being recruited into The LGBT+ Sex and Lifestyles Survey and to avoid a focus on penetrative assault, which limits our exploration of the nature of these assaults. Future research is needed to fully understand this association between drug use and sexual assault, and support services need to be available for WSW who experience sexual assault.

Engaging in drug use was associated with a higher number of recent female sexual partners, and engaging in sexualised drug use was further associated with a higher number of recent female sexual partners. Sexualised drug use was mostly under the influence of cannabis, which reflects previous research among LGB youth that found an association between cannabis use and number of sexual partners (Zhang & Wu, 2017). However, the current research found this association specifically among WSW and when measuring drug use in a sexual context.

Discrimination and internalised homophobia were associated with drug use in bivariate analyses, which is similar to previous research (Lehavot & Simoni, 2011), but possibly due to the association between these issues and psychological distress, this effect was not observed in the multivariable analysis. Discrimination and internalised homophobia were not associated with sexualised drug use among those taking drugs in this study. Further research is needed to understand the influence internalised homophobia may have on influencing drug use behaviour among WSW.

Similar to previous research, identifying as queer was found to be associated with drug use (Germanos et al., 2015). Previous research has also found that bisexual men and women were more likely to engage in drug use (Booker et al., 2017). The current study did not find an association between drug use and identifying as bisexual, but WSW identifying as bisexual were more likely to report sexualised drug use compared to general drug use in the multivariable analysis. Similarly, research has previously found that bisexual women were more likely to have reported sex with a man while under the influence of drugs compared to heterosexual women (Bauer et al., 2010; Estrich et al., 2014). Despite the slightly young age of the sample, probably due to using Facebook for recruitment, being of a younger age was still associated

with drug use among WSW, similar to previous research (Booker et al., 2017). Attending a GUM clinic and being diagnosed with an STI were associated with drug use at the bivariate level, and attending a GUM clinic was also associated with sexualised drug use at the bivariate level. These were not significant at the multivariable level, possibly due to an overlap with other sexual variables. However, sexual health clinics may be able to play a role in future research regarding drug use and sexualised drug use among WSW due to this association, as well as providing a place of support for WSW engaging in drug and sexualised drug use.

These results demonstrated that sexualised drug use does occur among WSW in the UK and this may be associated with a number of potential harms, in addition to drug use more generally. Services that come into contact with WSW (e.g. sexual health clinics, drug services) should be aware of potentially compounding factors like psychological distress and sexual assault that WSW who use drugs and/or engage in sexualised drug use may face.

Trans people

Sexualised drug use and chemsex was observed among trans participants, but to a lesser extent than observed in MSM. Ketamine and GHB/GBL were the only chemsex drugs that had been used for sex and these were used by a minority of trans participants (1%). Just under half of trans participants (45%) reported any drug use in the past 12 months and over one-fifth of participants (21%) reported broader sexualised drug use, of which cannabis was the most commonly reported sexualised drug used. A higher proportion of participants in this study reported drug use compared to the Trans Mental Health Study (45% vs. 24%) (McNeil et al., 2012), but the most commonly reported drugs were similar (i.e. cannabis, poppers, ecstasy). Both studies had a similar number of participants and age distribution; however, the Trans Mental Health Study primarily used word-of-mouth to recruit. Therefore, the difference in reported drug use observed in this study may be due to using Facebook as a recruitment tool, as the recruitment method has been effective previously at representing drug and alcohol users (Bauermeister et al., 2012), as well as sexual history and relationships (Jones et al., 2012), compared to the general population.

The factors associated with drug use among trans people were similar to those associated with drug use among WSW, such as younger age, experiencing sexual assault, and having 2-4 female sexual partners. Younger age has been associated with higher levels of drug use in LGB people in the UK (Booker et al., 2017), but this survey has now observed this among

trans people as well. Similar to WSW, experiencing sexual assault was associated with drug use, but it is unclear whether taking drugs may be a coping mechanism for those who have experienced sexual assault, or whether using drugs may make someone more vulnerable to sexual assault. Sexual violence experienced by trans people has previously been suggested as a determinant of health behaviours (Hendricks & Testa, 2012). Sex work was not measured in this survey, and due to the association between sex work among trans people and drug use (Hoffman, 2014; Reback & Fletcher, 2014), this may also be a contributing factor to experiencing sexual assault and drug use. Future research is needed to understand this potential association further.

Both female sexual partners and male anal intercourse partners were associated with drug use at the bivariate level. Having 2-4 female sexual partners was associated with drug use when controlling for other factors. Greater than or equal to five sexual partners was not associated with drug use, but this may be due to small numbers reporting this, because this category did have a higher proportion of drug use. The reason female partners may be associated with drug use but not male partners, is that only anal intercourse with male partners was measured, thereby not including vaginal sex with male partners. It could be that people who have an increased number of sexual partners are more likely to engage in drug use, regardless of the gender of their partner. Only a quarter of trans participants identified as either heterosexual or homosexual (27%), and future research should account for this by measuring a variety of sexual behaviours.

Having 2-4 male anal intercourse partners was associated with sexualised drug use at the bivariate level and in the multivariable analysis. A high proportion of those who reported greater than or equal to five male anal intercourse partners reported sexualised drug use, but again, this may not have been significant at the multivariable level due to small numbers of participants in this category. A higher number of female sexual partners was not associated with sexualised drug use among trans people, and therefore sexualised drug use may be a more common practice among trans people with male sexual partners. Engaging in drug use and sexualised drug use were both associated with recent attendance at a GUM clinic, and whilst engaging in drug use is not a sexual risk, it is associated with a greater number of sexual partners in this sample. It therefore appears that trans people who are taking greater sexual risks are more likely to attend a GUM clinic.

Similar to MSM, poorer perceived health was associated with sexualised drug use among trans people. It is unclear the direction of this association, for example, it could be that those who have poorer health are then more likely to engage in sexualised drug use.

Alternatively, it could be that sexual drug use has an impact on a person's perceived health, due to its associations with sexual health and psychological factors, as well as the possible negative effects of drug use such as addiction. Despite the small proportion of people of colour recruited, being a trans person of colour was associated with sexualised drug use. Being single was associated with a reduced likelihood of engaging in sexualised drug use and therefore may be more common among trans people in relationships, although it is unclear about participants' relationship status at the time of engaging in sexualised drug use and further research would be needed to confirm this. Only one participant who engaged in sex under the influence of cannabis and no participants who engaged in sexualised drug use reported doing so because of pressure from their partner, suggesting it is mostly a consensual act within relationships. Similar motivations for engaging in intentional sexualised drug use were reported as among MSM and WSW, such as to give a more intense sexual experience and to have sex for longer, although the proportion of MSM and trans people reporting these motivations was much higher. This may be reflective of different types of sexual intercourse between MSM, WSW, and trans people that could influence these motivations for sexualised drug use more than other types of intercourse. Alternatively, this could be explained by partner type and social norms within these subcategories of LGBT people.

Poorer life satisfaction and psychological distress was associated with drug use at the bivariate level, but satisfaction with life was not significant in the multivariable analyses. No other psychological or social factors such as self-stigma, body dissatisfaction, or experiences of discrimination were associated with drug use or sexualised drug use. Therefore, it appears that these trans specific stress factors, as adapted from the Minority Stress Model (Hendricks & Testa, 2012), may not influence these specific behaviours.

Similar to the WSW findings, this research found that sexualised drug use is observed among trans people in the UK, and that both drug use and sexualised drug use may have a number of associated harms. Whilst the causal direction of these relationships between drug use and specific harms is unknown, it is positive that trans people who use drugs and those who engage in sexualised drug use are more likely to attend a sexual health clinic than those who do not. This provides an opportunity for not only sexual health care, but referrals for further support if needed.

Strengths and limitations

The use of community organisations and the PPI group not only helped aid recruitment of certain groups of participants (i.e. trans people), but improved the research so that it speaks with LGBT people and not at/for LGBT people. Facebook advertising enabled a large sample size to be obtained in a short time period. Although an attempt was made to measure whether participants were recruited from Facebook advertising or community organisations, this was deemed invalid due to reporting of recruitment methods that had not yet been initiated. However, it is assumed that Facebook advertising was responsible for the majority of the sample, as the majority of participants were recruited as the adverts were running. Additionally, based on the recruitment log (Appendix 5), the community organisation social media posts tended to have little engagement in comparison to paid advertising. Although answers to the recruitment question appeared to be invalid, it is likely to be due to a lack of understanding among the public regarding how Facebook advertising works and assuming the advert was from a community organisation, rather than a piece of research from a university.

Whilst Facebook was a great tool for achieving the sample size, it may also reflect some biases observed in the sample. Participants were relatively young and majority white ethnicity compared to the general population. Additionally, very few heterosexual-identifying MSM and WSW were recruited. Despite the slightly skewed age range, age still appeared to be associated with drug use or sexualised drug use behaviour among MSM, WSW, and trans people. Representation from LGBT people of colour has been noted as an issue in other UK-based LGBT research (McNeil et al., 2012). Although a higher proportion of WSW of colour engaged in drug use, this was not significant, possibly due to the overlap with country of birth and the small number of people of colour recruited. Despite the small proportion of participants who were people of colour, being a person of colour was still associated with chemsex among MSM at the bivariate level and sexualised drug use among trans people at the multivariable level. It could be that LGBT people of colour are less likely to engage in LGBT content on Facebook, and were therefore less likely to be shown the adverts, or that LGBT people of colour were less likely to engage with the adverts. Future research should aim to be more reflective of LGBT people of colour to investigate this further and to reflect the lives and experiences of all LGBT people by utilising organisations specific for LGBT people of colour.

The sample who completed the survey differed to the sample who did not on a number of demographic characteristics (gender, sexuality, education, and relationship status), but whether this influenced how representative this survey is of LGBT people is unknown, because

of a lack of inclusion of LGBT people in UK national data collection. Additionally, targeted Facebook ads for MSM were ran in Brighton, London, and Manchester to aid the recruitment of MSM engaging in chemsex. Although this may have biased the prevalence of MSM engaging in chemsex in this study, the aim of this research was not to find an accurate prevalence rate for MSM engaging in chemsex, but to find psychosocial and sexual factors associated with the behaviour. It may be that there are common factors related to MSM in these locations and those who engage in chemsex, but controlling for population density hopefully negated some of these differences.

Heterosexual identifying WSW and MSM were excluded from analyses due to small numbers. However, previous research has found heterosexual identifying WSW were more likely to engage in drug use and sexualised drug use (Bauer et al., 2010). Additionally, internalised homophobia has been suggested as a reason for engaging in chemsex among MSM (Weatherburn et al., 2017), and although not observed in this sample, that may be because of the small number of heterosexual identifying MSM recruited. The small number of MSM and WSW identifying as heterosexual is probably reflective of using Facebook advertising for recruitment, as people had to engage with LGBT content on Facebook to be shown the advert, which heterosexual identifying MSM and WSW may be less likely to do. Future studies should consider the use of other recruitment approaches to reach more heterosexual identifying MSM and WSW. Due to their focus on collecting sexual history rather than identity, sexual health clinics may be more appropriate venues for recruiting heterosexual identifying MSM and WSW.

There were difficulties in creating a fully inclusive LGBT survey regarding sexual behaviour. Whilst event-level data was collected among MSM in regards to condom use, event-level data among WSW and the majority of trans people was not, due to a lack of previous research on which to base any event-level assumptions. This data would have been able to give more context for sexualised drug use among these populations, as gender of partner and sexual behaviour will influence sexual health needs. Despite this, novel findings regarding sexualised drug use among trans people and WSW were observed, and future research specific to each population group would be able to collect more event-level details of sexualised drug use.

Online surveys are a useful tool for recruitment, but this method meant a reliance on self-report measures, and though where possible standardised tools and questions were used, responses may still be subject to recall bias. The cross-sectional nature of this survey also meant that causation cannot be inferred from the findings. The additional incentive of a prize draw and the anonymity of online recruitment methods can lead to fraudulent responses (Riggle, Rostosky, & Reedy, 2005). Efforts were made to minimalize and exclude fraudulent responses,

for example, participants who had skipped mostly through the survey to get to the prize draw were not included in the analyses, as well as participants who tended to only answer one question on scales with multiple questions. Fraudulent responses could also be identified and then excluded from analyses by checking answers to certain questions, such as using the gender identity question to identify as an "attack helicopter" or a "gender fluid non binary trans microwave". It cannot be said with certainty that all fraudulent responses were removed; however, it is believed that these would be the minority of responses and therefore very unlikely to influence the outcomes.

Conclusion

Despite the limitations, The LGBT+ Sex and Lifestyles Survey made a number of novel contributions to the literature. Chemsex was measured in the context of broader sexualised drug use among MSM and associations with psychological factors were measured, which had been previously neglected from research. Drug use and sexualised drug use among WSW and trans people was previously under-researched in comparison to MSM, and a number of potential confounding health and psychological factors were associated with these behaviours among trans people and WSW. Additionally, research among trans people tended to focus on solely trans women, whereas in this research, trans men and non-binary people were included as well. Whilst creating an inclusive survey was difficult, it has highlighted a number of potential health inequalities experienced by LGBT people who engage in drug and sexualised drug use, which warrant further investigation so that appropriate harm reduction services can be developed, and existing services for LGBT people can further develop using the knowledge of potential associated health and psychological factors.

Personal reflection

My experience of conducting Study 2 was mostly positive. I did not expect to achieve such a high response rate in such a short period. However, this did have an impact on my personal life. To run Facebook adverts and set up a Facebook page, this needs to be linked to a Facebook account and I used my personal account. Due to the large success of the survey, I would get notifications to my phone whenever anyone commented or interacted with the survey, and although I tried to turn these off, I would see these comments whenever trying to access

my personal account. I also felt the need to deal with comments quickly, because although most were neutral comments such as people stating they had completed the survey, some had the potential to discourage future participants. These comments included someone incorrectly stating that the survey was not inclusive of bisexual people in a relationship with someone of the opposite gender. Although a bisexual person will have had to have had a same gender partner to take part that not all bisexual people will have had, but this was fundamentally a survey about sex and sexual behaviour. Other commenters called the survey a fix because participants had missed the link to the prize draw at the end, and even when given the link to the prize draw in a private message, some still insisted there was no link. I believe these comments were written without realising a person was behind the account, and the anonymity of internet no doubt influenced the harshness and negative tone of these particular comments. It was hard to take a step back from these comments and see them in perspective compared to the vast majority of participants who completed the survey without complaints. Also, any comments which had the potential to deter other participants were deleted and I feel this raises some ethical questions, because these were participants' experiences and I was effectively silencing them. However, my primary focus was recruitment and I did not want these negative opinions to interfere with that, and my own bias that these comments were unfair and unjustified definitely contributed to their removal. Although this recruitment method can be considered successful given the sample size and the relatively little amount spent on advertising, if I were to use this method again, I would have a separate Facebook account to link the adverts to, so I could have more of a barrier between professional and personal life.

I placed a lot of value on the use of community organisations and community members in the design and distribution of the survey, because I wanted this research to advocate for the community. Using the organisations helped ensure the research was attempting to understand a topic, whilst speaking with the community and not for the community. The gender identity question was derived from previous work with community organisations, as well as feedback from community members in the PPI group. Although I am happy to have used gender questions that trans community members were happy with, these questions were used as an opportunity to voice opinions that I see as transphobic. This included poking fun at people with different gender identities, such as "attack helicopter" or a "gender fluid non binary trans microwave" as previously mentioned, but also included comments that were more direct in their transphobia like "Female (trans women not included)", and "female bugger all to do wuth[sic] trans do not limp[sic] them together". For the latter, these participants were recoded into the correct gender category (cisgender female); however, it is unlikely they were asked the appropriate questions

because of their distaste for the category “Female (including trans women)”. I find these comments quite upsetting, as they conflict with my own strong opinions of trans inclusion and trans rights and I don’t like that my survey was used as an opportunity to air these opinions. As much as these opinions conflict with my own, I had to put these biases aside and still include them in analyses.

It is important to remember that these are the definite minority of cases and that some comments were constructive. Two commenters stated they found the survey overwhelmingly negative and therefore it didn’t apply to them, one of which stating they dropped out. It is sometimes easy to forget that many of the tools used and experiences researched are on the more negative side of the human experience. This is why positive psychology exists (Sheldon & King, 2001), and is something I will consider in research going forwards to try to not only focus on these ‘negative’ experiences and attempt to retain participants who feel these questions are not a reflection of their experiences. There were also some light-hearted comments among what seemed at the time to be a sea of negativity, such as someone tagging their friend to take part in the survey asking them to not mention the hamster (implying a type of sexual act that was not measured in the survey).

I did come into this research with my own biases around MSM who engaged in chemsex based upon previous research, as well as news articles regarding chemsex, and I had to confront these when analysing the data. I did believe the narrative that people who engage in this behaviour do so because they are repressed and/or distressed, which was not reflected in the data. Whilst this may be some people’s experiences of engaging in chemsex, it does not appear to be reflective of MSM engaging in chemsex as a whole. It is also important to note that as humans, we give more weight to negative experiences than positive ones (Rozin & Royzman, 2001). Therefore, news stories about overdosing or coming into harm are going to attract more attention than an opinion that people are engaging in chemsex and everything is fine. A minority of MSM stated that chemsex was having a negative effect on their life. Whether more are in denial about the negative effects of chemsex is unclear, but regardless, I feel that you cannot force help upon someone who doesn’t want it or isn’t ready for it. Therefore, a harm reduction approach for services would be most appropriate (Lenton & Single, 1998), where people are helped to minimize the risks of chemsex behaviours, and are made aware of services to reduce or stop their behaviour, so they can engage with these services if they ever perceive a need.

Chapter 6: Methodology of qualitative interviews with service users and service providers

Rationale and outline

The LGBT+ Sex and Lifestyles survey highlighted a number of interesting and novel findings regarding sexualised drug use among LGBT+ people to explore further. Due to the larger proportion of MSM reporting sexualised drug use and chemsex, only MSM were recruited for qualitative interviews. In relation to Objective 4 of the programme of research regarding service provision and service development for LGBT people engaging in sexualised drug use, interviews were also conducted with sexual health workers regarding sexualised drug use and chemsex among MSM. This enabled both service user and service provider perspectives regarding service provision to be obtained. This chapter will outline the rationale, recruitment, and analysis method for the interviews.

The LGBT+ Sex and Lifestyles Survey found that MSM who engaged in chemsex were more likely to report doing so because of the intense sexual experience and to have sex for longer, compared to those who reported engaging in other sexualised drug use. Those who reported engaging in other sexualised drug use were more likely to report doing so because of the intense sexual experience and to have sex for longer, compared to those who reported engaging in sex under the influence of alcohol. MSM engaging in chemsex were also more likely to report doing so because of pressure from friends compared to those engaging in other sexualised drug use and sex under the influence of alcohol. Previous qualitative interviews among MSM engaging in chemsex found the intense sexual experience to be a motivation, in addition to HIV stigma and internalised homophobia (Weatherburn et al., 2017). Chemsex has also been described as a normalised behaviour among MSM in London, with those engaging in chemsex setting boundaries for themselves in terms of drug and sex practices (Ahmed et al., 2016). Whilst no association between internalised homophobia and sexualised drug use or chemsex was found in The LGBT+ Sex and Lifestyles Survey among MSM, it would be interesting to explore these motivations and social norms further in comparison to other forms of sexualised drug use. MSM who engaged in sexualised drug use generally reported a lower life satisfaction than those who did not engage in sexualised drug use, but this did not differ between those engaging in chemsex and those engaging in other forms of sexualised drug use. Additionally, previous research regarding chemsex and sexualised drug use has been criticised for neglecting the potential impact on psychological wellbeing (Desai et al., 2018), and

therefore these effects were explored further in the qualitative interviews. Research regarding chemsex in the UK has been largely London based, so this research was conducted in other regions in the UK where chemsex and sexualised drug use is known to take place (Schmidt et al., 2016), to investigate whether the behaviour is similar to findings from the London based research.

The previous survey found that MSM who engaged in sexualised drug use and chemsex were more likely to have attended a GUM clinic in the past 12 months, and those who engaged in chemsex were more likely to have attended than those who engaged in other sexualised drug use. It was also found that 17% of those engaging in chemsex reported the behaviour having a negative effect on their life. Previous research found that a majority of MSM engaging in chemsex in Manchester would prefer to access care at a specialist chemsex support service within a sexual health clinic (Tomkins, Vivancos, et al., 2018). The qualitative interviews explored this topic further by not only asking MSM who have engaged in sexualised drug use and chemsex about the care they have received from sexual health services, but also interviews with sexual health staff provided insights into the types of care available for MSM engaging in sexualised drug use and chemsex. PrEP was another form of sexual health protection that was associated with sexualised drug use and chemsex in bivariate analyses but not in the multivariable analyses, possibly due to the association between PrEP and condomless sex. It would therefore be interesting to further understand the use of PrEP in the context of sexualised drug use and chemsex.

When observing the effects of chemsex, MSM in the LGBT+ Sex and Lifestyles Survey reported they were more likely to have sex without a condom and do things they would not do sober, compared to those engaging in other sexualised drug use and sex under the influence of alcohol. The Theory of Planned Behaviour (Ajzen, 1991) states that a person's attitude towards a behaviour, subjective norms, and perceived behavioural control influence a person's intention to carry out that behaviour, and intention and perceived behavioural control influence whether someone conducts that behaviour. This has been applied to condom use among MSM with intention explaining some of the variance in behaviour, although an intention-behaviour gap remains (Andrew et al., 2016). The intention-behaviour gap is a term used to explain when a person's intention to conduct a particular behaviour does not translate into action (Sniehotta, Scholz, & Schwarzer, 2005). The previous study found MSM engaging in sexualised drug use were more likely to engage in condomless sex, and those engaging in chemsex were more likely to engage in condomless sex compared to those who engaged in other forms of sexualised drug use. The previous study also found MSM engaging in sexualised drug use and chemsex had

lower sexual self-efficacy, which suggests there may be an intention for condom use, but a lack of confidence in carrying out condom use behaviour. This research will examine the Theory of Planned Behaviour (Ajzen, 1991) in relation to sexualised drug use and chemsex, particularly focusing on intention and behaviour of condom use during sexualised drug use. This is because if there is a discrepancy between sober intentions to use condoms and condom use behaviour when engaging in sexualised drug use, then this provides an opportunity for intervention to increase condom use behaviour and reduce STI transmission.

Service providers were included in the qualitative stage to provide a greater understanding of sexualised drug use among MSM and the standard of care provided. Including service providers not only provided two perspectives regarding sexualised drug use and therefore a more holistic understanding, but it can also helped identify any discrepancies in service delivery or knowledge that can be used to inform regarding service delivery. Additionally, if barriers to care are identified by service users, interviewing service providers may provide more context as to why those barriers exist and what can be done to minimise these barriers to care.

Therefore, to build upon the findings from The LGBT+ Sex and Lifestyles Survey, the qualitative stage of this mixed methods programme of research had three objectives:

1. To further investigate the relationship between sexualised drug use and chemsex with physical and psychological wellbeing from a service user and service provider perspective.

2. To explore using the Theory of Planned Behaviour (Ajzen, 1991) in relation to intention to use condoms and condom use behaviour in the context of sexualised drug use.

3. To understand the current standard of service provision for MSM engaging in sexualised drug use, as well as any barriers to potential service development from both a service use and service provider perspective.

Method

Recruitment of MSM (service users)

Ethical approval for semi-structured interviews with MSM was obtained from Liverpool John Moores University Research Ethics Committee (approval reference:18/PHI/36). The information sheet and consent form for the semi-structured interviews can be seen in Appendices 6 and 7 respectively. Semi-structured interviews were chosen for both service user and service provider interviews, because of the conversational and informal style that was deemed appropriate due to the sensitive topics researched (Longhurst, 2003). Additionally, the one-on-one nature of semi-structured interviews could protect participants' anonymity on a sensitive and personal issue compared to other techniques, such as focus groups. Three methods of participant recruitment were used for MSM: Facebook posts, community organisations, and a call for participants sent to those who took part in The LGBT+ Sex and Lifestyles Survey. A Facebook post was placed on The LGBT+ Sex and Lifestyles Survey Facebook page. The LGBT Foundation in Manchester, which has a chemsex support network, was approached to help aid recruitment through mentioning the research at their support network meetings. Other LGBT organisations providing chemsex or sexual health support in Merseyside, South Yorkshire, and West Midlands were also approached, but recruitment was unsuccessful with most organisations not responding to recruitment requests. One organisation did assist but no recruitment was gained. Participants from The LGBT+ Sex and Lifestyles Survey were given the option to be contacted for future research if they lived in the North West, and a call for participants was sent out using this mailing list. To be included, participants had to identify as a man who has sex with other men and report the use of one of 10 substances before or during sex in the past 12 months (amphetamine, cocaine, crack cocaine, crystal methamphetamine, ecstasy, heroin, ketamine, GHB/GBL, mephedrone, poppers). Alcohol and cannabis were not included as the aim was to investigate intentional sexualised drug use, as opposed to sex under the influence of drugs.

The semi-structured interview guide for MSM was based on findings from The LGBT+ Sex and Lifestyles Survey and previous research (Appendix 8). Questions investigating motivations and wellbeing during and after were based on findings relating to differing motivations between those engaging in chemsex and those engaging in other sexualised drug use from The LGBT+ Sex and Lifestyles Survey, as well as the association between sexualised drug use and satisfaction with life. Investigating sexual behaviour and PrEP was based upon

the finding that a higher proportion of MSM engaging in sexualised drug use and chemsex reported more male condomless anal intercourse partners and PrEP use, as well as a specific question investigating motivations based upon the Theory of Planned Behaviour (Ajzen, 1991). Questions regarding sexual health clinic services were added in relation to Objective 4 of the programme of research to assess support needs for MSM engaging in sexualised drug use and chemsex.

The interview guide was piloted on one participant and a small modification was made, which was adding a question to ease the transition to talking about sex (i.e. did you use Grindr at the weekend). No changes to the interview guide were made once interviews commenced. Interviews were conducted at LJMU private offices, at public locations with the required level of privacy, over the phone, and via Skype between January and June 2019. It was intended that interviews would be conducted until data saturation was reached. Thirteen MSM service users were recruited, and whilst data saturation was achieved as no new information emerged in the later interviews, ideally a small number of additional interviews would have confirmed data saturation. Participants were given a £20 Amazon voucher for their time.

Recruitment of NHS sexual health workers (service providers)

The recruitment of service providers was combined with another sexual health project regarding PrEP provision (Hillis, Germain, Hibbert, Hope, & Van Hout, in press) to aid recruitment and reduce time taken out of work for the service providers. The interviews were divided into PrEP questions and chemsex/sexualised drug use questions and three quarters of NHS interviews were conducted by the researcher (n=12/16), with the remaining conducted by other researchers on the PrEP project. Ethical approval for semi-structured interviews with NHS staff was obtained from the NHS Health Research Authority (REC reference:19/HRA/0443). The information sheet and consent form for the semi-structured interviews can be seen in Appendices 8 and 9 respectively. Questions were designed in relation to Objective 4 to assess the current services available for MSM engaging in sexualised drug use and chemsex and what service development is needed. Six NHS Trusts based in the North or Midlands of England were approached for recruitment, five of which agreed to take part (two from Merseyside, and one each from Greater Manchester, South Yorkshire and the West Midlands). Names of potential service provider participants at the NHS Trusts were gained through a research contact at the Trusts and individuals were then emailed to take part. Sixteen telephone interviews were

conducted between June and December 2019. Interviews were conducted until multiple researchers (n=3) believed data saturation had been achieved and there was good geographical representation from the four locations in England. The semi-structured interview guide can be seen in Appendix 10. The interview guide was initially developed for face-to-face interviews, but due to constraints placed on the project from the NHS Health Research Authority, interviews had to be conducted via telephone. Therefore, some of the questions had to be adapted for this change (i.e. draw a referral pathway was changed to describe a referral pathway). Due to NHS time constraints, questions could not be piloted before use, but no changes were made to the interview guide once interviews had commenced.

Analysis

Generic qualitative research is an approach to conducting qualitative research that is not guided by specific philosophical assumptions (Caelli et al., 2003) and is used for topics unsuited to traditional qualitative methods (e.g. case study, ethnographic, grounded theory, phenomenology) (Percy, Kostere, & Kostere, 2015). It has been suggested that a generic qualitative research approach is suitable for research topics regarding attitudes towards an issue and is well suited to mixed methods research (Percy et al., 2015). The aim of this qualitative research is to investigate attitudes towards sexualised drug use and chemsex among MSM and service providers, as well as investigating service provision for MSM engaging in these behaviours, and therefore using a generic qualitative approach was deemed appropriate. The generic qualitative research approach lends itself to semi-structured interviews for data collection, and the use of thematic data analysis (Braun & Clarke, 2006). Thematic analysis (Braun & Clarke, 2006) was chosen to analyse the data because it is not limited to a single theoretical approach, is widely used in health and wellbeing research, and has a systematic coding framework which is useful for those new to qualitative analysis (Braun & Clarke, 2014). It has also been used previously when researching chemsex among MSM (Ahmed et al., 2016; Weatherburn et al., 2017). Other analysis techniques, such as Interpretative Phenomenological Analysis (IPA), were considered but not chosen due to the role of the researcher's subjective experiences (Peat, Rodriguez, & Smith, 2019) that may have led to a misinterpretation of participants' lived experiences on a sensitive issue. Additionally, IPA would not have been appropriate for interviews with NHS sexual health workers, as participants were discussing their work that was not necessarily emotionally loaded.

The six phase guide to thematic analysis, as outlined in Braun and Clarke (2006), was followed to analyse the data. Interview transcripts were coded and analysed in NVivo 12 (QSR International 2018).

Phase 1: Familiarising yourself with your data

Interviews were transcribed verbatim and then checked for accuracy against the audio. Five service provider interviews were transcribed using a transcription service; otherwise all interviews were transcribed by this researcher. The transcription of all service user interviews and most service provider interviews enabled familiarisation with the data. The transcripts were grouped into two datasets (service users and service providers). The transcripts were then read multiple times for the researcher to further familiarise themselves with the data. During this phase, any initial ideas for coding were made note of.

Phase 2: Generating initial codes

Two researchers independently generated initial codes on three service user and three service provider transcripts. The coding of these transcripts were then compared for accuracy and relevance to the research questions. The coding of the rest of the two datasets was then completed. Most of the coding was data-driven, with codes depending on the data and relevance to the research questions. However, due to the use of Theory of Planned Behaviour (Ajzen, 1991) as a model for condom use in the context of sexualised drug use, there were some specific themes related to the Theory of Planned Behaviour (Ajzen, 1991) that the researchers coded to. Therefore, the majority of coding was done inductively, but deductive coding was done with regards to the Theory of Planned Behaviour (Ajzen, 1991) and intention to use condoms and condom use behaviour. Because the service provider interviews were combined with questions regarding PrEP, the coding of these transcripts was specific to anything with relevance to sexualised drug use and chemsex only. A screenshot of the coding framework at this stage can be seen in Appendix 12 for service users and Appendix 13 for service providers.

Phase 3: Searching for themes

Once all data had been coded, codes that were similar or overlapping were condensed. Codes were then grouped into potential themes and sub-themes. Mind maps were used to help with

this grouping stage. Codes that did not appear to fit into any initial themes were grouped as miscellaneous. This category was then reviewed at the end of phase 3 and were coded into existing themes if applicable.

Phase 4: Reviewing themes

The first part of this phase involved reading the data extracts within themes to assess if the data extracts formed a coherent pattern within themes. Data extracts that did not fit within the theme or sub-theme were either recoded to a more suitable theme or removed. Overlapping themes were condensed into one theme. The miscellaneous category was reviewed again, this time removing any data extracts that did not coherently fit into a theme or sub-theme. A candidate thematic map was then created. After this, the entire datasets were read, considering if the themes were an appropriate representation of the dataset and research questions, as well as coding any additional data to themes that was previously missed. Data were coded and themes were generated until it was deemed that no substantial value was being added by additional coding.

Phase 5: Defining and naming the themes

Once satisfactory thematic maps had been created, themes and sub-themes were then defined and refined by identifying the fundamental quality of a theme, using this to inform the theme's name, as well as identifying and naming sub-themes. Figure 12 and 13 displays the final thematic maps for service users and service providers respectively.

Trustworthiness of qualitative research

To ensure rigour and trustworthiness in the qualitative research section of this programme of research, the framework developed by Shenton (2004) was used to demonstrate the methods undertaken to ensure reliability, validity, and objectivity of the research. Shenton's (2004) criteria was based upon the four criteria for trustworthiness outlined by Guba (1981), which are: credibility, transferability, dependability, and confirmability. Table 14 outlines how these criteria were adhered to in the present study.

The next chapter will provide the results from the qualitative interviews, discussing the themes identified for service users and service providers separately.

Figure 12. Thematic map of themes from service user interviews.

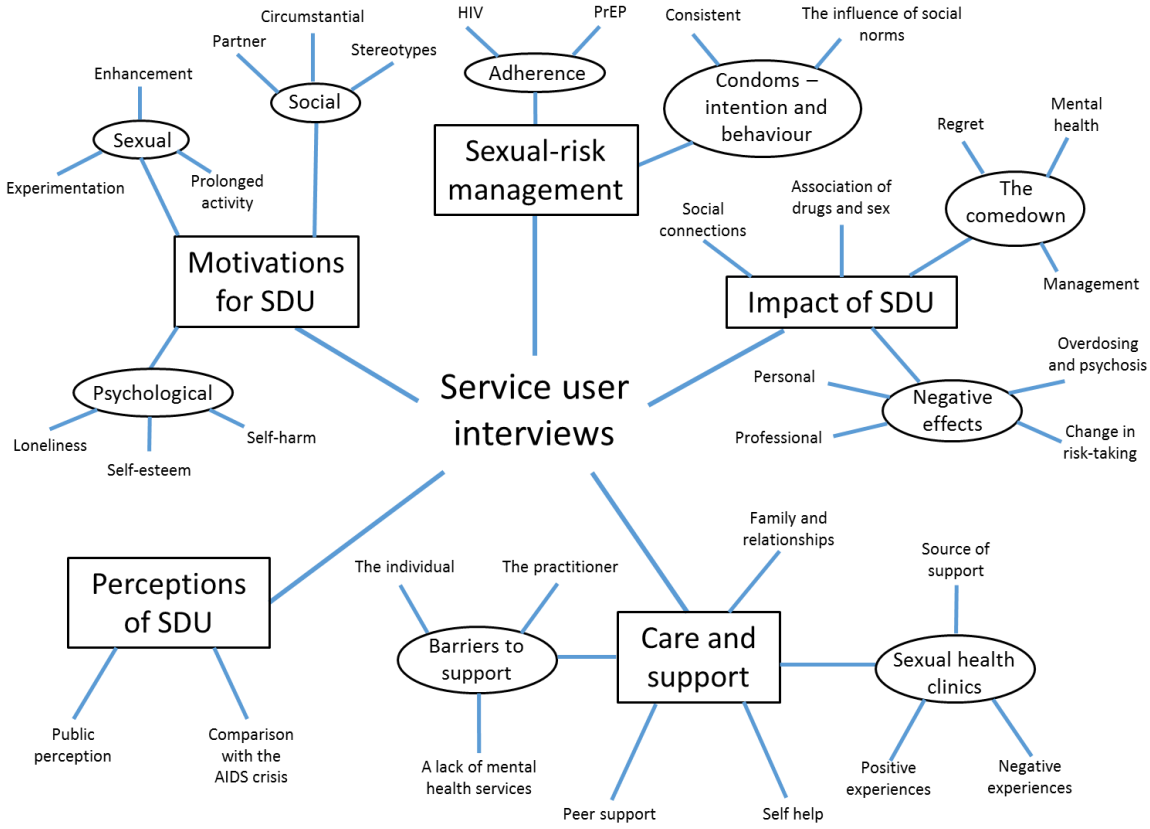


Figure 13. Thematic map of themes from service provider interviews.

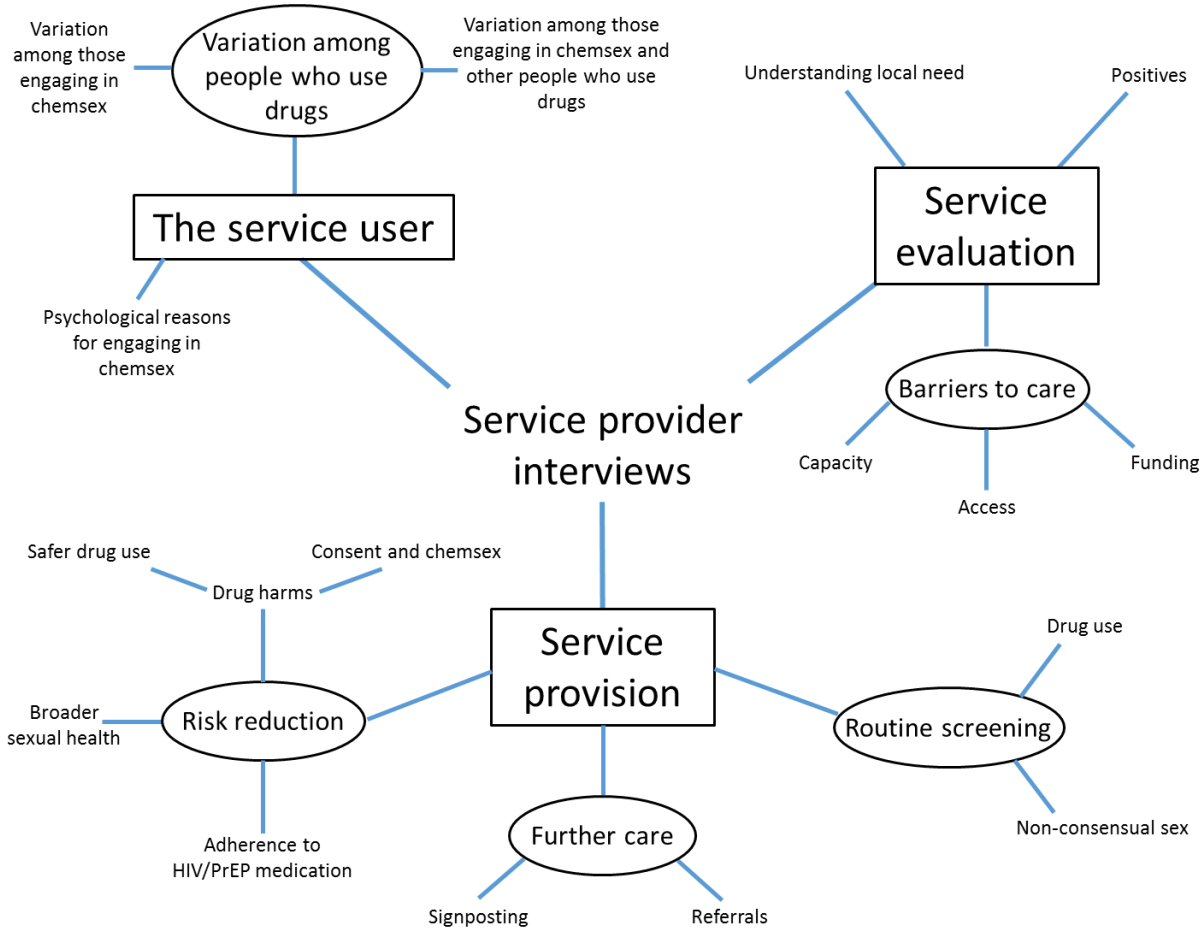


Table 14. Shenton's (2004) criteria for trustworthiness in qualitative research.

Quality criterion	Provisions made in the research
Credibility	**Adoption of appropriate and established methods:** Semi-structured interviews are a well-established research method within the context of the generic qualitative approach and thematic analysis is one of the most widely used qualitative analysis techniques. **Use of reflective commentary:** Personal reflections were made and noted throughout the qualitative research stage and these reflections are provided at the end of Chapter 7. **Peer scrutiny:** Supervisors provided feedback at all stages of the qualitative research project, from design, analysis, interpretation, and write-up. Presentations at conferences allowed for external peer scrutiny. Additionally, stakeholders at LGBT Foundation provided constructive feedback on the project, as they wanted to ensure anonymity and appropriate ethical considerations were in place for participants recruited via this organisation.
Transferability	**Provision of background data to establish context of the study:** The rationale and outline section at the beginning of this chapter provides the context of the research in relation to how the findings from the LGBT+ Sex and Lifestyles Survey were used, in addition to previous research that was used to guide the qualitative research.
Dependability	**In-depth methodological description:** This chapter provided a detailed description of the methods used for the qualitative section of this programme of research in sufficient detail so that the project could be repeated.
Confirmability	**Triangulation to reduce investigator bias:** Findings from the qualitative stage were triangulated with findings from the systematic review and The LGBT+ Sex and Lifestyles survey using Farmer et al.'s (2006) method, which can be seen in Chapter 9 alongside the protocol for the triangulation process. **Recognition of shortcomings:** In Chapter 8, a strengths and limitations section is provided where limitations to the qualitative methodology are outlined and how these may have impacted the results are discussed. **Use of diagrams to demonstrate an audit trail:** Appendices 12 and 13 provide images of the coding after phase 2 of thematic analysis, and Figures 12 and 13 show the thematic maps generated from the analysis process.

Chapter 7: Results from qualitative interviews with service users and service providers

Service users

Thirteen participants took part in semi-structured interviews. The majority of interviews (n=7) were conducted face-to-face (4 Skype, 2 phone call). Most participants (n=9) were recruited through the mailing list to the previous survey, and four participants were recruited through the community organisation. Interviews were on average 43 minutes in length and ranged from 20-70 minutes long. Demographics of participants can be seen in Table 15. The majority of participants identified as gay, were white British, and had a median age of 34 years (range 23-66). Two participants were living with HIV and three participants were currently taking PrEP, all of whom self-reported engaging in chemsex. The most common sexualised drugs used were mephedrone and poppers, followed by cocaine and crystal methamphetamine. Five out of the thirteen participants (38%) reported engaging in chemsex when defining chemsex as the use of crystal methamphetamine, GHB/GBL, ketamine, or mephedrone immediately before or during sex. Two other participants self-identified as engaging in chemsex, both using cocaine before sex. One of these participants was in an exclusive relationship, the other discussed using cocaine at group sex parties. For clarity in the analysis, any referral to chemsex is referring to the use of crystal methamphetamine, GHB/GBL, ketamine, or mephedrone immediately before or during sex.

Analysis of data identified five themes. These were: motivations for sexualised drug use; sexual risk management; the impact of sexualised drug use; care and support, and perceptions of sexualised drug use.

Theme 1: motivations for sexualised drug use

Participants discussed their motivations for engagement in sexualised drug use. Motivations were organised into three sub-themes: sexual motivations, psychological motivations, and social motivations. The primary motivation for engagement appeared to be sexual, which were seen as positive motivations by participants. Psychological and social motivations on the other hand appeared to hold a mixture of positive and negative value, depending on the motivation sub-theme and the participant.

Table 15. Service user demographics.

	No. of participants (N=13)	%
Sexuality		
Gay	11	85%
Bisexual	1	8%
Queer	1	8%
Ethnicity		
White British	10	77%
White Irish	1	8%
White Australian	1	8%
Latino	1	8%
Work Status		
Full-time	10	77%
Student	3	23%
Relationship status		
In a relationship	6	46%
Single	7	54%
Location		
Lancashire	1	8%
Liverpool	1	8%
Manchester	9	69%
Stockport	1	8%
Warrington	1	8%
Sexualised drugs used		
Cocaine	3	23%
Crystal methamphetamine	4	31%
GHB/GBL	4	31%
LSD	1	8%
Mephedrone	5	38%
Poppers	5	38%
Use of a chemsex drug (crystal methamphetamine, GHB/GBL, mephedrone)	5	38%

Sub theme: sexual motivations

All but one participant noted a sexual motivation for sexualised drug use and this was primarily to enhance the sexual experience. This was a key motivation regardless of the substance used, although the specifics of how it enhanced the experience appeared difficult to articulate. Sexualised drug use was described as *"intense"*, *"euphoric"* and *"enhancing"*, with a number of participants noting how it creates an intense focus on sexual pleasure, creating a *"little bubble"* that was isolating in a positive way.

That's the thing that I wanted, was to carry on using chems [GHB/GBL, mephedrone] and having sex, coz of the like how much of a more intense experience it was. – 31, Gay

I think it [poppers] lends itself to a kind of subservient role, a kind of nothing else matters, it creates almost like a single focus, single focus in terms of like eroticism and sexual pleasure really. – 52, Gay

A number of participants did specifically describe how the sexual experience is enhanced, because certain drugs helped them to prolong the sexual experience. One participant described how the use of crystal methamphetamine amplified their *"sexual stamina, so you can fuck like mad hung for hours and hours"* (41, Queer), and another described using cocaine to "*stretch it out, make sure you don't come as quickly"* (24, Gay). Another way in which the sexual experience was enhanced was that sexualised drug use lent itself to sexual experimentation because of reduced inhibitions, whereby sexualised drug use facilitated enacting sexual fantasies or trying new sexual practices. One participant described how engaging in chemsex helped him recreate sexual desires he had seen in porn or being more willing to try fetishes that are not acknowledged by the conscious mind. Another participant described how poppers were used between him and his partner when trying out a new sex toy that helped facilitate the experience practically and psychologically.

If you were sober, you might be less willing to experiment, but actually you'd be more willing to experiment [during chemsex], so you actually play out your fantasies, and a lot of those fantasies are then driven around what you experience there in terms of what you watch on porn online, so what you see on porn, then you then want to recreate it…so you might actually watch a bit of porn and think 'actually, aw yeah' you know, you quite like that fetish or something like that, but you wouldn't necessarily do it, because actually you understand that actually it's a porn, and it's a porno movie, and it's fictitious, and it's not real, it's made up, but actually when you're doing chems, you then you seek to recreate those fantasies that are sometimes ingrained really, really deep – 42, Gay

but whenever we do use them [poppers], it's more that we're trying to introduce something new into the bedroom, therefore we both or me be more relaxed in what we're trying…so for example we got some new sex toys. We got an inflatable butt plug, so we just wanted to kind of make sure that I was fully confident but also relaxed with it, so for example we'd get poppers out help with that – 29, Gay

Sub-theme: psychological motivations

Several participants identified self-esteem as a psychological motivation for engaging in sexualised drug use and how using drugs for sex helped them feel more confident. One participant outlined how chemsex helped them moderate their own drug use due to the confidence boost from chemsex, and therefore only took drugs when in that environment. This increase in self-esteem was related to feeling more attractive, because of being invited to more sex parties. Another participant identified the validation he received from others at chemsex parties from his sexual behaviour was a motivation that was secondary to sexual fulfilment.

For me it's been a really good thing [engaging in chemsex], like it's massively helped my confidence even though I have that confidence on the drugs and then I don't have it as much when I'm not, in myself I feel like, I feel more attractive because people want to invite me to these things, like someone's boyfriend messaged me because his boyfriend had met me and like that is a really strange thing for boyfriends to do but it made me feel really nice, and it's made me feel better about my drug use, because I really enjoy taking drugs, but I know it's not a good thing to do all the time, so the fact I can go to these parties just like you know, once a couple of weeks or once a couple of months and still take those drugs in an environment where no one is judging you, and come away from it and be confident in myself that I'm not gonna continue that on my own, that's really helped me as well. – 26, Gay

I then go and get the gratification to validate myself, and that's what I go to chemsex parties for as well as being horny. That's maybe what I see as see as the surface driving me to go and have chemsex, those chemsex parties is because I'm horny and I want sex and I'm probably, I dunno what you want to call it, I can still cum when I'm high, so when everyone else is just sat there and they're not really able to like get to that point where they do, for me like I know I can and it's almost like that drives me, but also it's that validation from other people – 31, Gay

Three participants mentioned negative psychological motivations for engaging in sexualised drug use, such as loneliness and mental health. All of those who mentioned a negative psychological motivation had been engaging in chemsex and had stopped engaging, either because of the harm it was doing to them or due to a very small period in time where they did engage in this behaviour. One participant reflected on how they were previously using drugs to *"self-destruct"* by engaging in a number of risk behaviours that could have had a potentially negative effect on their health. Another participant described how the breakdown of a long-term relationship had left him *"grief-stricken"*, and how the drugs contributed to the worsening of his mental health, whilst using the drugs to invite other men around for sex to ease the

loneliness. One participant described how recently receiving a mental health diagnosis had led to a situation where they tried mephedrone, because they had stopped caring about life and their wellbeing.

Motivations [for chemsex]? Loneliness, I had been for seven years in what I considered a totally loving relationship and unfortunately my partner met someone else, fell in love with him and it was handled very, very carefully and very delicately, and we're still friends to this day and I'm friends with his partner, but I was grief-stricken, totally and utterly grief-stricken. I couldn't face the future on my own. I'd mentally and physically, I'd set myself a whole target of where I was going, he was 14 years younger than me, and I just couldn't face the future, and I used to say to everyone I haven't got anything to live for anymore, and that's that mental side that eventually I had to come to terms with and sort out, but taking the combinations of MKAT [mephedrone] and G [GHB/GBL] and then eventually doing a lot of Tina [crystal methamphetamine] did not help that mental state at all, it was trying to get someone round the whole time to fill the void. – 66, Bisexual

It was a really, really tough time for me in general. Just before that I'd quit my job, been diagnosed with PTSD and depression and severe anxiety disorders all in the same go, after probably six or seven years of struggling with various different things and not really understanding why and kept hitting this point. So I quit my job, so there was just this quite long period where I didn't have a clue what my future would be, how I was going to get sorted again, how I was going to get back on my feet, what was going to happen. I was single at the time so any experience that happened I just thought it could be my last, so it just didn't matter to me whether or not it went bad or not, and it sounds awful, I distinctly remember snorting something [mephedrone] and at the moment of snorting thinking 'that could be the last thing I ever do' and I didn't care at all – 34, Gay

Sub-theme: social motivations

For one participant, the psychological motivation of their mental state had lent itself to circumstantial chance, a social motivation combined with a 'YOLO' (you only live once) type attitude, describing his thinking beforehand as *"fuck it"*. This circumstantial chance arose from a dating app hook-up, whereby the participant met someone who he knew was going to use mephedrone and used mephedrone themselves without pressure from his sexual partner, which then lead to the participant using mephedrone three times after that with the same sexual partner.

I had no plan to do anything. There was three times I took MKAT [mephedrone], it was all with the same guy. The first time I had no intentions of taking anything at all, it was just I had met up with him before but I thought yeah I hadn't had any plans to take anything although I

knew he did and it was one of those situations I never really gave a shit and I just thought fuck it…It was just like I said it was just there. He had said before that he would use it occasionally and that night that I arrived, it was already on the table. So it was more a case of, I think from his perspective it was like 'I'm gonna do it, it's there if you want it'. There was never any pressure, or you should, or persuasion, and from me it was genuinely just a 'fuck it'. – 34, Gay

One participant who reported using cocaine for sex discussed how a social queue would trigger positive memories about drug use and sex and motivate them to want to engage again. This participant likened the circumstances of engaging in sexualised drug use to that of seeing an advert, whereby something would trigger a positive memory of sexualised drug use that would then be motivation to engage. The 'advert' could be something seen on social media or a conversation about drugs.

It's difficult to…erm…do you know what it is? It's like if someone brings it up or someone says something, and you go…it's like seeing and advert on TV for McDonald's, you didn't ever want the McDonald's and think I don't want that it's full of shit, then you watch the advert and you think could really do with it, then someone brings it up and you go 'aw god do you know that time we did this' or 'oh god I would love to go out and do this' and you think 'oh god I'd love one too', I would love that buzz again [from cocaine and sex] and you just kind of forget all the bad stuff because all you're focusing on is it makes me feel really buzzed, it makes me feel really good. – 24, Gay

A small number of participants (n=3) discussed how pressure to adhere to or rebel against certain stereotypes were a motivation for engaging in sexualised drug use. These were either stereotypes of gay men, such as having an active sex life, which also included media depictions of gay men having active sex lives and using drugs, or stereotypes surrounding relationships, such as married couples having a conservative sex life. One participant who previously engaged in chemsex described how he felt he needed to conform to the stereotype of a gay man having sex with multiple partners and conformed to this stereotype by engaging in chemsex. Another participant described how the stereotype of marriage being a sexless relationship made him want to use poppers during sex to rebel against this stereotype.

Is it because you're a gay man and it's available, do you think you actually need to be part of that stereotype? That you actually need to go out and have it [sex] two or three times just so you're exactly the same as everyone else in the gay scene, and that's I think where it came from for me, that I was actually going to a stereotype, that I was a gay man, and that it was

my God given right, and I could go and do it [chemsex] coz it was so easy, but then also, the other side of that coin is that it filled the loneliness and it filled the void. – 66, Bisexual

So the expects[sic] about a married couple is they are going to be having sex just with themselves, just in their beds, in a really quite conservative practice. I think that's what makes me go away from that idea. I don't want to become one of them really boring couples. – 28, Gay, discussing poppers use and sex

Pressure from a partner was not common among participants stating they had engaged in sexualised drug use within a relationship, but one participant mentioned how social pressure from his partner was his motivation for engaging in sexualised drug use, specifically LSD. This participant later regretted his behaviour, because he did it to please his partner, despite it going against his own beliefs.

I think I did deliberately take LSD to have sex with him [my partner], but it was only the one time and then after that it wasn't…because I took it out like not of my own choice, because it was genuinely he wanted me to take it, after I felt like I betrayed what I kind of go against when it comes to any kind of drug recreation, and after I did kind of feel like I'd kind of betrayed myself – 23, Gay

Theme 2: sexual risk management

Participants discussed their methods for managing sexual risk in relation to engaging in sexualised drug use. For those who were living with HIV or taking PrEP, service users discussed how they would manage adherence to their medication whilst engaging in sexualised drug use. For other participants, they discussed their intention and behaviour in relation to condom use, and for the majority of participants, they practiced consistent intention and behaviour, but this was no intention to use condoms, and therefore did not use condoms.

Sub-theme: adherence to HIV medication and PrEP

The two participants who were living with HIV and engaging in chemsex mentioned how engaging in chemsex for long durations did not affect their adherence to their medication. One participant suggested that engagement may have helped facilitate a routine of adherence, whilst

another highlighted that an adherence strategy of carrying ART medication in a keyring, which was used before engaging in chemsex, helped him adhere to their medication in chemsex situations.

There were a couple of times when I might have missed during the, I always took everything within a 12 hour period, so I was safe. In fact quite honestly [laughs] the number of times totally sober and in a way, I mean I woke up this morning, pottered around, I normally take mine at eight o'clock and I went into the kitchen at midday today and suddenly realised I hadn't taken them, so in fact, in rather a perverse way, I was probably better at taking my meds [when engaging in chemsex] then than I am sober. – 66, Bisexual

No, I would say that's more so…I mean I've had HIV for four and half, five years now, so I've been on meds for four and a half so I would say that was a lot earlier on like in my, in having HIV, like I'm very good now at taking 'em.

Interviewer: So would you take your meds to the [chemsex] party as well?

Yep. Yeah, I have like keyrings full of 'em, I take 'em everywhere with me. – 26, Gay

This was true for participants taking PrEP and engaging in chemsex as well (n=3). Two of these participants mentioned how engaging in chemsex did not affect their adherence by having a set routine of adherence and taking PrEP daily, so that even if they did miss a dose, this would not reduce the overall effectiveness. One participant mentioned how if he did not have any PrEP with him, people at the party were likely to share, suggesting PrEP is common among those engaging in chemsex, and there is a community that are protecting each other.

There has been incidences where if I had been there [at a chemsex party] for several days, then somebody who has got PrEP, I'd ask them if I could have a tablet from them. – 31, Gay

Sub-theme: intention and behaviour towards condom use

Regarding intention around using condoms, most participants reported consistent intention and behaviour regardless of the effect of a substance, with most stating intention not to use condoms. Besides those who were in an exclusive relationship, and therefore reported not using condoms, participants who were single also commonly reported not using condoms, with four out of five of those engaging in chemsex reporting condomless sex. Two participants discussed

the social norm of not using condoms at a chemsex party, one stating it did not influence them using a condom, because of their deeply held attitude towards consistent condom use. Another participant stated how the social norm of not using condoms influenced their condom use over time after initially wanting to use condoms in chemsex situations.

And I've come across a lot of guys, where I've said I've wanted to use one [a condom], and they've almost said it in a way where like, they'll make an allowance for me. Like, it's odd that I want to use one.

Interviewer: But that never impacts on your sexual safety?

No, I'm a little bit obsessive about condoms really. – 43, Gay, discussing cocaine use and sex

I've got into a belief in my head where I think it's unprotected, like bareback sex is, I never would think oh I'm going to bring condoms [to a chemsex party], because, I mean, I did actually to begin with, going back years ago, I remember now, I would put my trackie bottoms on, I would bring some lube, bring some condoms and I would use them, but then it very quickly developed, because of being in a chemsex environment, like condoms just weren't used or people didn't want to use them, and then when PrEP came about I then maybe in my head it was almost like we don't need the condoms and I know PrEP is not 100% safe at all because of all the other things you can get – 31, Gay

Theme 3: the impact of sexualised drug use

Participants discussed how engaging in sexualised drug use had impacted them. The impacts of engagement were grouped into four sub-themes: association of drugs and sex; the comedown; negative effects, and social connections.

Sub-theme: association of drugs and sex

Over half of participants (n=8) discussed how they had formed a strong association between the use of drugs and sex. One participant discussed how he had taken mephedrone in a non-sexual context and this triggered a desire for sex, like *"a switch was flipped"*, and then subsequently went to a chemsex party. Another participant described how poppers were needed for their partner to orgasm.

It was almost like a, like a switch is flicked, coz that could happen if I was out clubbing with friends and I'd like be I'd be having some MKAT [mephedrone] and I'd go to the toilet and create a profile whilst I was there and then be messaging in between cigarettes going outside and then like would maybe go straight from the club to a sex party, so it's almost like a switch was flipped and like I want sex now, like I'm horny – 31, Gay

I must admit, it's [the use of poppers] probably the only thing that ensures my husband cums as well. He needs the rush, I think he's used them for so long – 35, Gay

Sub-theme: the comedown

The impact of the comedown was outlined in terms of how it felt and how some participants would manage their comedown. The length of the comedown was specific to the particular drug used, with a comedown associated with poppers lasting a few hours, but a comedown associated with chemsex drugs was described as lasting a couple of days. Two participants who engaged in chemsex stated how they would use other substances, such as prescription drugs or cannabis, to help mitigate some of the negative effects of the drugs used and to facilitate sleep.

Zolpidem would be my like go to for a comedown, 48 hours say into a session, you know when the body is naturally sort of tired anyway, then it's kind of, it works quite well, just to short circuit the Tina [crystal methamphetamine] for 5-6 hours maybe. It's enough for the body to get rest for that period - 41, Queer

Interviewer: What's your motivation for taking weed at the end?

So to help me like come down, like to start to come down off that level. Like if I wasn't to have a joint it would probably take me about 2 days to fall asleep after taking [GHB/GBL] obviously…to be fair if I do start to feel like a come down and I start to get in to that worrying kind of place, it'll take that away for me as well, so it can help kind of cope with the aftermath. – 26, Gay

Four participants talked about a feeling of regret that sometimes came with the comedown. This tended to be associated with a fear about what may have been said whilst engaging in sexualised drug use. Two participants who had taken cocaine for sex described how they both regretted what had been said, with one participant regretting potentially upsetting his partner but avoided talking about it, whilst another participant feared that they had given too much detail about sexual pleasures and that this would be gossiped about.

I always always always always say afterwards, the morning after 'never doing it again' [cocaine and sex], it's not worth it, it's not worth the money, it's not worth the hangover, you think, you know you call yourself stupid for doing it and you think do you know what, you think all the sex and stuff was really good but is it really worth it? Is it worth feeling like this? You might have said something that was, that might make your partner uncomfortable. You don't know coz you're not fully aware of what you're saying, it might be offending someone or not, but because I don't want to bring it up, you just don't know, because you don't ask the next day. – 24, Gay

You just tell people things you wouldn't really tell people, like your fantasies or stuff [on cocaine] you've done or things you want to do, things you wouldn't really tell your friends or partner sometimes.

Interviewer: And how does that feel being able to express that?

Yeah it feels amazing at the time, and then sometimes you think 'oh I shouldn't have said that now' and that's one of the reasons you don't want to see the people again. Especially in most cases, in this situation anyway, there's a chance that everyone knows everyone or at least they know someone that knows, do you know what I mean, it's that you might say something and they know your friend or your friend's friend and it's a bit…things like that and then the paranoia of the come down, that doesn't make a good combination. – 43, Gay

A number of participants (n=5) discussed how the comedown influenced their mental health. One participant who had not previously been diagnosed with a mental health condition, described how they were using drugs to manage their mental health and this resulted in two separate suicide attempts, both of which were attempted whilst on a comedown from chemsex drugs.

So that you know there's no doubt in my mind now that looking back, the reason I was doing more and more drugs [crystal methamphetamine, GHB/GBL, mephedrone] is because I was trying to cope with my mental health. I committed suicide, I tried to commit suicide twice in that time period…and on both occasions, I was very lucky to survive. One was I overdosed on 30mls of GHB, I had a flatmate at that time, and it was such bad, I actually walked into the kitchen, picked up, poured out myself 30mls, came into here, stood there and necked it. I was on the comedown. It was the depression. The depression was so bad that just didn't want to cope with life – 66, Bisexual

Sub-theme: negative effects

Other negative effects of sexualised drug use identified were the risk of overdosing and psychosis. One participant discussed his experience of someone making him overdose on GHB/GBL and then try to have sex with him. He went on to say this is the behaviour of a minority of people engaging in chemsex, and noted that there is a community that will look out for one another if someone does come into harm.

I went there with a fuckbuddy, but there were a lot of cute guys there and there was a lot of guys there who were sort of like gym bunny, white gym bunny guys that I wasn't into at all, and one of them was really into me and I was just like nah, I was just like trying to like kinda sherk him off all the time, then he asked me if 'oh do you want a hit of G[GHB/GBL]?' and obviously he gave me a fucking huge dose so I went under, and somehow I just managed to come round enough to realise he was starting to fuck me, so I kicked him in the face and like pushed him and said 'Don't fucking touch me or I'll cut your fucking cock off', very aggressively…I heavily emphasise this to guys all the time, just because somebody has come to your chill out doesn't mean they have to have sex with you…I actually think there's a lot of decent people out there that don't want to engage in non-consensual sex and look after each other if somebody goes under and you know, want the conversation as well as the sex, not just in it for the drugs – 41, Queer

One participant discussed his experience of psychosis whilst engaging in chemsex. The participant described this psychosis, which involved being unable to scream for help and being locked in their bedroom. This psychosis triggered the participant to seek help for their chemsex usage.

I had this episode [after crystal methamphetamine use] where actually it's probably very similar to a K-hole. I was lay just in like my underwear, on the rug on the living room floor, and I could feel the whole world dropping in on me, everything, going like, it's like, sometimes they call it a k-hole, they get it off ketamine, and it took all of my energy to let out this scream, and it was the wimpiest little scream that you've ever heard, [wimpy scream], like that, but it took every single energy, and then suddenly I got light again, and then that happened about three or four times, but then I made it up to my bedroom, and got into my bed, but I couldn't get out of me bedroom, because there was broccoli, there was a pile of broccoli at the door, and I couldn't actually get out of my bedroom…and that psychotic episode, that at that point, I thought actually no, I need to do something – 42, Gay

Participants who had stopped engaging in chemsex (n=4) described how engaging in chemsex had negatively affected them personally and professionally. This negative impact ranged from

financial, having to take time off work, and family. One participant stated how they had *"lost everything"* in terms of their personal assets and financial stability due to the cost of engaging in chemsex. Four participants described the professional impact engaging in chemsex was having. One participant described injecting a chemsex drug in the toilets whilst at work. Another participant described how the exhaustion from long chemsex sessions was impacting them at work. Participants who had stopped engaging in chemsex would compare the impact of engaging in chemsex with their personal goals and aspirations.

I've lost everything, you know, I've lost houses, I've lost money, you know, because that's from my drug usage, my assets, coz I live in a furnished house, so everything in my house is actually a landlord's. My assets are what I'm stood up in, other than a computer at home, that's it, I've got no assets whatsoever. All me savings gone, everything, so you know, you've got to really think, well actually, but you still aspire to actually having a nice house and a nice car, and doing nice things, but you can't do any of that until you actually sort out your mental health and move away from drugs, and it's a hard journey, and you're never going to stop on that recovery, it's going to be all my life. – 42, Gay

I was having huge difficulties at work. I think dealing with the realisation of some the behaviour in the more recent like weeks since February and the exhaustion from obviously missing a day's sleep every other week, I had to, I was actually off of work with stress, I got signed off for four weeks by the doctor, but I took only a week off work and I've gone back to work now, but I had to kind of just say to them look there's issues with my mental health outside of work that I'm also dealing with at the moment and again that was a big, big thing for coz I've never wanted it to ever affect my work – 31, Gay

One participant then elaborated how engaging in sexualised drug use had changed their risk behaviour beyond associated sexual risks, and how this conflicted with their sober behaviour. They described themselves as a *"risk averse"* person normally, but then discussed a time after taking cocaine, where they then drove to go to a sex party and then did more drugs, and how this conflicts with their attitude towards alcohol and driving.

but it's the strange thing is how risk averse I am in my normal day-to-day life, I'm quite risk averse. When I'm high [cocaine, GHB/GBL, mephedrone] it's the complete polar opposite version of me. It's like those risks aren't even a consideration.

Interviewer: What sort of risk adverse things do you do when you're sober?

So I mean I wouldn't even consider getting in my car even if I had a glass of wine, I only started driving like last October, so I wouldn't even have one drink and drive, I just don't

wanna, don't wanna play with that, but then for some reason the last two occasions I got high, I thought it was acceptable to get in a car and drive, which I just don't understand how in my head I can think that's right – 31, Gay

Sub-theme: social connections

Beyond the positive reasons for engaging in sexualised drug use, such as enhancing the sexual experience and boosting self-esteem, a positive impact noted by participants was the social element and the connections made from engaging in chemsex. One participant mentioned how they enjoyed the personal conversations that happen at chemsex parties (*"chillout"*), and another described the friends they made from engaging in chemsex, and later described how they would meet up with these friends outside a sexual context as well.

So a lot of what happens at a chemsex chillout isn't either chems or sex, it's actually conversation, it's a bunch of men sitting around really comfortable, naked together, talking about their experience of you know many things, what they do, what they're passionate about – 41, Queer

Like I've made loads of friends at chemsex parties and stuff, like I dunno you just, I just feel like, you only mainly you only remember the bad stories you hear. It's just a fun thing, do you know what I mean? I dunno it's just, I really enjoy it. – 26, Gay

Theme 4: care and support

Participants were asked about sources of support for sexual health and drug use. Participants identified a range of sources and methods for support regarding sexualised drug use, which was coded into five sub themes: sexual health clinics; self-help; peer support; family and relationships, and identifying barriers to support.

Sub-theme: sexual health clinics

Some participants spoke of using sexual health clinics as a source of support for their sexualised drug use. One participant described how using a specific chemsex clinic helped him manage his usage. It provided an opportunity to vent and receive reinforcement and generate ideas of how to manage his chemsex usage. Another participant described how receiving HIV care

helped him get the care needed to stop his usage, because this started the chain of events that led to him receiving help and support.

It's like things get quite heavy and it can be a nice kind of release valve, just to go up and have a word with the, and you know talk about some of the things that happen and like I've gone up sometimes when things are going really well, like I'm looking really well and they're saying aw it's really good, I'm still doing chems but you know I'm putting all these things in place. It's not that I need it every week, but there's certain times where I just feel aw I'll give them a call, and just book in an appointment and just talk to them coz I think I need it at the moment, for both positive reinforcement and for possibly like advice really or kind of exchange of ideas, what do you think of this, do you think if I start doing this. I mean, sitting there in that space with them, sometimes I come up with the realisation just by being there. – 41, Queer

I was backwards and forwards so much to the clinic during that time period [when having chemsex], and my consultant and the whole of the team at [sexual health clinic] were so concerned about me, to the point where letters were being written to my GP, and my GP eventually said to me isn't it about time you started getting some help for this, put me in touch with the [community organisation chemsex support group] – 66, Bisexual

Beyond seeking specialist sexual health and drug care, most participants found engaging in sexual health services a positive experience, complimenting the staff for their friendliness and making them feel comfortable, with one participant saying he found them *"really friendly"* and it was "*completely fine, very comfortable"* (29, Gay). Another participant stated: *"they're really friendly, really nice, make you feel really comfortable, they're very good at answering questions if you've got any worries, really good at referrals and things" (*26, Gay). However, a number of participants (n=7) complained about waiting times and accessibility of sexual health clinics, with one participant referring to them as *"sausage machines"* and stating *"They're overrun. The difficulty of getting an appointment"* (66, Bisexual). Two participants acknowledged that this was not the fault of staff, but rather due to funding and current constraints on sexual health clinics. For example, one participant said: "*I still don't think the governments and that are taking sexual health serious. I think they think they put out this message 'use a condom' and that's enough and people just aren't*" (43, Gay). Another participant felt austerity had impacted sexual health and recognised that staff were doing the best they could with the current resources.

They're at a strain, austerity has hit them really hard and they're trying to run a complex service, dealing with a very sensitive issue, on a very limited budget, with very limited staff, and all they get all the time is criticism including from me like, but it's all like ' aww they're shit, can't get an appointment, blablabla, it's shit,' but they are doing the best in a very fucking difficult environment. – 41, Queer

Sub-themes: self-help, peer support, and family and relationships

Other sources of support for participants included self-help, peer support, and family and relationships. For those using self-help, this involved participants setting rules for themselves, such as abstinence or limiting drug use to specific occasions. Participants who had sought peer support from community organisations mentioned how useful it was to discuss things with people from similar experiences, and some participants stated how their family and partners reactions helped them to control or stop their usage.

and by actually sorting my mental health out then that in a way meant I could actually take a proper look at why I was doing so many drugs [crystal methamphetamine, GHB/GBL, mephedrone], which is exactly what happened, I sorted that out and then went 'why am I doing all this? I don't need to', and coz then I found a purpose in life I didn't then find this need to actually be sitting there doing a lot of chem, and quite frankly I came to the conclusion that I didn't really need at the age of 64 at that point, you know, I'd had a bloody good innings in terms of sex, and I actually stopped having sex, I didn't feel the need to have actually sex anymore, so I actually stopped doing drugs because I stopped having sex, is how I actually dealt with it. – 66, Bisexual

you get peer support groups, so there's lots of peer support groups [for chemsex], you're talking to other people who are actually going through the same shit, because you're using and you're thinking it's only you, you know, you think it's only you that's got a problem, where actually that problem's actually all over, so talking to other people, I've learnt so much from it. I'm only getting to the point where I'm not dependent on it – 42, Gay

But my mum said to me how her and my brothers had been speaking and they could see I me getting better [from drug use unrelated to sex] and that was my motivation, coz I was like oh shit people are actually noticing, coz I was really trying for a couple of weeks but in myself still feeling you know, like urgh I don't think I'm getting anywhere. Once I'd heard that kind of affirmation from my mum, I would say that really helped as well. – 26, Gay

Sub-theme: barriers to support

Participants identified a number of barriers to care and support, such as a lack of services,

attitudes of the practitioner, and the person seeking support as well. One participant discussed how after they attempted suicide during a comedown from chemsex drugs they received no after care, because no care was available in the near future. Another revealed how their GP referred them to an organisation that no longer existed, suggesting both a lack of knowledge and a lack of services for MSM engaging in chemsex, as well as more generally for mental health support.

When I tried to commit suicide the first time in 2015, there was nothing. There was absolutely nothing available. I wanted counselling at that time and there was an 18-month waiting period – 66, Bisexual

When I reported to my own GP and said actually, I've tried to kill myself because I'm a drug user, me GP gave me a telephone number for this team, he said ring this local drug team, he gave me a telephone number, that team had ceased existence five years ago, you know, and my GP at that particular point was a GP in the suburb, never even heard of it, never even know, didn't know anything about it, didn't even know the types of drugs I was talking about. He's a GP, he's a medical professional, coz he was thinking it's a criminal matter, you know what I mean, so that whole mind-set. – 42, Gay

Related to this, two participants identified their practitioner as a barrier to care. One participant detailed how he was rejected from private counselling whilst seeking help for chemsex. They were given the analogy that they were trapped inside a car that was on fire and the counsellor could not help. Another participant described an experience of receiving drug support unrelated to sexualised drug use from an HIV clinic, and how the practitioner's expectation that gay men who used drugs did so because of trauma related to their sexuality made him question his validity for help.

he just stopped me at half way through and was like look, you know, you need extra support [for chemsex] coz he said, he gave the analogy, it's like you're sat in a burning car and I'm stood outside asking you how it is in there and he's like we need to put the fire out first. – 31, Gay

He was like really surprised that I was still in touch with my family and they were accepting of me being gay and I'd come from an OK family, like he was just really shocked that I needed help. So that made me feel like, do I actually need this help? Am I kind of valid for it or am I just being ridiculous? So then when I get to a point that I know I need help, I'll just

sit there for days and be like do I actually, or am I just being an idiot you know? Are they just going to ask me the same questions and then tell me that I don't fit into that box so I don't need that help – 26, Gay

Another barrier to care participants identified was themselves. One participant described how they perceived themselves as a barrier if they were in a situation where they needed support, because their anxiety would talk them out of seeking help. One participant identified a gender norm specific to men seeking healthcare, describing themselves as a *"typical bloke"*, and that their fear of the unknown was a barrier to healthcare, regardless of the problem.

The only barrier in my life would be me, I'm my own worst enemy, but no yeah other than that.

Interviewer: Can you expand on that a bit more?

Erm so just like if I am going through a bad patch I get really bad anxiety so I'll know the right thing to do is to go and seek these services and get this help, but then sometimes I'll manage to talk myself out of it – 26, Gay

but the thing is I'm very much a coward, I'm a typical bloke, I put my head in the sand and I don't always want to know about my health coz I've got no one to confine in, I've no support, coz I live on my own and I've a very small network of friends who I don't think really fully appreciate or understand circumstance and there's things I wouldn't want to share with them, so consequently I tend to neglect that part of my wellbeing really, my health be it orally or sexually or whatever. – 52, Gay

Theme 5: Perceptions of sexualised drug use

How men who engage in sexualised drug use, in particular chemsex, are perceived by the general public became a topic among some participants. Other participants discussed the narratives surrounding chemsex, such as the parallels drawn with the AIDS epidemic of the early 1980s.

Sub-theme: public perceptions

Participants commented on what they see as the public's perception of chemsex. They discussed how this is often a one-sided, negative perception, and how drugs and sex separately

have negative perceptions in society. Therefore, this implies that the combination of drugs and sex will exacerbate these negative attitudes. This was the opinion of both those that engaged in chemsex and those that engaged in other forms of sexualised drug use.

In public opinion, chemsex has a really bad image and it's something that is for morally wrong people and underground subcultures and just people who is not in charge of their lives. They don't behave properly to what is expected, and I think that's not the truth. I mean, it can be chemsex, it can be drugs by themselves, it can be just unprotected sex and a lot of another practices can be, can reflect something wrong with your life, but chemsex doesn't mean necessarily you have something wrong in your life. – 28, Gay

People just think drugs are bad, and people think people who have lots of sex are bad. I think society in the past is to blame in regards to religion and things, you know, we are taught, I mean I grew up Catholic, so you're taught that unless you are just one man and one woman having children together that's the only valid sex kinda thing. You know so then everyone around you just thinks anyone who doesn't have that is bad, and especially when you throw drugs into the mix. You know, you think of drugs and you just think of smack heads on the street or people in prison, you don't ever hear about the positives. – 26, Gay

Sub-theme: comparisons with AIDS

Two participants discussed the parallels drawn between chemsex and the AIDS crisis in the early years of the epidemic, where gay men were losing friends at an alarmingly rapid rate. One participant rejected this narrative and other narratives around chemsex, such as people engaging in chemsex are doing so because of internalised homophobia. On the other hand, one participant compared their experience of engaging in chemsex with that of the AIDS crisis, discussing how there has been a shift from friends dying from natural causes to friends dying from overdoses or suicides, and how this compared to life before the development of effective HIV treatment.

this notion that chemsex is just gay tragedy on a par with the AIDS crisis, that it's this meaningless interaction inhabited by desperate people living at the edges of society, or fiercely addicted but unwilling to admit it because of this innate self-loathing, they're infantile, and they don't understand themselves so they have to deal with it by filling themselves full of meaningless sex and pumping drugs until they crash and it's just a nightmarish, ghoulish scenario. It's a description of an extreme end of chemsex and it's kind of like, and I'd say the majority of people who engage in chemsex for any length of time will

experience some of that stuff, whereas it's not true of every experience of chemsex. – 41, Queer

It's a little bit telling, that out of those ten people, six of them are no longer with us anymore, they've either overdosed or they've committed suicide, six out of the ten…We know that we're losing people. Prior to 2012, I didn't hear of any of my friends dying other than from natural causes, cancers, heart attacks, the things that effect everyone else in the community, but since 2012, it's did you hear about so-and-so. It's like pre 1996 the comments are exactly the same 'did you hear about X' or on Facebook, people, deaths are being reported all the time. The number of R.I.P. as in pictures that I see, you know, monthly. – 66, Bisexual

Service providers

Sixteen NHS staff were recruited for semi-structured interviews. Nine of these worked in Merseyside, four in Greater Manchester, two in the West Midlands, and one in South Yorkshire. Seven of the staff recruited were consultants, four were speciality doctors, two were health advisors/psychotherapists, two had an administrative role, and one was a nurse practitioner. Interviews took on average 30 minutes and ranged from 15-45 minutes.

Three themes were identified from the interviews: the service user, service provision, and service evaluation. Participants discussed the service user and the possible psychological reasons as to why someone might engage in chemsex, as well as the variation seen among MSM who use drugs and engage in sexualised drug use. Service provision and how to reduce risk was discussed, and service providers evaluated their service provision, identifying both positives and barriers to care.

Theme 1: the service user

Discussion regarding the service user was grouped into two sub-themes: psychological reasons for engaging in chemsex, and variation among people who use drugs. Variation among people who use drugs was discussed in the context of variation between those who engage in chemsex and those who engage in other types of drugs, as well as variation among those engaging in chemsex in terms of their diversity.

Sub-theme: psychological reasons for engaging in chemsex

Service providers mentioned possible psychological reasons for engaging in chemsex, which usually involved mental health and self-esteem, but acknowledged that this was not true for all MSM who engage in chemsex. One participant discussed how a particular patient would engage in chemsex every time they had a mental health relapse. Another participant mentioned the stereotype of being a gay man may influence engagement, whereby a metaphor of a merry-go-round was used to describe being involved in a gay culture scene.

I had a lad the other day who has mental health relapses and every time he has a mental health relapse he goes into chemsex. He'd come in for PEP because he'd had a relapse and just had unprotected sex. – Nurse practitioner

but sometimes I find that, after having time to have a discussion of someone's history and what their goals are, the lifestyle choices that they're making are related to having low self-esteem, and they're also related to the fact they see this type of lifestyle as a kind of merry-go-round, they can't get off, and it's almost an expectation as a gay man that they should be part of a scene, when actually, I'd take the fact that they're having sex with other men out of the equation, and look at the fact they're a human being with various of needs and some of that might be intimacy, and they can get that however best they see fit. It doesn't have to fit in with the stereotype, so explore some of those things, lifestyle, stereotypes, self-esteem. – Health Advisor/Psychotherapist

Sub-theme: variation among people who use drugs

Participants also discussed variation among people who use drugs. For variation among chemsex users, service providers recognised it as a broad group of people with different impacts for different people. The complexities of referring to MSM who engage in chemsex as one group were discussed, due to the wide ranging behaviours and experiences among MSM engaging in chemsex. One participant stated from their experience, it was not a behaviour solely associated with MSM, identifying that a woman had come seeking support for using GHB.

It's still probably about a quarter of the people that I see who are using chems at some degree, but it also varies very much from the occasional use of G to people who are completely out of control and who are using all kinds of drugs like Tina and mephedrone and cocaine and all kinds of other things so it's very variable. I think it's difficult to lump together chems users as a whole because they actually encompass a very wide wide range of behaviours. – Consultant

We have had a request for it [chemsex support] for non-MSM people recently, a young lady who had a real problem with GHB, which that service isn't commissioned to provide. Clearly, maybe chemsex isn't just all about gay men, maybe that's just the bit that we know about. Clearly this young lady had gone to her GP with that as an issue for her, which was something that was new to me. Maybe there are more out there. – Consultant

Participants also discussed variation between those who engage in chemsex and other people who use drugs, defining drug use as a spectrum, which made comparisons between groups of people who use drugs potentially problematic. This was seen as potentially problematic due to the diversity within drug users and the overlap between those who use drugs and then have sex, as opposed to intentional sexualised drug use, and how the use of these drugs is common among other groups beyond MSM.

No, it's not only one social group actually, I think that would be wrong to say, but certainly from kind of traditional IV drug users, I guess that would vary quite a bit between sociodemographic groups and chems, I would say chems is probably more diverse, yeah, yeah I think that's probably it, a greater spectrum. – Speciality Doctor

I feel like that's caricaturing people a little bit. I think there is a whole complexity to drug use. That includes MSMs as well as people who aren't MSM. The use of class A drugs is quite common in general, I think, among students and lots of people. There is going to be an overlap there between taking cocaine at parties and then engaging in chemsex. – Consultant

Theme 2: service provision

Service provision for MSM engaging in sexualised drug use was discussed in terms of routine screening, further care, and risk reduction. Service providers discussed how these methods were utilised to provide a high level of care to MSM engaging in sexualised drug use and chemsex.

Sub-theme: routine screening

Service providers mentioned routinely screening for both drug use and non-consensual sex. For non-consensual sex, the screening question was used as an opportunity to raise awareness of consent, particularly among those who engage in chemsex, and participants' main concern was around someone's ability to maintain consent when using any drugs for sex. In reference to routine screening for drug use, one service provider described how they adapted their questioning method for drug use based upon the trend they had noticed regarding steroid use among men generally. The service provider adapted their questioning to specifically ask about

"gym drugs", because men using these drugs would see them more as health supplements rather than a drug.

Generally we ask people routinely actually in the clinic about non-consensual sex, so I will then specifically ask about do people feel that they have ever been kind of forced into doing things they didn't want to do or not be aware of what they've done, and just kind of make people aware that there is this kind of, I feel there is this grey area between kind of maintaining consent and do they actually definitely know everything that's happened because of being under the influence of chems. It's just really, I would say, raising awareness – Speciality Doctor

So I think we are definitely seeing an increase in steroid use. I would say that's not just in MSM though, I'm seeing that in heterosexual patients as well, and actually when I ask about drugs, I'm now saying do you use recreational drugs, chems, or gym drugs, because I've started, I was finding that patients were not counting steroids as a recreational drug, and therefore weren't disclosing them, so I think we're definitely seeing an increase in steroid use via gyms. – Consultant

Sub-theme: risk reduction

Reducing risk was a common practice when discussing service provision to MSM engaging in chemsex. Risk was considered in terms of both sexual health and drug use. Adherence to HIV medication and PrEP among those who engage in chemsex was not perceived to be a significant concern among service providers. This was because of the effectiveness of PrEP, and that if people were not taking PrEP during long chemsex parties, the drug would still provide a high level of protection if taken daily outside of these parties. Even if adherence was a concern among those engaging in chemsex, participants suggested finding alternative methods to provide the same level of care.

There's a concern if people are having long parties, where it's sort of running into days, then the advice would be that if they're taking as much as possible, if they were to take four days in the week, but miss it for three days, they're probably still going to be protected. I think chaotic lifestyles obviously do lead to challenges with drug adherence, in every aspect of medicine, not just in HIV and PrEP. So, I still think it's worth people signing up to it, and being on it for the protection. Because there are different ways that people can take PrEP, and they might decide that they only need it for their chemsex parties, and do it as event-based dosing. – Consultant

My experience of people taking it is that they just tend to get on with it, and I don't think that any drug use, at all, is a barrier to effective medical care. For HIV treatment and care, you find ways around that and strategies to help people adhere to treatments. It's the same skillset, really, that you use for this. It's the same for any medicines really. – Consultant

Consultations with MSM engaging in chemsex were also seen as an opportunity to reduce sexual risk through a variety of methods. Participants described using consultations as opportunities to discuss risk and aim to reduce sexual risk by as many methods as possible, such as vaccinations, PrEP, regular testing, and condom use.

So I think vaccination is a really important, you know, Hep B, Hep A, HPV, that's a really important step, and then with PrEP they're coming for regular testing anyway, but again it's important, you know, it gives us an important opportunity to reiterate the importance of regular screening. I think it is a good opportunity to discuss kind of risk taking, and if there are other ways to mitigate risk-taking behaviour, so you know condoms, thinking about other, you know, other measures to reduce risk as well. – Consultant

Reducing harms related to drug use was discussed in the context of safer drug use, as well as consent and chemsex. In terms of safer drug use, one participant described how they would give advice around safety, and how this knowledge is spread among the community, as well as giving patients chemsex packs that contained tools for reducing both sexual and drug risk, such as sterile spoons, gloves, and syringes appropriate for GHB/GBL measurements due to the small dosing required by GHB/GBL. This participant also highlighted how he believed MSM engaging in chemsex were looking out for each other with regards to drug safety.

In all groups we give advice about safe use, drug interactions with other things, but particularly around injecting, and we've got the chemsex packs that we can give out as well. We give a lot of safety information about GHB and GHL, and kind of the, coz that's where if people are going to come to harm it's coz the GHB, they overdose on GHB and have a respiratory arrest, so a lot of safety information around that, about generally being safe, about the infection risks which are mainly about kind of snorting drug use kind of and mostly intravenous drug use, so it's more a safety about if this happens do this and just increasing the awareness of the, coz some people have no idea quite how fine line the toxicity of something like GHB can be. One drop can make a difference between a good night and a cardiac arrest, so it's just getting the safety message across, and we're seeing people kind of doing it in networks, so quite often some more experienced users tend to look after the less experienced users until…it's just general safety information would be the extra bit. Obviously, we kinda discuss problematic use and what's available – Consultant

When discussing non-consensual sex and chemsex, service providers said they raised awareness and increased knowledge by discussing this issue with the service user to reduce both physical and mental harms that can come to someone in a chemsex situation. One participant outlined how this applies to both those who experience non-consensual sex as well as unintended perpetrators, and how raising the issue of non-consensual sex would hopefully deter people from acting in a way that was not intended.

We've discussed how someone can be very vulnerable, and it might be my client, it might be that so vulnerable that, you know, they're so out of it that things happen, and either that they are unable and not fit to say no, they don't want to engage in that activity, or actually don't remember what's happened and you know, will explain that the consequences of that might be not just physical and contracted disease or any rips or tears to their body or damage, it might also be psychological, and you know obviously I see it in other instances, I see people who are victims of sexual assault, because if someone doesn't consent to something, it is sexual assault, and then I flip it over and say well you know, hypothetically you can be in a position where you're almost unable to remember your behaviours, or so out of it you can't pick up on the signs that are telling you that this person does not want to consent to this activity, and that would basically cost you, committing a sexual assault, and the consequences of that which involve, you know, obviously, the criminal justice system, the psychological effect on you who will have committed a sexual assault, and maybe not have set out with the intention of doing that, so you know, we'd obviously spend some time about looking at the consequences on both sides, whether someone is a victim or a perpetrator, and how the rules of consent state someone cannot give their consent if they're under the influence, and the absence of no does not imply yes. – Health Advisor/Psychotherapist

Sub-theme: further care

Signposting to community organisations was used for both non-consensual sex and chemsex. Service providers tended to describe signposting all patients to available services, whether they were seeking help or not, to raise awareness that support is there if it was ever needed. This was seen as giving the patient the information needed to make an informed choice if they ever wanted to seek help. However, one participant mentioned that both internal and external services had long waiting lists for services.

So I would ask specifically about chems, and if they disclose any risk at all, I would discuss [community organisation] with them, I think it's, you know it's good for them to know about that service even if they don't want to engage with it. I think it's helpful that they know it exists and then they've got that choice really, so any kind of chem use in the past year or so I would discuss it with them – Consultant

We may or may not involve the sexual assault referral centre depending on the detail of what's happened. We usually offer people self-referral to [community organisation], who I've found to be really helpful. Unfortunately, they have a bit of a waiting list. Our sexual assault referral centre has got a really long waiting list, longer than [community organisation's] so I'd always mention that for counselling – Consultant

When the service user wanted further care, service providers mentioned making both internal referrals to health advisors, drug workers, psychologists, as well as external community organisations who were sometimes onsite. Some service providers mentioned their clinic running specific chemsex clinics. One participant highlighted how it helped having a service within the sexual health clinic, so they could make an immediate referral if needed, and how that helps with continuation of care.

We do have a psychologist onsite, but that's mainly for our HIV patients. We have used that as a referral pathway once or twice previously. The relationship that we had with [community organisation] onsite and that's immediate, you know, so they could touch base, make that face to face contact and arrange their next meet with them. If that's done face to face it's real time and people are more likely to make an effort for that continuation. – Health Advisor/Psychotherapist

We have a weekly clinic that has a drug worker, and GU consultant, and sexual health nurses. So, some booked appointments, and some walk-in slots; so people can come in and get support around their chemsex use. - Consultant

Theme 3: service evaluation

Participants evaluated their current service provision with regards to MSM engaging in sexualised drug use. The evaluation of services was grouped into three sub-themes: understanding local need; positives, and barriers to care.

Sub-theme: understanding local need

When evaluating current service provision to MSM engaging in chemsex, some service providers considered whether there was a need locally for services specific for those engaging

in chemsex. Before setting up a specific service for MSM engaging in chemsex, they were of the opinion that there needed to be a clear demand for the service so it would be cost effective.

So I think before we were to set up a specific service, we would need to know what the demand was for it, so I think we would have to get an idea of how prevalent chem use was in our area, because it has to be cost effective. I do think the team we have working, the outreach team we have working the [name removed] clinic have a lot of skills to discuss this, so I do think that drop in service for that specific MSM group with the option of talking to somebody for support is probably adequate for our needs at present – Speciality Doctor

I think it could be improved but I don't know what our cohort is to be honest. I'm not, yeah I don't know how many people we're seeing that are engaging in chemsex so I don't know what whether there would be enough demand for a specific clinic. – Speciality Doctor

Sub-theme: positives

When evaluating their service, two service providers highlighted positives with the services they are currently providing. One participant showed pride in their service provision and running a specific service for MSM engaging in chemsex, stating "*I think we provide a really good service, actually, I'm really proud of it",* and that it is "*great to have it within our service"* (Consultant). One participant stated that although the service they currently provide is good, there are still ways it could be improved.

We've done a lot of training, and with chems, and kind of, you know, managing high-risk MSM. I think I would say yes, overall it is a good service, but as with anything it can always be improved. – Speciality Doctor

Sub-theme: barriers to care

Barriers to providing optimum care for MSM who engage in chemsex and sexualised drug use were identified by a majority of participants (n=12). These included access to services, capacity to provide services, and funding for service development. Some participants discussed whether the clinic was accessible as it should be, and one participant suggested possibly utilising online methods to reduce barriers regarding accessibility.

Well not everyone conforms to the nine to five or the nine to seven screening, you know, working hours that we offer, so if people could access things at a time that was convenient to them, so perhaps more online engagement, so we weren't trying to get people to fit in with what we already, when we're open, but they can access services through other means, so online, perhaps receive help and support that way. More use of social media I think, I don't know about other services, but I know [clinic] we don't have really any kind of social media profile and I think, you know, we're behind the times. – Speciality Doctor

Capacity was identified as another barrier to providing optimum care for MSM who engage in chemsex. Clinicians expressed a desire to improve services, but a lack of capacity was cited in terms of competing resources, staffing, and time. Two consultants discussed constraints the current PrEP trial was having on sexual health clinics and how this was limiting their capacity to deliver services not just to MSM, but a lot of groups that were competing for limited resources.

I think it's [chemsex services] far from ideal, I think we're doing the best we can within limited resources and within the conditions imposed upon us by the IMPACT study is being rolled out. – Consultant

I think we probably need to bolster, because of PrEP, we need to bolster maybe increase our MSM dedicated provision and the chemsex provision will kind of follow that really. Like anything, all the sexual health services are really under stress, and this is just one kind of high-risk group that we kind of have to assess and look after really and we have a lot of sexual exploitation in younger people. We have a lot of trafficking. All these groups are kind of competing for intensive kinda health advisor and clinician time. There's just not enough people to go around, so services for all our kind of high-risk groups could be definitely increased. – Consultant

Funding was seen as a barrier to providing optimum care for MSM engaging in chemsex. A lack of funding was noted as underpinning all other barriers to providing optimum care. This was identified as a national problem across sexual health generally, due to funding for sexual health services now falling under local authorities, and whether funding would remain in place for current services was a concern.

I mean sexual health services around the country have seen major cuts in budgets. We're no longer really part of the NHS coz we're commissioned by local authorities and there are year

on year budget cuts which are actually bigger than they seem because those budget cuts come on top of the fact there's inflation of wage and other inflation so I'm not talking specifically about [region], it's known that that's a national issue. – Consultant

I don't know if it's still going now coz the time, we, [community organisation] were providing chemsex support, but I know a while ago their funding was questionable, it was questionable whether they were going to continue. – Speciality Doctor

Chapter 8: Discussion and reflection of semi-structured interviews with service users and service providers

Qualitative semi-structured interviews with both service users and service providers allowed a more detailed investigation into some of the topics from the online survey, as well as providing a different perspective of the topic from sexual health service providers. A number of themes were identified from service users and service providers, with some of these overlapping between the two groups. Themes were identified that supported the research aims of investigating health and wellbeing in relation to sexualised drug use, sexual risk behaviour whilst engaging in sexualised drug use, and service provision to MSM engaging in sexualised drug use. This chapter will discuss the significance of these findings in reference to previous research and the objectives for this stage of the programme of research. A conclusion and personal reflection on this stage of the programme of research will then be provided.

The relationship between sexualised drug use and chemsex with physical and psychological wellbeing

Both positive and negative impacts on wellbeing were highlighted from service users. Positive effects of engaging in sexualised drug use were seen as motivations to engage, such as the sexual experience and boosting self-esteem, which has been observed by other research into chemsex among MSM (Weatherburn et al., 2017). Additionally, the current study observed these motivations in other forms of sexualised drug use among MSM, and service users' motivations for engagement appeared to be primarily sexual regardless of the sexualised drug used, with only one service user participant not reporting a sexual motivation. Another positive impact noted by service users was the social experience of chemsex, which included the conversations had during these experiences and gaining new social connections. Although, two participants did report regret over possibly disclosing more information than they would have liked to whilst under the influence of drugs.

Self-esteem was seen as a positive effect of engagement in chemsex for one service user, but a service provider mentioned this as a negative reason for engagement. However, this service provider did state that, as a psychotherapist, they would not be seeing these patients unless they were experiencing negative psychological effects and wanting to stop. Interestingly, this service provider mentioned how they would discuss someone's life goals in relation to their drug use, and service users who had stopped engaging in chemsex discussed their ambitions

and life goals, and saw how their engagement in chemsex was inhibiting these goals. Some participants also stated how their chemsex behaviour was having the unintended consequence of negatively affecting their personal relationships and work life, which is consistent with previous research regarding MSM and chemsex (Bourne et al., 2015). Therefore, it could be that these negative motivations and effects of engaging in sexualised drug use are only negative when they are conflicting with someone's ambitions. It may be that in these instances where chemsex is inhibiting someone's goals and ambitions that service users want to manage or stop their sexualised drug use. Service providers should therefore investigate a service user's motivation for engagement and if this appears to be harmful (e.g. loneliness) or contradictory to the service user's goals and ambitions, this may identify a service user who would like further care and support.

Service providers noted that engaging in sexualised drug use was a variable behaviour, ranging from non-problematic use to witnessing service users experiencing negative effects on wellbeing. Negative effects tended to be associated with chemsex drug use as opposed to other types of sexualised drug use. Although, service providers found the concept of a difference between chemsex and other sexualised drug use potentially problematic, possibly due to witnessing a wide spectrum of sexualised drug use with wide ranging effects on patients' health. From a service user perspective, for those expressing negative effects on wellbeing, these tended to be particularly adverse, with two participants stating they had attempted suicide, both of whom were engaging in chemsex. One participant stated his suicide attempt was related to his drug use, and another specifically mentioned that both his suicide attempts were during comedowns from chemsex drugs. Research that was published after the current study had been conducted found that MSM chemsex users recruited from an LGBT drug and alcohol support service were less likely to report previous suicidal ideation than those attending for other substances (Stevens, Moncrieff, & Gafos, 2020). However, among chemsex users, using GHB/GBL or crystal methamphetamine was associated with an increased likelihood of previous suicidal ideation, but not for chemsex users using mephedrone (Stevens et al., 2020). Additionally, it could be that all MSM seeking help for drug support are at an increased risk of suicidal isolation compared to the general population, but further research is needed to understand the associations between chemsex, sexualised drug use, and suicidal ideation or suicide attempts.

A number of participants mentioned overdosing, particularly on GHB/GBL, and one participant reported an experience of non-consensual sex whilst unconscious. Some service providers highlighted how they had also had consultations with MSM who had experienced this

whilst engaging in chemsex, and expressed concern for patients' ability to maintain consent in this situation. Overdosing and sexual assault have been identified as effects of engaging in chemsex previously (Bourne et al., 2015), and this supports the finding from The LGBT+ Sex and Lifestyles Survey that a higher proportion of MSM engaging in chemsex had experienced or were unsure they had experienced non-consensual sexual contact. No participants engaging in other sexualised drug use referred to non-consensual sex, which may be due to most people engaging in other forms of sexualised drug use with their partner, or because there is a lower risk of overdose using these drugs allowing for greater control over maintaining consent. This study provides further evidence that service providers need to be aware of the potential for non-consensual contact among MSM engaging in chemsex. It is positive that service providers in this study were aware of this issue and would discuss the issue with service users engaging in chemsex.

The stigma of living with HIV has been suggested as a motivation for engaging in chemsex previously (Weatherburn et al., 2017), and living with HIV was associated with engaging in chemsex in bivariate analyses in the previous study. Two out of the thirteen service user participants were living with HIV, both of whom were engaging in chemsex and neither of these suggested that their HIV status influenced their sexualised drug use. Service users discussed ways they managed their sexual risk, and for those who were living with HIV and on ART medication as well as those taking PrEP, engaging in chemsex did not influence adherence. Service providers were also confident in the effectiveness of PrEP and how engagement in chemsex would not influence adherence. Previous research has found that injecting drug use among MSM living with HIV was associated with poorer ART medication adherence (Daskalopoulou et al., 2014); however, the service users living with HIV in the current study appeared to have routines and strategies to manage their adherence whilst engaging in chemsex. Service providers also discussed even if there were concerns with regarding adherence whilst engaging in chemsex, they would attempt to find strategies to improve this. Similar to service users' self-reported adherence to PrEP whilst engaging in chemsex in this study, research that was published after the current study was conducted found no difference in adherence to PrEP between MSM engaging in chemsex and those not (O'Halloran et al., 2019).

Multiple findings suggested there was a social coercion and social capital among MSM (Kawachi & Berkman, 2000). This was evident from service users discussing the sharing of PrEP and protecting MSM who overdose from sexual assault, as well as from service providers suggesting MSM were sharing knowledge of how to protect each other and looking after one another. Social capital and social cohesion has previously been researched in relation to MSM,

HIV prevention, and PrEP (Grover et al., 2016; Zarwell, Ransome, Barak, Gruber, & Robinson, 2019), and was utilised by service providers in this study in disseminating knowledge about drug harms and safer drug use. However, further research is needed to understand how social coercion and social capital exists in the context of chemsex, and how this can be used to develop health promotion and harm reduction strategies.

Service users discussed the public perception of chemsex and how these perceptions are often negative due to negative opinions of gay sex and drug users. The joining of two stigmatised behaviours was suggested to compound the stigma surrounding chemsex in society. Two participants discussed the narrative that the effects of chemsex is on a par with the AIDS epidemic in the 1980s, in relation to lots of the MSM community dying due to a pandemic where there was little knowledge or understanding. One participant objected to this narrative, discussing how harmful this narrative could be, while another participant stated this was reflective of their experiences of losing friends to chemsex related overdoses and suicides. When considering sexualised drug use and specifically chemsex as a spectrum, it may be that both participants have these opinions due to different experiences and positions on this spectrum. Previous research has suggested that chemsex is a highly variable experience (Bourne et al., 2015), which was also suggested by service providers in this research. Although stigma around certain behaviours can be a barrier to care for some (Wakeman & Rich, 2018), service providers did not appear to hold stigmatising opinions, and instead offered a non-judgemental, harm reduction approach (Lenton & Single, 1998), which should be utilised by all service providers engaging with this group.

The Theory of Planned Behaviour (Ajzen, 1991) in relation to condom use intentions and behaviour in relation to sexualised drug use

The Theory of Planned Behaviour (Ajzen, 1991) was used to investigate whether an intention-behaviour gap existed between intention to use condoms when not under the influence of drugs and condom use behaviour whilst engaging in sexualised drug use. However, due to most participants reporting consistent condom use intention and behaviour, with the majority of these participants not intending to use condoms, this investigation was not possible. Two participants did mention social norms related to condom use at chemsex parties, with one service user suggesting that the social norm of not using condoms may have influenced their condom use behaviour over time. Alternatively, another service user stated the social norm did not influence their behaviour due to their attitude and perceived behavioural control regarding

condom use. Therefore, similar to previous research regarding condom use among MSM generally (Andrew et al., 2016), the Theory of Planned Behaviour (Ajzen, 1991) may help explain condom use behaviour among MSM whilst engaging in sexualised drug use, but a larger quantitative study would be needed. It may be that attitudes, subjective norms, and perceived behavioural control influence intention with regards to condom use, and therefore this is more influential than a potential gap between intention and behaviour. Because service users' intentions to not use condoms appeared cemented, it may be that by addressing attitudes, subjective norms, and perceived behavioural control, this can influence intention and behaviour regarding condom use. Service users who were not using condoms appeared to have strong attitudes towards not using condoms and the service user who reported using condom use during group sex had strong attitudes and perceived behavioural control towards using condoms. This gives some support towards the Theory of Planned Behaviour (Ajzen, 1991) with regards to explaining condom use among MSM engaging in sexualised drug use, but components of the theory beyond intention and behaviour need to be explored.

Service users who engaged in other types of sexualised drug use (cocaine, poppers) and were in an exclusive relationship did not intend to use condoms. This is understandable in relation to the reduced sexual risk compared to those engaging in condomless anal intercourse with multiple partners whilst engaging in chemsex. It therefore appears that those engaging in chemsex were at greater sexual risk due to an intention not to use condoms with a much larger number of sexual partners. Whilst there may be some level of sexual risk with regards to the potential for infidelity and therefore transmission of STIs, it may be ethically questionable to try to change this specific attitude towards condom use, as it involves implying that a person should question their partner's sexual commitment. Therefore, if the Theory of Planned Behaviour (Ajzen, 1991) is to be explored further with regards to other types of sexualised drug use in addition to chemsex, researching this behaviour specifically among single MSM or those in a non-monogamous relationship may be more appropriate. This will allow for a greater investigation into different attitudes that may influence condom use intention in relation to sexualised drug use. Although the Theory of Planned Behaviour (Ajzen, 1991) has been demonstrated to best explain condom use compared to the Socio-Cognitive model (Bandura, 1994) and Information-Motivation-Behavioural skills model (Fisher, Fisher, Misovich, Kimble, & Malloy, 1996) among young people (Espada, Morales, Guillén-Riquelme, Ballester, & Orgilés, 2016), these models may better explain condom use in relation to sexualised drug use among MSM, but further research would be needed to determine this. However, the usefulness of investigating condom use in relation to HIV and STIs is questionable when PrEP and PEP

are available for HIV prevention. Additionally, The LGBT+ Sex and Lifestyles survey found that MSM engaging in sexualised drug use were more likely to attend for sexual health care, which would reduce onward transmission of STIs. Therefore, attempting to change condom behaviour may be less effective as a health promotion strategy, compared to encouraging the use of PrEP and PEP, as well as regular STI screening in this population.

Condoms were seen as just one sexual health protection tool to be utilised and service providers discussed utilising all methods available to reduce sexual risk among MSM engaging in chemsex, such as vaccinations, PrEP, regular screening, and condoms. This approach therefore provides the patient with the best possible level of care. Research has been conducted with regards to intentions to these other methods of reducing sexual risk among MSM, such as PrEP (Goedel, Mayer, Mimiaga, & Duncan, 2019; Jaspal, Lopes, Bayley, & Papaloukas, 2019), HPV vaccination (Marra et al., 2016), and sexual health screening behaviour (Horvath, Lammert, Danh, & Mitchell, 2019). Therefore, understanding intentions towards sexual health behaviours among MSM remains an important research consideration when attempting to understand and influence sexual health behaviour in this group, and should continue to be investigated in the context of sexualised drug use.

Service provision for MSM engaging in sexualised drug use

Research has previously suggested that MSM who engage in chemsex would prefer drug services within sexual health clinics as opposed to traditional drug services (Deimel et al., 2016; Glynn et al., 2018). All sexual health services in this study mentioned providing MSM clinics as an opportunity to discuss sexualised drug use and chemsex, with some services running specific chemsex clinics. When deliberating the need for a specific chemsex service, service providers considered whether there would be a local need. When a desire to expand services was expressed, numerous barriers such as finances, competing resources, and capacity were commonly reported. One service user mentioned using a specific chemsex clinic and how they found the service useful, in terms of moderating and supporting their chemsex behaviour when needed.

Most service users had positive experiences of sexual health services generally, complementing staff and the treatment they received. The most common complaint among service users was access and service providers also noted accessibility as a barrier to care. One service provider suggested online methods as a possibility to reduce accessibility barriers, and

research has found that MSM who have used HIV self-testing services reported it reduced barriers relating to convenience (Witzel et al., 2019). Therefore, more modern means of testing may help reduce this accessibility barrier, although further research is needed (Wellings, Mehl, & Free, 2017). Additionally, both service users and service providers noted funding strains on sexual health services, which may hinder any potential service development. It was interesting that service users were aware of issues regarding funding of sexual health services, suggesting that service users may be feeling the impact of these funding constraints, or these service users may have been aware of the funding issues because they were reported on by the media.

Some service users mentioned seeking support from community organisations and highlighted a lack of access to appropriate healthcare services, particularly mental health services. Poor access to NHS mental health services has been reported across the UK (Care Quality Commission, 2019). Therefore, the findings from the current study are likely to be reflective of a lack of access generally, rather than being specific to those seeking support for sexualised drug use. To help those that may have experienced more negative impacts of sexualised drug use, service providers mentioned signposting participants to available services, offering the opportunity to discuss and give advice during consultations, and referring into both internal and external services. Both service users and service providers noted some internal and external services as having long waiting lists, which is a barrier to care at a time when people may be particularly vulnerable. Therefore, existing services may need to be expanded to cope with demand, but this may not be possible due to the existing funding constraints on sexual health services (BASHH/BHIVA, 2018).

Whilst a definition of what drugs constitute chemsex is needed for quantitative research, specifying particular drugs in a clinical setting may be a barrier to services for MSM not using the 'four chems' (crystal methamphetamine, GHB/GBL, ketamine, mephedrone) (Schmidt et al., 2016). Service providers highlighted issues with visualising chemsex users as a homogenous group. Additionally, two service users stated using cocaine for sex and self-identified as engaging in chemsex, one of whom stated going to chemsex parties and having sex with multiple partners, but would not have been included in the 'four chems' definition despite engaging in some of the risk behaviours associated with chemsex (e.g. group sex). One service provider highlighted a potential problem of defining chemsex as a behaviour exclusive to MSM, as they recalled a heterosexual woman with problems related to GHB/GBL use but could not access support because these are specific to MSM. This highlights that, even if chemsex is more prevalent among the MSM community, other groups may engage in this behaviour and will still need access to support services. Therefore, a classification of chemsex

in a clinical setting may need to be more loosely defined, so that it is not a barrier to those engaging in other forms of sexualised drug use with a similar level of sexual risk.

Whilst the service providers in this study, as well as previous research with MSM (Weatherburn et al., 2017), has highlighted internalised homophobia as a possible motivation for engagement in chemsex for some, service providers would often contextualise this statement by discussing the variability of chemsex, and how from their experience, sexualised drug use does appear to be a wide-ranging spectrum of behaviour. One participant discussed the narrative around chemsex being related to internalised homophobia, and argued against this being the reason that people engage. It was highlighted how relating chemsex to internalised homophobia could potentially be a barrier to seeking care for some, as people who do not identify as experiencing internalised homophobia but engage in chemsex may question their validity for such help. One service user stated they had a negative experience of seeking help for drug use unrelated to sexualised drug use through sexual health services, where the practitioner's expectations of MSM with 'problematic' drug use was off-putting. The practitioner's expectation that MSM experiencing problematic drug use must have experienced problems relating to their sexuality was enough to make this particular service user question his validity for help in this instance. The service user then discussed how this could be a barrier for him seeking help in the future, after describing himself as a possible barrier to future help due to talking himself out of needing support. This service user then went on to discuss other stigmas surrounding chemsex, including the combination of drug stigma and gay sex stigma. It is possible that other stigmas, such as the stigma surrounding polygamy and non-monogamy (Frank, 2019; Moors, 2019), which is in itself linked to same-sex sexual stigma for men (Herek, 2004), and the stigma and marginalisation of people who use drugs (Room, 2005), all interact in the case of chemsex and sexualised drug use resulting in a highly stigmatised behaviour by different means. Ensuring service providers have the perception that sexualised drug use and chemsex is a variable behaviour, with variable motivations for engagement, could avoid potentially stigmatising patients resulting in avoidance of future care.

Strengths and limitations

To the author's knowledge, this is the first attempt to understand and compare both service users' and service providers' perspectives on sexualised drug use and chemsex. Including service providers added depth and breadth to the study's findings, as well as a more

holistic understanding that contextualised some of the issues raised by service users. As the majority of research regarding chemsex among MSM has been conducted in London (Bourne et al., 2014; Ottaway, Finnerty, Amlani, et al., 2017), it is a strength to have a regional comparison within the UK, given the lack of generalisability in qualitative research. However, due to issues with service user recruitment, it was not possible to completely match geographical locations of service providers and service users. Additionally, most service user participants were recruited via the online survey, which had a sample that was majority white ethnicity, and therefore this may reflect the qualitative service user participants being mostly white as well (n=12/13). Although it was assumed data from service users was approaching saturation, it is unclear how much additional information could have been gained by recruiting service users from all locations where service providers were recruited from.

In principle, involving community organisations to aid with recruitment was a good idea but proved difficult in practice for this study. The Liverpool-based chemsex organisation that was involved in The LGBT+ Sex and Lifestyles Survey had been integrated into a sexual health clinic, meaning they could not be used without NHS ethics for patients. Additionally, the other Merseyside-based LGBT organisation also came under the NHS, and was therefore inaccessible without NHS ethics. Due to time constraints on the project, it was not deemed realistic to attempt to gain NHS ethics for access to patients. Community organisations in the other locations that NHS staff were recruited from were contacted to be involved, but this was also unsuccessful apart from Manchester, where LGBT Foundation who run a chemsex support group agreed to help. Although, the additional recruitment from this organisation was not as successful as desired. The majority of service user participants were therefore recruited using the call for participants from previous online survey. However, the question regarding interest in future research was limited to those based in the North West of England, and in hindsight, this should have been national, but at the time it was expected that the qualitative stage would only take place locally.

Interviews with service user participants were conducted via telephone, Skype, and face-to-face. Whilst providing interviews face-to-face would have been optimal to minimize any technical or communication difficulties, utilising other methods allowed interviews to be conducted more conveniently to participants and provide an extra layer of confidentiality to service user participants. There were some moments that were inaudible when conducting telephone and skype interviews, but equally there were inaudible moments when conducting interviews face-to-face. Therefore, it is unlikely that the utilisation of different interview methods influenced the findings. Initially, it was planned that NHS interviews be conducted

face-to-face, but this was not possible due to NHS Health Research Authority guidelines. Although some questions had to be modified due to this change in interview methods, this may have actually aided recruitment, as it increased accessibility for service providers who were experiencing heavy workloads.

As with other research, it cannot be overlooked that the findings may reflect a self-selection bias. Both service users who were currently engaging in sexualised drug use and service users who had stopped engaging in sexualised drug use were recruited in an attempt to provide multiple narratives and experiences. It is still possible that those that wanted to voice positive or negative experiences were more likely to volunteer for recruitment, but as with all qualitative research, the aim was to explore people's experiences of sexualised drug use and chemsex, rather than focusing on the representativeness of these viewpoints. Self-selection bias is a possibility for service provider responses, but due to participants discussing their day-to-day work life, which is not necessarily a personal topic, this may reduce this risk somewhat. Service provider interviews were combined with another project regarding PrEP to potentially aid recruitment and reduce time taken away from work for potential service provider participants. However, discussing PrEP first may have framed some of the responses for sexualised drug use and chemsex, with service providers potentially overlooking experiences of MSM living with HIV and engaging in chemsex. Although, having two topics of discussion may have aided recruitment, as this could have resulted in participants who were more interested in the PrEP part of the interview, but still provided a perspective on sexualised drug use among MSM.

Conclusion

Sexualised drug use and chemsex among MSM is a wide-ranging behaviour, as demonstrated by MSM service users, and this was also the opinion held by service providers. Sexual health providers appeared to be delivering a high-level of care for MSM engaging in sexualised drug use under the current constraints placed upon them. Although it can be seen as a positive that community organisations were being utilised when needed, certain barriers to care still remained and service providers expressed a desire to improve services. For service users who were engaging in sexualised drug use and were content with their drug use, sexual health services provided an opportunity to reduce possible harms associated with this behaviour. For those experiencing adverse effects of sexualised drug use, barriers to care were

not necessarily reflective of sexual health services, but possibly reflective of poorer quality of care across other health disciplines such as mental health. To improve the quality of care for MSM engaging in sexualised drug use, not only does funding for current services need to be maintained and possibly increased in places, but funding for health services where these MSM may come into contact, such as A&E departments and mental health services, may also need to be increased.

Personal reflection

The lack of anonymity between the researcher and the participant in qualitative research was something I had not yet experienced when conducting research, and it is natural that personal opinions formed. This meant that during analysis, whilst I had committed to setting aside my own bias and opinions, these thoughts were apparent when taking what participants stated at face value. For example, one participant reported engaging in chemsex had boosted his self-esteem, and whilst I questioned the positivity of this notion myself (using drugs and sex to develop self-esteem), the participant's point of view and interpretation was maintained during the analysis and reporting of findings. One participant in particular had stated his pseudonym associated with a fictitious career when taking part in research to protect his anonymity. However, the participant would refer to this fictitious career in relation to some of his responses. This left me wondering how much truth I could ultimately take from these experiences. Therefore, I decided to not include any information with regards to his career in the analyses, and it is highly likely this information would not have been included anyway due to confidentiality.

Negativity bias is a bias in all human experiences where negative events, feelings, and traits are given more weight than their positive equivalents (Rozin & Royzman, 2001). I found my own negativity bias present when analysing and writing up my research, because two participants stated attempting suicide and that drew more focus than those discussing the positive elements of sexualised drug use. To overcome this, it was important that those expressing positive aspects of sexualised drug use had their experiences heard also, and I had to make a conscious effort to make sure an equal platform was given to both of these perspectives.

Combining the service provider questions with another project appeared to be successful in aiding recruitment and reducing strain on participants. However, I believe this limited the

responses to the chemsex and sexualised drug use questions somewhat, because starting with questions regarding PrEP first potentially narrowed the frame for discussing sexualised drug use and chemsex to men who were not living with HIV. In addition, service provider participants who maybe agreed to take part more to give opinions on PrEP kept referring to back to previous PrEP questions during the chemsex and sexualised drug use questions, which was frustrating. Whilst I tried to keep participants on track by referring back to the chemsex questions, some participants kept adding information with regards to PrEP. That being said some participants did discuss MSM living with HIV engaging in chemsex and sexualised drug use, and therefore this may be more reflective of my frustration in the moment, rather than a true reflection of the data collected.

As stated in my personal reflection on The LGBT+ Sex and Lifestyles Survey, before starting this research I was of the opinion that MSM engaging in chemsex were doing so because of internalised homophobia and were unhappy doing so. The LGBT+ Sex and Lifestyles Survey did not find any evidence of this association between chemsex and internalised homophobia, and this investigation contextualised how harmful this narrative can actually be, given that one participant reported how a practitioner who expressed this opinion made him question his validity for help. Therefore, this research has made me question the assumptions I make and how trying to pigeonhole an experience into a narrative can be harmful to those needing help and support. That being said, although this was a narrative I believed before conducting this research, I have been able to reject this narrative when finding contrasting evidence.

Due to the sensitive nature of this topic, it was expected that emotional topics would be discussed that may be distressing to the participant. Whilst appropriate ethical approval was gained and participants were referred to support organisations if needed, it took me by surprise that the only time a participant displayed distress was when they were discussing how they felt lonely and isolated in general. When this happened, I highlighted the appropriate organisations available that this person may contact for further help and support. Reflecting on this experience made me realise the role of the researcher is to be a bystander while participants are discussing these issues, and just talking about these feelings could have been cathartic for the participant. It was not my job to counsel or provide emotional support to this participant, but to simply refer to an appropriate place they can get that support if needed. I was therefore confident my ethical duty as a researcher was fulfilled.

Chapter 9: Discussion and triangulation of findings

This programme of research has made several novel contributions to research and knowledge on the subject of sexualised drug use among LGBT people. In this chapter, the findings from all three studies (systematic review (Study 1), cross-sectional online survey (Study 2), semi-structured qualitative interviews (Study 3)) will be triangulated and discussed in relation to the research aims and objectives. This chapter will also outline the strengths and limitations of the programme of research as a whole and discuss the novel contributions this programme of research has made. Recommendations for future research will be highlighted and personal reflection on the programme of research will be provided. Finally, overall conclusions and a summary of this programme of research will be given.

Triangulation of findings

Triangulation is the method of combining findings from numerous data sets that utilise different methods to answer research questions that were underpinning the programme of research (Flick, 2018). Triangulation was historically used for combining different qualitative studies, but has also been used to combine mixed methods research (Denzin, 2012). Whilst it has been questioned whether the 'languages' of both quantitative and qualitative studies can be effectively combined (Creswell, 2011), and although the combination of mixed methods findings can be difficult and time consuming, this process can add greater breadth and understanding to a particular research topic (Almalki, 2016). To effectively triangulate the findings from the three studies, it is important to contextualise this process with the aims and objectives of this programme of research, and consider which studies relate to each particular objective. The aim of this programme of research was to investigate sexualised drug use among LGBT people, with a particular focus on reasons for engagement, as well as the potential impact on physical health and psychological wellbeing.

The objectives for this programme of research were:

1. To investigate the occurrence of general sexualised drug use in the context of chemsex among MSM and the wider LGBT community (Study 1 and 2).

2. To measure quantitatively the psychological reasons as to why some MSM engage in chemsex and/or sexualised drug use, and also investigate possible reasons for engagement in the wider LGBT community (Study 2).
3. To understand what potential impact engaging in sexualised drug use has in terms of sexual and physical health, and psychological wellbeing (Study 1, 2, and 3).
4. To investigate what services are currently available for LGBT people engaging in sexualised drug use and what service development is needed. (Study 3).

The third objective was the only objective to span across all three studies in this programme of research. Nevertheless, due to the QUAN→qual design of this programme of research, the triangulation of findings across the three studies in the context of all the objectives may reveal findings that were not expected and support additional objectives. A criticism of the triangulation process is that it has been previously conducted with a lack of transparency (Farmer et al., 2006). Therefore, in the interest of transparency, a triangulation protocol using Farmer et al.'s (2006) method was created before the process began and can be seen in Table 16. The triangulation protocol by Farmer et al. (2006) was designed for different types of qualitative research with multiple researchers. Therefore, this protocol was adapted for the current programme of research to combine quantitative and qualitative research by one researcher (i.e. removal of the researcher comparison and feedback stages). Initially, each study was reviewed in sequence for key themes. Each discussion section was systematically analysed for findings and these findings were then noted. Where themes of findings appeared to be similar across studies, an appropriate title was given to the theme that encompassed the findings. Table 17 describes each theme across the three studies, which studies the theme is present in, and the degree of convergence coding within the theme. An assessment of convergence across all themes was outlined, and how each theme relates to the research objectives will be discussed.

The majority of themes identified had agreement with another study (n=8/15), meaning the findings from each study were consistent in relation to the theme. Additionally, four themes had partial agreement across study findings, implying that there was some agreement on findings between the studies but some components of the findings did not agree. Three themes were coded as silence, indicating these findings were only present in one study. This is not surprising as some objectives were specific to one study in the programme of research, and due to the differences in design of the studies, some objectives could not translate across studies (i.e. an international systematic review was possible in Study 1, but Study 2 and 3 were national research studies). Overall, the majority of themes either coded as agreement or partial

agreement (n=12/15). Three themes were unique to one study (silence) and no themes demonstrated dissonance. It can therefore be concluded that, globally, there was a high level of agreement across studies in relation to themes. Each theme was then grouped in relation to one of the four objectives and discussed in relation to that objective, and how this contributed to the overall findings from the programme of research.

Table 16. Triangulation protocol adapted from Farmer et al. (2006).

Step	Activity
1. Sorting	Findings from each study in the research programme will be revisited and sorted into themes of similar content to determine overlap and divergence. Findings that only occurred in one study will also be highlighted.
2. Convergence coding	The degree of convergence among the findings from the studies will be assessed using Fisher et al.'s (2006) criteria: agreement (full agreement between findings from studies); partial agreement (agreement on some but not all components of findings); silence (where the theme is covered in one study but not others); and dissonance (disagreement between the studies on all components of the findings). It should be noted that studies were silent on some themes due to the design of the study meaning that investigation of that theme was not possible.
3. Convergence assessment	All themes will be reviewed to provide a global assessment of the degree of convergence.
4. Completeness assessment	Assess where studies provide unique findings and how this relates to the completeness of the research programme in reference to the research objectives.

Table 17. Triangulation matrix for findings themes across the programme of research.

Theme	Present in study 1	2	3	Findings	Convergence coding
MSM, WSW, and trans people engage in sexualised drug use	Yes	Yes	Yes	**Study 1:** Only findings from MSM and trans women engaging in sexualised drug use were included in the systematic review results; however, the systematic review search found articles that recorded sexualised drug use among WSW but they did not meet the inclusion/exclusion criteria. **Study 2:** A proportion of MSM, WSW, and trans people reported engaging in sexualised drug use (41%, 17% and 21% respectively) and chemsex (6%, 0.6%, and 1% respectively). **Study 3:** MSM engaging in sexualised drug use were recruited to take part in semi-structured interviews but no WSW or trans people were recruited.	Partial agreement
Sexualised drug use and chemsex among MSM and trans women has been researched internationally	Yes	No	No	**Study 1:** Sexualised drug use had been measured in 53 countries among studies including MSM and trans women.	Silence
Defining what constitutes chemsex is difficult	Yes	Yes	Yes	**Study 1:** The definition of chemsex varied across studies, but crystal methamphetamine and GHB/GBL were common to all definitions of chemsex. **Study 2:** There was a high level of poly-drug use among MSM engaging in chemsex, making a clear definition difficult. **Study 3:** Two service user participants who took cocaine before sex self-identified as engaging in chemsex, and clinicians noted variability in the drugs used for chemsex.	Agreement
Sexualised drug use and chemsex is associated with sexual risk among MSM	Yes	Yes	Yes	**Study 1:** In meta-analyses, sexualised drug use (poppers/chemsex) was associated with STIs and condomless anal intercourse. **Study 2:** Engaging in sexualised drug use was associated with recent STI diagnosis and a higher number of condomless anal intercourse partners in the multivariable analysis, and engaging in chemsex was associated with a greater likelihood of recent STI diagnosis and a higher number of condomless anal intercourse partners in multivariable analyses. **Study 3:** The majority of service user participants, all of whom engaged in sexualised drug use, did not intend to use condoms and this was consistent with their behaviour.	Agreement
Chemsex may be associated with greater sexual risk than other forms of sexualised drug use	Yes	Yes	Yes	**Study 1:** In meta-analyses, chemsex drug use was generally associated with greater odds of living with HIV, having an STI, and engaging in condomless anal intercourse than other drugs used. **Study 2:** Engaging in chemsex was associated with a greater likelihood of recent STI diagnosis and a higher number of condomless anal intercourse partners in multivariable analyses. **Study 3:** When service users discussed condom use, those engaging in other types of sexualised drug use (i.e. poppers/cocaine) were either engaging in condomless sex in exclusive relationships or using condoms, whereas service users who were engaging in chemsex were having condomless sex with multiple partners.	Agreement

Sexualised drug use and chemsex among MSM is associated with living with HIV	Yes	Yes	Yes	**Study 1:** Meta-analyses revealed a consistent association between (sexualised) drug use and living with HIV among MSM, regardless of the drug used. **Study 2:** MSM who engaged in sexualised drug use were more likely to be living with HIV than those who did not (8% vs 2%). MSM who engaged in chemsex were more likely to be living with HIV than those who engaged in other sexualised drug use (20% vs. 6%). **Study 3:** Two of the thirteen service user participants (15%) were living with HIV, both of whom had engaged in chemsex (n=2/5, 40%).	Agreement
Engaging in sexualised drug use and chemsex may be associated with taking PrEP among MSM	No	Yes	Yes	**Study 2:** Those engaging in chemsex were significantly more likely to report currently taking PrEP than those who engaged in other types of sexualised drug use (21% vs. 9%) in bivariate analyses, and taking PrEP was significantly associated with event-level condom use. Event-level condom use was associated with taking PrEP for MSM engaging in sex under the influence of alcohol or cannabis, as well as taking poppers or EDD immediately before or during sex. **Study 3:** Three service user participants reported taking PrEP, all of whom engaged in chemsex, and service providers mentioned discussing PrEP to anyone who was engaging in chemsex.	Agreement
People engage in sexualised drug use to help facilitate the sexual experience	No	Yes	Yes	**Study 2:** MSM who engaged in chemsex and other sexualised drug use were more likely to report doing so to have sex for longer and because of the intense experience than MSM who had sex under the influence of alcohol. WSW and trans people who engaged in intentional sexualised drug use were more likely to report doing so to have sex for longer and the intense sexual experience compared to those who had sex under the influence of cannabis or alcohol. **Study 3:** The main motivation for engaging in sexualised drug use among MSM service user participants (n=12/13) was to facilitate the sexual experience, which included enhancement, prolonging the experience, and sexual experimentation.	Agreement
Internalised homophobia is not a motivation for engaging in sexualised drug use	No	Yes	Yes	**Study 2:** Internalised homophobia was not associated with engagement in sexualised drug use or chemsex among MSM, and was not associated with sexualised drug use among WSW. **Study 3:** Service users did not express internalised homophobia as a motivation for sexualised drug use or chemsex, with one participant expressing frustration that this is an assumption of MSM who engage in chemsex. Some service providers did note that they had witnessed MSM engaging in chemsex who did have internalised homophobia, but this was often contextualised with an understanding that a wide spectrum of MSM engage in chemsex.	Partial agreement
There can be negative psychological associations with chemsex and sexualised drug use	No	Yes	Yes	**Study 2:** Engaging in sexualised drug use among MSM was associated with lower life satisfaction compared those who did not engage in sexualised drug use. Among WSW, engaging in sexualised drug use was associated with very high psychological distress at the bivariate level **Study 3:** Two MSM engaging in chemsex reported having attempted suicide in relation to their drug use. Other MSM acknowledged psychological impacts of engaging in sexualised drug use. Service providers mentioned some MSM engaging in chemsex may need psychological support.	Agreement

Poorer perceived health may be associated with sexualised drug use	No	Yes	Yes	**Study 2:** Engaging in sexualised drug use among MSM was associated with poorer perceived health, which could relate to mental, sexual, or physical health. Poorer perceived health was associated with sexualised drug use among WSW compared to those engaging in drug use, and poorer perceived health was significantly associated with sexualised drug use compared to drug use in the multivariable analysis among trans people. **Study 3:** Some service user participants discussed the impact sexualised drug use, in particular chemsex, had on their sexual and their mental health.	Partial agreement
People engaging in drug use and sexualised drug use may experience sexual contact without consent	No	Yes	Yes	**Study 2:** 53% of MSM and 56% of WSW who experienced sexual contact without consent in the past 12 months had engaged in sexualised drug use, which was significant in bivariate analyses. Trans people who had engaged in drug use were more likely to report experiencing sexual contact without consent than those who had not engaged in drug use. **Study 3:** One service user participant described their experience of sexual contact without consent whilst engaging in chemsex. Service providers mentioned concern about someone's ability to maintain consent when engaging in chemsex, and described consultations where they had observed this among MSM patients engaging in chemsex.	Partial agreement
Sexual health clinics can play a role in service provision for people engaging in sexualised drug use	No	Yes	Yes	**Study 2:** Attending a GUM clinic in the past 12 months was significantly associated with sexualised drug use among MSM and trans people in multivariable analyses. Attending a GUM clinic was significantly associated with sexualised drug use at the bivariate level among WSW. **Study 3:** Service user participants mentioned using sexual health clinics as a source of support for sexualised drug use, and service providers discussed running specialised clinics for MSM engaging in chemsex.	Agreement
Engaging in chemsex did not affect MSM's adherence to PrEP or ART medication	No	No	Yes	**Study 3:** Service users who were taking PrEP or on ART medication stated they adhered to their medication when engaging in chemsex, and some service providers mentioned whilst this may be a concern among MSM taking PrEP and engaging in chemsex, the effectiveness of PrEP could allow for a couple of treatments being missed if taken daily.	Silence
Barriers to effective care exist for MSM engaging in sexualised drug use	No	No	Yes	**Study 3:** Both service users and service providers highlighted a number of barriers to care for sexualised drug use, which included barriers to sexual health clinics, but also barriers to other aspects of healthcare as well (general practice, mental health).	Silence

Objective 1: To investigate the occurrence of general sexualised drug use in the context of chemsex among MSM and the wider LGBT community

Previous research regarding sexualised drug use among LGBT people has mostly focused on MSM (Halkitis et al., 2001; Schmidt et al., 2016; Stall & Purcell, 2000), which is understandable in terms of associated sexual risks. However, sexualised drug use had also been previously observed among WSW (Mooney-Somers et al., 2018), and trans women (Hoffman, 2014; Reback & Fletcher, 2014), but much less is known among these populations with regards to associations with sexualised drug use compared to MSM. The themes related to Objective 1 and the level of agreement across studies can be seen in Table 18.

Table 18. Triangulation themes related to Objective 1 and level of agreement, partial agreement, dissonance and silence across the studies.

Theme	Study 1	Study 2	Study 3
MSM, WSW, and trans people engage in sexualised drug use	Agreement	Agreement	Partial agreement
Sexualised drug use and chemsex among MSM and trans women has been researched internationally	Agreement	Silence	Silence
Defining what constitutes chemsex is difficult	Agreement	Silence	Agreement

Study 1 and 2 found sexualised drug use among MSM, WSW, and trans people. In the systematic review, whilst studies investigating MSM and trans women met the inclusion and exclusion criteria, studies researching sexualised drug use among WSW found during the search strategy did not. The online questionnaire observed sexualised drug use among MSM and WSW, in addition to observing sexualised drug use among all trans people, not just trans women. The qualitative interviews with service users were only conducted among MSM, and therefore this study only partially agreed with the finding that MSM, WSW, and trans people engage in sexualised drug use.

Study 1 found that sexualised drug use was observed internationally among MSM and trans women, and because Study 2 and Study 3 were conducted in the UK, the latter two studies were coded as silence regarding this theme. However, the national design of Studies 2 and 3 meant that that this finding could not be addressed. Despite only being observed in Study 1, this finding is still important as sexualised drug use, and in particular chemsex, are sometimes

referred to as a behaviour that occurs in and is predominantly researched in Western countries, when sexualised drug use and chemsex are behaviours that occur internationally (Bourne, 2012).

Whilst attempting to understand the possible implications of engaging in sexualised drug use and chemsex, it became clear that defining chemsex within sexualised drug use is quite difficult. In Study 1, the drugs included in a study's definition of chemsex varied, with only crystal methamphetamine and GHB/GBL included in all definitions. Study 2 found that MSM engaging in chemsex were more likely to report polydrug use than those engaging in other forms of sexualised drug use, thereby making a clear definition of what substances are more associated with chemsex difficult. In Study 3, two service user participants stated using cocaine and self-identified as engaging in chemsex, one of whom was engaging in group sex, which has also been associated with chemsex. Also, service provider participants acknowledged that there is variation within MSM with regards to drug use, and therefore categorising this complex behaviour is difficult.

Objective 2: To measure quantitatively the psychological reasons as to why some MSM engage in chemsex and/or sexualised drug use, and also investigate possible reasons for engagement in the wider LGBT community

Motivations for engaging in sexualised drug use have emerged from both quantitative and qualitative research (Glynn et al., 2018; Weatherburn et al., 2017), with the sexual experience being a motivator identified in both types of research. Qualitative interviews have suggested more psychological motivations with regards to reasons for engaging in chemsex among MSM. Because sexualised drug use research had largely neglected WSW and trans people, research regarding any possible psychological associations with engaging in sexualised drug use among these groups is relatively unknown. Due to the finding from Study 2 that WSW and trans people do engage in sexualised drug use, psychological reasons for engagement could be investigated in these groups. The themes related to Objective 2 and the level of agreement with these themes across the studies can be seen in Table 19. Study 1 was silent on both themes relating to Objective 2, as investigating associated motivations for chemsex and sexualised drug use was not the aim of the systematic review.

Studies 2 and 3 found that people engage in sexualised drug use to help facilitate the sexual experience. In Study 2, this was evident by the high proportion of MSM who stated they engaged in chemsex to prolong the sexual experience (72%) and to have sex for longer (58%). Additionally, 42% of MSM who engaged in other sexualised drug use reported doing so to

prolong the sexual experience, and one quarter reported doing so to have sex for longer, which were both significantly more than MSM engaging in sex under the influence of alcohol. Whilst these motivations had been previously established among MSM engaging in chemsex (Glynn et al., 2018; Weatherburn et al., 2017), Study 2 highlighted that these are also motivations for other types of sexualised drug use among MSM. Furthermore, motivations for intentional sexualised drug use could be investigated among WSW and trans people in Study 2, showing similar findings that people engaging in sexualised drug use were more likely to do so because of the intense sexual experience and to prolong the sexual experience. The proportion of trans people reporting these motivations for intentional sexualised drug use were similar to MSM (61% intense experience; 26% sex for longer). A smaller proportion of WSW reported these motivations (29% intense experience; 12% sex for longer), but in both trans and WSW analyses these motivations were still significantly greater than those who reported sex under the influence of alcohol or cannabis. A theme that emerged in Study 3 was the sexual motivation for sexualised drug use among service users and revealed that in addition to prolonging and enhancing the sexual experience, sexual experimentation was also a motivation for engaging in sexualised drug use. All but one participant identified at least one sexual motivation for engaging in sexualised drug use, and therefore both Study 2 and 3 collectively suggest that a primary motivation for most people engaging in sexualised drug use is a sexual one.

Table 19. Triangulation themes related to Objective 2 and level of agreement, partial agreement, dissonance and silence across the studies.

Theme	Study 1	Study 2	Study 3
People engage in sexualised drug use to help facilitate the sexual experience	Silence	Agreement	Agreement
Internalised homophobia is not a motivation for engaging in sexualised drug use	Silence	Agreement	Partial agreement

Previous qualitative interviews with MSM engaging in chemsex had suggested internalised homophobia was a motivation for engaging in chemsex (Weatherburn et al., 2017). Additionally, internalised homophobia and experiences of discrimination have been used to try and explain LGBT health more generally (Meyer, 2003), as well as in relation to drug use among LGB people (Lea et al., 2014), and sexual behaviour among gay and bisexual men when engaging in drug use (Dentato et al., 2013). Internalised homophobia was not associated with sexualised drug use among MSM and WSW, and was not associated with chemsex among

MSM in Study 2. In Study 3, no service user participants suggested internalised homophobia was a driver for their behaviour, and one participant argued that the narrative that MSM engaging in chemsex do so because of internalised homophobia is homophobic and incorrect. However, the interviews with service providers in Study 3 revealed that some clinicians had seen MSM service users where they perceived that internalised homophobia had been a motivation for engaging in chemsex. Therefore, Study 3 only partially agrees with the theme that internalised homophobia is not a motivation for sexualised drug use. It may be the case that internalised homophobia may motivate some individuals to engage in this behaviour, but people who have internalised homophobia are not more likely to engage in sexualised drug use because there are many other motivations for sexualised drug use, and sexualised drug use and chemsex are highly individual experiences (Bourne et al., 2015).

Objective 3: To understand what potential impact engaging in sexualised drug use has in terms of sexual and physical health, and psychological wellbeing

Previous research into sexualised drug use and chemsex among MSM has found a number of associated sexual risks, such as condomless anal intercourse with multiple partners, group sex, and STI diagnoses (Bourne et al., 2014; Glynn et al., 2018; Hegazi et al., 2017; Mattison et al., 2001). In addition to neglecting WSW and trans people, research regarding sexualised drug use and chemsex has been criticised due to its focus on sexual health outcomes (Desai et al., 2018; Edmundson et al., 2018), neglecting possible psychological impacts of engaging in sexualised drug use or chemsex. The themes related to Objective 3 can be seen in Table 20. Study 1 was silent on the majority of themes related to Objective 3, because the scope of the systematic review was limited to three specific sexual health and behaviour outcomes (HIV status, STI diagnoses, and condomless anal intercourse).

There was a consistent finding across the programme of research that engaging in sexualised drug use and chemsex was associated with living with HIV, which is similar to previous research (Bourne et al., 2014; Hegazi et al., 2017; Ottaway, Finnerty, Amlani, et al., 2017). Study 1 found an association between HIV status and sexualised drug use across meta-analyses regardless of the drug used. Study 2 found that the proportion of MSM engaging in sexualised drug use that were living with HIV was higher than those not engaging in sexualised drug use (8% vs. 2%), and the proportion of MSM engaging in chemsex living with HIV was higher compared to those engaging in other forms of sexualised drug use (20% vs. 6%). Both

of these findings were significant at the bivariate level, but not in the multivariable analyses, possibly due to an association between HIV status and condomless anal intercourse. In Study 3, the two MSM living with HIV recruited had both engaged in chemsex and acquired their HIV before engaging in chemsex. Therefore, the consistent finding across the three studies that MSM living with HIV are more likely to engage in sexualised drug use and chemsex may reflect this behaviour being common among MSM already living with HIV, as opposed to MSM acquiring HIV through engaging in chemsex, and previous research has not found an association between chemsex and HIV incidence (Hegazi et al., 2017; Ottaway, Finnerty, Amlani, et al., 2017).

Table 20. Triangulation themes related to Objective 3 and level of agreement, partial agreement, dissonance and silence across the studies.

Theme	Study 1	Study 2	Study 3
Sexualised drug use and chemsex among MSM is associated with living with HIV	Agreement	Agreement	Agreement
Sexualised drug use and chemsex is associated with sexual risk among MSM	Agreement	Agreement	Agreement
Chemsex may be associated with greater sexual risk than other forms of sexualised drug use	Agreement	Agreement	Agreement
Engaging in chemsex may be associated with taking PrEP in MSM	Silence	Agreement	Agreement
Engaging in chemsex did not affect MSM's adherence to PrEP or ART medication	Silence	Silence	Agreement
Poorer perceived health may be associated with sexualised drug use	Silence	Agreement	Partial agreement
People engaging in drug use and sexualised drug use may experience sexual contact without consent	Silence	Agreement	Partial agreement
There are negative psychological associations with chemsex and sexualised drug use	Silence	Agreement	Agreement

Similar to the previous research on sexualised drug use among MSM, all three studies found an association between sexualised drug use and sexual risk. In Study 1, meta-analyses revealed that poppers and chemsex was associated with STI diagnosis and having condomless anal intercourse. In Study 2, MSM engaging in sexualised drug use were more likely to have been diagnosed with an STI and have more condomless anal intercourse partners than those who did not. Also in Study 2, MSM who engaged in chemsex were more likely to report an STI diagnosis and have a greater number of condomless anal intercourse partners than MSM who

engaged in other types of sexualised drug use. Interestingly, drug use among WSW and trans people was associated with STI diagnoses, but not sexualised drug use in comparison to general drug use. This may be due to a low incidence of self-reported STI diagnoses in this group. During interviews with service users in Study 3, all of whom engaged in sexualised drug use, the majority of MSM reported no intention to use condoms, and this was consistent with their behaviour. Therefore, there was a consistent finding across all three studies that sexualised drug use and chemsex was associated with increased sexual risks.

The results from this programme of research were used to compare chemsex with other types of sexualised drug use, as other forms of sexualised drug use had been somewhat neglected in the recent literature due to the emergence of chemsex. Study 1 found meta-analytical associations between engaging in chemsex and HIV status, STI diagnoses, and condomless anal intercourse. Additionally, the association between chemsex and HIV status, STI diagnoses, and condomless anal intercourse tended to be greater compared to meta analyses between other drugs and HIV status, STI diagnoses, and condomless anal intercourse. Additionally, Study 2 found that MSM engaging in chemsex were more likely to report an STI diagnosis and a greater number of condomless anal intercourse partners than those engaging in other types of sexualised drug use. Study 3 provided context for this finding, as MSM engaging in other types of sexualised drug use tended to report having condomless anal intercourse within an exclusive relationship, compared to MSM who were engaging in chemsex and condomless anal intercourse with multiple partners. Whilst further research is needed to justify this conclusion, there has been a consistent finding across this programme of research that there may be greater sexual risk associated with chemsex.

PrEP use has been associated with engaging in chemsex among MSM in Amsterdam (Druckler et al., 2018), but prior to this programme of research, little was known about PrEP in the context of sexualised drug use and chemsex in the UK. Study 2 found that MSM engaging in sexualised drug use were more likely to report currently taking PrEP than those who were not (11% vs. 3%), and those engaging in chemsex were more likely to report currently taking PrEP compared to those who did not (21% vs. 9%). These findings were significant at the bivariate level but not in multivariable analyses, possibly due to the association between PrEP use and condomless anal intercourse. Additionally, taking PrEP was associated with condomless anal intercourse in event-level analyses when engaging in sex under the influence of alcohol or cannabis, or taking poppers or EDD medication immediately before or during sex. Three service user participants who were taking PrEP and engaging in chemsex were recruited for Study 3. Service providers also mentioned providing PrEP to MSM engaging in chemsex.

Therefore, Study 2 and 3 provided consistent evidence for the association between PrEP and sexualised drug use and chemsex.

Previous research regarding MSM living with HIV and engaging in sexualised drug use and chemsex had suggested that engagement may be associated with a lack of adherence to medication (Daskalopoulou et al., 2014; Pufall et al., 2018), and prior to this programme of research, adherence to PrEP and the influence of sexualised drug use and chemsex had not been investigated. Study 3 found that service user participants did not report any problems with adherence to ART medication or PrEP whilst engaging in chemsex, and service providers did not perceive engaging in chemsex as a barrier to PrEP with regards to adherence, because of the effectiveness of PrEP even if a couple of doses are missed per week. Whilst research regarding adherence to PrEP and chemsex published after the current research programme had been conducted found no difference in PrEP adherence between those engaging in chemsex and those not (O'Halloran et al., 2019), interviews with service users gave a more in-depth understanding of participants' strategies to maintain adherence to PrEP or ART medication whilst engaging in chemsex. These included taking their medication to parties, building and maintaining a routine of adherence, using adherence tools like keychains, and sharing PrEP with other members at the party. Due to the fact that adherence was investigated in Study 3 on the basis of findings from Study 2 that MSM engaging in sexualised drug use and chemsex were more likely to be taking PrEP or living with HIV, this finding is unique to Study 3 and makes an interesting contribution to knowledge with regards to adherence and sexualised drug use.

Participants in Study 2 were asked to rate their perceived health and it was found that poorer perceived health was associated with sexualised drug use among MSM and trans people, as well as drug use among WSW. Although it is unclear whether this is related to sexual, physical, and/or mental health, due to the question asking participants how they perceived their health generally, MSM service user participants in Study 3 discussed poorer health in terms of mental and sexual health, but it is unclear if this was contributing to how they perceived their health overall. Therefore, Study 3 only partially supports the finding theme in relation to sexualised drug use and perceived health, and further research is needed to investigate the implications for overall health in regards to drug use and sexualised drug use.

Over half of MSM and WSW who reported experiencing sexual contact without consent in the past 12 months had engaged in sexualised drug use in their respective analyses. These findings were significant at the bivariate level but not the multivariable level, possibly due the small proportion of participants reporting sexual contact without consent. Experiencing

sexual contact without consent was significantly associated with drug use among trans participants in multivariable analyses, but this was not significant when comparing sexualised drug use with drug use generally, possibly due to the fact that 82% of trans participants who had experienced sexual contact without consent had also engaged in drug use. However, the direction of this relationship is uncertain; whether engaging in drug use or sexualised drug use makes someone more vulnerable to sexual assault, or whether drug use may act as a coping mechanism for people who experience sexual assault. It may be that there is variability between MSM, WSW, and trans people with regards to the direction of this effect, as well as variability within these groups. Previous research among MSM engaging in chemsex has found evidence that sexual assaults have taken place during chemsex (Bourne et al., 2015), and one service user in Study 3 described an experience of sexual contact without consent in the context of chemsex. Service providers also expressed concern about a person's ability to maintain consent in the context of chemsex and described consultations where participants reported experiencing non-consensual sex in the context of chemsex. Further research is needed to understand the direction of effect in regards to sexual assault and drug use or sexualised drug use, particularly among WSW and trans people.

As mentioned previously in relation to Objective 3 of the programme of research, research regarding sexualised drug use and chemsex has been criticised for often neglecting possible psychological associations (Desai et al., 2018; Edmundson et al., 2018). Study 2 found that among MSM engaging in sexualised drug use was associated with lower satisfaction with life. In addition to this, bivariate associations were found between having very high psychological distress was associated with sexualised drug use among WSW, but this was not significant in the multivariable analysis, possibly due to psychological distress being associated with drug use generally among WSW. In Study 3, service users noted some negative psychological associations with sexualised drug use, particularly chemsex, with one participant reporting experiencing psychosis and two participants reporting attempting suicide. Service providers also noted that some MSM engaging in sexualised drug use may do for psychological reasons, such as low self-esteem and/or mental health problems, and some service providers stated some MSM engaging in chemsex may need further psychological support. Whilst not all people engaging in sexualised drug use will do so due to negative psychological reasons, or all people engaging in chemsex will experience negative psychological associations, both Study 2 and 3 highlight that caution is needed when engaging in this behaviour. People engaging in sexualised drug use and chemsex should be aware of this potential and seek care if in need of help.

Objective 4: To investigate what services are currently available for LGBT people engaging in sexualised drug use and what service development is needed

Previous research has highlighted that MSM engaging in sexualised drug use and chemsex have a preference for integrated sexual health and drug services (Bourne et al., 2014; Tomkins, Vivancos, et al., 2018). Objective 4 was designed in specific reference to the qualitative interviews stage of this programme of research (Study 3), and the themes related to Objective 4 and the level of agreement with these themes across the studies can be seen in Table 21. Study 1 was silent on the themes related to Objective 4, because the systematic review did not aim to investigate sexual health clinic use among those engaging in sexualised drug use and chemsex.

Table 21. Triangulation themes related to Objective 4 and level of agreement, partial agreement, dissonance and silence across the studies.

Theme	Study 1	Study 2	Study 3
Sexual health clinics can play a role in service provision for people engaging in sexualised drug use	Silence	Agreement	Agreement
Barriers to effective care exist for MSM engaging in sexualised drug use	Silence	Silence	Agreement

Research regarding sexualised drug use and chemsex among MSM is often conducted in sexual health clinics (Edmundson et al., 2018; Hegazi et al., 2017; Ottaway, Finnerty, Amlani, et al., 2017). By using a community sample, Study 2 was able to assess whether those engaging in sexualised drug use were more likely attend sexual health clinics. Multivariable analyses found MSM engaging in sexualised drug use were more likely to have attended a sexual health clinic than those who did not (55% vs. 38%), and this was also significant when comparing MSM engaging in chemsex with those who engaged in other types of sexualised drug use (84% vs 65%). Similarly, bivariate analyses among WSW suggested that engaging in sexualised drug use was associated with attending a sexual health clinic compared to drug use generally (35% vs. 22%), and was significant in the multivariable analysis when comparing sexual health clinic attendance between trans people engaging in sexualised drug use and those engaging in drug use generally (62% vs. 26%). Study 2 found that sexual health clinics are a point of contact for LGBT people engaging in sexualised drug use and so can be used as a source of support if needed. Study 3 found that MSM engaging in chemsex used sexual health clinics as a source

of support for drug use to help someone stop or manage their usage. Some service providers described running specialist chemsex clinics, as well as providing both internal and external support for MSM engaging in chemsex attending for care, although it is unclear what services were available for WSW and trans people. Therefore, Study 2 and 3 were both in agreement that sexual health services can play a role in service provision to people engaging in sexualised drug use.

Despite the opportunity for service provision in sexual health services, Study 3 highlighted barriers to care for MSM engaging in sexualised drug use. Service users and service providers both identified a number of barriers associated with sexual health clinics, such as accessibility and funding. However, access to other forms of care (mental health services, counselling) were also reported as a barrier among MSM engaging in sexualised drug use and chemsex. This barrier was not deemed specific to MSM engaging in sexualised drug use, but because of poor access to services generally (Care Quality Commission, 2019). This was a unique finding to Study 3, but important in terms of the quality of care received by LGBT people engaging in sexualised drug use, and further research that is inclusive of WSW and trans people is needed to investigate the level of care received.

Summary of the triangulation of findings

The triangulation process has highlighted the novel contributions this programme of research has made in relation to the four objectives. The aim and objectives of the programme of research have been achieved through a combination of the three studies, and the findings from these studies can be used to inform recommendations for future research and public health practice that will be outlined in the conclusion.

Strengths and limitations

The strengths and limitations of each individual study have been discussed in their respective chapters, and therefore the strengths and limitations of the programme of research as a whole and the triangulation process will now be discussed.

A limitation of the programme of research is that, unlike Studies 1 and 2, Study 3 was not inclusive of WSW and trans people. Although this decision was made due to the higher proportion of MSM engaging in sexualised drug use and chemsex, thereby possibly aiding

recruitment, including WSW and trans people may have provided supporting or contrasting findings regarding sexualised drug use among these groups compared to MSM. It is unclear if any WSW or trans participants would have been recruited if included, but any recruitment would have provided novel contributions to knowledge with regards to sexualised drug use among these groups, as it is uncommon that WSW and trans people are included in sexualised drug use research. Therefore, it is recommended that future research investigate sexualised drug use among WSW and trans people using qualitative interviews to add to the growing body of knowledge regarding this issue.

As outlined as good practice in Farmer et al. (2006), a triangulation protocol was created before the triangulation process began. Whilst this is a strength, Farmer et al. (2006) also suggesting using two researchers to assess the level of agreement on finding themes between studies. Although this was not possible in this programme of research, the supervisory team did play a role in ensuring accurate categorisation of themes. Additionally, a protocol was produced to minimise bias in the triangulation process, but the level of agreement may still be biased to one researcher's interpretation of findings from each study. Despite this, the triangulation process was useful in understanding the findings from each of the studies from the programme of research in the context of the research objectives and providing assessment of how these objectives were achieved.

Using a mixed methods approach allowed for a more comprehensive investigation into sexualised drug use. However, Study 2 used self-reported measures and causation could not be inferred due to the cross-sectional design. The qualitative interviews in Study 3 allowed for further investigation into peoples' perspectives regarding causation between findings from Study 2, but this personal perspective of causation is limited to a small number of participants, and it cannot be said with any certainty to be reflective of people's experiences more generally. Additionally, participants self-selected for both Study 2 and 3, which may have resulted in a self-selection bias in both datasets, with participants with particular experiences regarding sexualised drug use and chemsex being more likely to come forward; therefore, possibly missing a section of this target population. Those currently reporting negative associations with chemsex and sexualised drug use may be less likely to come forward, but it is equally plausible that those that have experienced negative associations may be more likely to come forward so they can have their experience heard. Despite this, both positive and negative associations with chemsex and sexualised drug use were found across the programme of research, but further research may be needed to target people at risk of negative impacts of sexualised drug use and chemsex.

The PPI group was utilised during Study 2 and their contribution was of significant value with regards to the design and accuracy of variables included. The inclusion of a PPI group also gave this study an added sense of validity, ensuring that research was inclusive of community members, as well as designed and used by community members. An attempt was made to have PPI in Study 3, but this was not possible due to capacity within appropriate community organisations. Although it is unfortunate that this research approach could not be applied to Study 3, the benefits of having the PPI group in Study 2 highlight the success of utilising this research approach.

Personal reflection

Personal reflection is provided after Studies 2 and 3; therefore, this personal reflection will focus on the whole programme of research. Using a mixed methods approach has added a greater value and insight into the topic of sexualised drug use, than would have been gained from just using either quantitative or qualitative methods. Despite my previous skill set and research exposure being mostly quantitative, I did enjoy conducting interviews and collecting narratives that are hidden from the quantitative data. I was never a researcher who diminished the value or integrity of qualitative research, and in my opinion, I found this portion of the programme of research much more difficult. I don't believe this is because I have more experience with quantitative research, I think the data collection, analysis, and reporting of qualitative research requires a lot more energy than for quantitative research. That is not to say I will shy away from using qualitative research in the future, but I have more of an awareness of how much work is required.

Having a PPI group has meant that this research was conducted in partnership with LGBT people and for LGBT people, as opposed to just conducting research on LGBT people. The use of community organisations has helped generate impact and dissemination of findings that would not have occurred otherwise. Although I had previous experience of conducting research with a PPI group, I was part of a large research group, whereas in this programme of research I had a lot of autonomy over the research, which then led to me being more involved in forming and liaising with the PPI group. Being more involved in the organisation of the PPI group allowed me to experience the additional value PPI groups bring to research, and I would highly recommend any researcher conducting health or community based research to consider using a PPI group.

My only regret with the PPI group is not including an LGBT group for people of colour. Had I known that Facebook advertising for Study 2 would have resulted in a biased sample in terms of white ethnicity, I would have definitely included a community organisation for LGBT people of colour. This would have helped to overcome the biases that came from using Facebook advertising. It is unclear as to whether LGBT people of colour were less likely to be shown the advert, or less likely to engage in the advert. Additionally, it is unfortunate that community organisations could not be utilised in the same way for Study 3, but funding problems for community organisations and integration with NHS services created additional barriers to utilising these groups, and seeking NHS Health Research Authority ethics for service users was not feasible in the remaining timescale.

In relation to Study 3, only MSM were researched from a service user perspective. Although this has left some gaps during the triangulation process, there are multiple reasons for and against focusing solely on MSM. Firstly, I have issues with trans women being grouped in with MSM due to the historic misidentification of trans women as MSM, and if not enough trans women were recruited, I would not want these findings to be hidden by or submerged with the MSM findings. Even though some interesting findings from The LGBT+ Sex and Lifestyles Survey emerged with regards to WSW and thus warranted further research, the findings were not homogeneous with MSM, and therefore I see it as two separate studies. Whilst I am proud of my inclusion of all LGBT people in Studies 1 and 2, designing a fully inclusive survey was not easy, and there are definitely situations that warrant focusing on one subgroup of LGBT people, because although there are similarities, LGBT people are not one homogenous group. Ideally, three separate qualitative studies would have been conducted (one for MSM, one for WSW, and one for trans people), in addition to interviews with service providers; however, this was not feasible within the time frame for this programme of research. Additionally, MSM reported the most sexualised drug use compared to WSW and trans people in Study 2 and are generally forthcoming with regards to sexual health research, due to being a group that sexual health research has focused on for some time. Although WSW and trans people engaging in sexualised drug use may be harder to recruit, this should not be a reason to neglect this topic, but a larger time scale may be needed to recruit these groups.

During my personal reflection for Studies 2 and 3, I discussed the preconceived notion that MSM engaging in chemsex were doing so because they were unhappy and had high levels of internalised homophobia. Whilst this may be true for some MSM engaging in this behaviour, the current programme of research found very little evidence of this. Additionally, Study 3 highlighted how this narrative can actually be harmful for people engaging in this behaviour,

as it may question someone's validity for help. Although I have admitted this was an opinion I held and something I thought I would find when conducting this research, the fact that I have been able to change my opinion when analysing the evidence in this programme of research demonstrates my integrity as a researcher. All researchers go into their research with the expectation to find something, but being able to demonstrate that you can disregard that expectation when presented with evidence is key to being an honest and unbiased researcher. Because I am conducting research on a community I am also a part of, and therefore may have strong personal opinions about certain topics formed outside of research, I think it is important that I can demonstrate that this does not undermine my scientific integrity as a researcher.

Conclusion

The aim of this programme of research was to investigate sexualised drug use among LGBT people, with a particular focus on reasons for engagement, and the potential impact on physical health and psychological wellbeing. The findings from this programme of research have made several novel contributions to knowledge regarding sexualised drug use among LGBT people, which are:

- The term chemsex was often used in a Western context and among MSM in previous research, but Study 1 found sexualised drug use and chemsex has been researched internationally among MSM and trans women.
- The LGBT+ Sex and Lifestyles Survey included WSW and trans people, and observed sexualised drug use among these groups, which had not been researched in the UK and had received very little attention internationally.
- Previous research had often neglected to examine psychological associations with sexualised drug use, and psychological associations with sexualised drug use and chemsex among MSM were investigated, finding sexualised drug use was associated with poorer life satisfaction.
- Psychological motivations for MSM engaging in sexualised drug use and chemsex, such as internalised homophobia, were not found. Both Study 2 and Study 3 highlighted that the main motivations for MSM engaging in sexualised drug use and chemsex were sexual.

- Whilst previous research had established the association between sexualised drug use, chemsex, and sexual risk among MSM, The LGBT+ Sex and Lifestyles Survey found that in addition to sexual risk behaviours like more anal intercourse partners, sexualised drug use and chemsex was associated with PrEP use, which had not been investigated in UK research previously.
- Despite the finding across all three studies that chemsex may be difficult to define, it did appear that chemsex may be associated with greater sexual risk than other types of sexualised drug use.
- Due to the lack of inclusion in sexualised drug use research generally, little was known about psychological and physical health associations with drug use and sexualised drug use among WSW, and trans people, and a number of potential physical and psychological associations were found, such as sexual assault and psychological distress.
- MSM engaging in sexualised drug use and chemsex appeared to be engaging with and receiving a high level of care from sexual health services, but this level of care was lacking from other services (e.g. mental health services). This poorer level of care did not appear to be specific to MSM engaging in sexualised drug use, but because of a poor level of care generally due to a lack of funding for mental health services.

These novel findings contribute to a number of recommendations for both future research and public health practice.

Recommendations for future research

Although it became apparent that defining what constitutes chemsex as opposed to other sexualised drug use is somewhat difficult, it is interesting that certain drugs, like those associated with chemsex, appeared to be associated with greater sexual risk among MSM. It would be interesting to explore this further and to assess whether drugs used in certain contexts are associated with greater sexual risk taking behaviour, and to further understand what influences intention to use condoms and condom use behaviour in the context of sexualised drug use. Additionally, the systematic review found that some studies that aimed to investigate sexualised drug use were using global associations, which means the drug use is not defined and measured in a sexual context. Any future research should utilise situational associations and event-level analyses to improve the accuracy of the measurement, as both of these analyses define and measure drug use in a sexualised context.

This programme of research highlighted a possible association between sexualised drug use and psychological wellbeing among MSM that warrants further investigation. The qualitative interviews with MSM engaging in chemsex revealed some participants experienced negative psychological associations and some did not. The reason as to why some people experience negative psychological associations and others do not, may be a result of their motivations for engaging, or their psychological wellbeing before engaging in sexualised drug use and chemsex. A longitudinal cohort study recording behaviour and wellbeing over a period of time may provide an answer to this research question.

By including WSW and trans people in Study 2, this programme of research was able to make some novel contributions to knowledge regarding sexualised drug use among these groups. The association between sexual assault and drug use among WSW and trans people requires further investigation, as little is known about the context of these assaults, and research regarding this may be able to protect people in the future. Although creating a fully inclusive survey regarding sexual health of LGBT people was difficult, research into LGBT health issues generally should aim to be inclusive of all LGBT people where appropriate.

Including a PPI group was a rewarding and worthwhile experience during this programme of research, and the group added to the quality of work produced. Therefore, it is recommended that researchers consider the inclusion of a PPI group in health related research, as well as LGBT research.

Recommendations for public health policy and practice

People who engaged in sexualised drug use and chemsex were identified to be at high risk of sexual health and drug harms, and support services need to be available for those engaging in this behaviour. The programme of research had identified a number of recommendations for public health policy and practice, which are:

- Sexual health services have been identified as a source of support for those engaging in sexualised drug use, but funding and capacity were common barriers to care, and sexual health services have had funding cut dramatically since 2013 (BASHH/BHIVA, 2018). It cannot be expected that sexual health clinics provide a high level of care on reduced funding, and therefore funding for sexual health services should be increased.
- Additionally, increases in sexual health funding may help reduce accessibility issues, by either extending clinic hours or utilising alternative methods such as online testing.

- Funding to mental health services should also be increased, as some participants reported attempting suicide and receiving no help from health services.
- This lack of appropriate care resulted in service users relying on community organisations for help, and whilst it is positive that participants experiencing negative effects have somewhere to go besides sexual health clinics, it was reported community organisations also had long waiting lists, and therefore funding for these services should also be increased.
- When this research was conducted, PrEP was currently available on the IMPACT trial in England, and whilst this has now been made more widely available (Kirby, 2020), this research identified strains on clinic capacity the PrEP trial was having. Therefore, it is recommended that future HIV prevention techniques should not be limited in this way, as this places increasing pressure on sexual health clinics and raises a number of moral and ethical questions.
- Experiences of sexual assault were common experiences among people using drugs or engaging in sexualised drug use. Therefore, training for services coming into contact with MSM, WSW and trans people (community organisations, sexual health clinics, rape and drug support services) should be provided to raise awareness of these potentially compounding issues to provide appropriate help and support.
- Narratives surrounding chemsex were identified as a potential barrier to care, and one participant reported how a practitioner's expectation of MSM who use drugs deterred him from seeking help. Although, service user participants in Study 3 identified that drug use was a spectrum of behaviour and training to sexual health staff should adopt this harm reduction approach.
- Additionally, promotion and training regarding of drug use as a spectrum of behaviour should be given to services other than sexual health clinics, such as other health services like mental health or accident and emergency, as well as private counselling services, in attempt to remove any stigmatising barriers to care.

Closing remarks

This programme of research has achieved the aim of investigating sexualised drug use among LGBT people, particularly the reasons for engagement and associations with physical and psychological wellbeing. It has been recommended that a harm reduction approach be adopted to help minimise any possible barriers to care that those engaging in sexualised drug use experience. It was novel to include WSW and trans people in sexualised drug use research, and this has resulted in a number of original and interesting findings and recommendations for future research and public health policy. Research into LGBT health should aim to be inclusive as possible, and although certain topics may affect a higher proportion of a particular subgroup within LGBT people, this does not necessarily mean that research regarding the topic on other LGBT groups is not needed. Highlighting LGBT health research is not only important for public health knowledge and practice, but to raise awareness of issues LGBT people face in society more generally compared to cisgender heterosexual people.

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Appendix 1: The PRISMA Statement

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	26
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	n/a
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	Introduction chapter/26
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	27
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	27
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	31
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	26-27
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	28-30
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	28, 31
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	28
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	28
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	28

Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	28
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	28, 38-41
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	42
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	28
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	32
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	33-35
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Appendix 2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	38-41
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	38-41
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Appendix 2
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	38-41
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	42
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	44
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	44-45
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	n/a

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Appendix 2. Quality assessment for included studies.

Study	A: Study design	B: Sample	C: Confounders	D: Data collection methods	E: Withdrawals and dropouts	F: Analyses	Overall
Men who have sex with men							
Barron-Limon et al. (2012)	Strong	Moderate	Moderate	Moderate	Strong	Moderate	Strong
Bowden-Jones et al. (2017)	Strong	Moderate	Moderate	Weak	Strong	Strong	Moderate
Card et al. (2017)	Strong	Moderate	Weak	Weak	Weak	Moderate	Weak
Daskalopoulou et al. (2014)	Strong	Weak	Strong	Moderate	Moderate	Strong	Moderate
Duan et al. (2017)	Strong	Moderate	Strong	Strong	Weak	Strong	Moderate
Eaton et al. (2015)	Strong	Moderate	Moderate	Moderate	Moderate	Strong	Strong
Eaton et al. (2016)	Strong	Strong	Strong	Strong	Strong	Strong	Strong
M. P. Fisher et al. (2013)	Strong	Strong	Strong	Strong	Weak	Weak	Weak
Frankis et al. (2018)	Strong	Strong	Strong	Strong	Weak	Strong	Moderate
Gilbart et al. (2015)	Strong	Strong	Weak	Weak	Moderate	Strong	Weak
Glynn et al. (2018)	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Goedel and Duncan (2016)	Strong	Moderate	Weak	Weak	Weak	Weak	Weak
González-Baeza et al. (2018)	Strong	Strong	Strong	Weak	Moderate	Strong	Moderate
Halkitis et al. (2012)	Strong	Weak	Weak	Weak	Weak	Weak	Weak
Hammoud et al. (2017)	Strong	Moderate	Strong	Weak	Strong	Strong	Moderate
Hammoud et al. (2018)	Strong	Moderate	Strong	Weak	Strong	Strong	Moderate
Bowring et al. (2014)	Strong	Weak	Weak	Weak	Weak	Strong	Weak
Heinsbroek et al. (2018)	Strong	Moderate	Weak	Weak	Weak	Strong	Weak
Kahler et al. (2015)	Strong	Moderate	Weak	Strong	Weak	Weak	Weak
Kecojevic et al. (2015)	Strong	Moderate	Weak	Strong	Strong	Moderate	Moderate
Kelly et al. (2014)	Strong	Moderate	Weak	Strong	Strong	Weak	Weak
Kelly et al. (2016)	Strong	Strong	Weak	Strong	Strong	Strong	Moderate
Kramer et al. (2016)	Strong	Moderate	Strong	Strong	Weak	Moderate	Moderate
Kupprat et al. (2017)	Strong	Weak	Weak	Strong	Strong	Strong	Weak
Lachowsky et al. (2016)	Strong	Strong	Strong	Strong	Strong	Weak	Moderate
Li & McDavid (2014)	Strong	Moderate	Moderate	Strong	Moderate	Strong	Moderate
Li et al. (2014)	Strong	Strong	Strong	Strong	Moderate	Strong	Strong
Lim et al. (2015)	Strong	Moderate	Moderate	Strong	Weak	Weak	Weak
Martinez et al. (2017)	Strong	Moderate	Weak	Weak	Weak	Strong	Weak
Melendez-Torres et al. (2016)	Strong	Weak	Strong	Strong	Weak	Weak	Weak
Melendez-Torres et al. (2017)	Strong	Weak	Strong	Strong	Weak	Moderate	Weak
Mitchell et al. (2016)	Strong	Moderate	Moderate	Strong	Weak	Moderate	Moderate
Morgan et al. (2016)	Strong	Weak	Strong	Strong	Weak	Strong	Weak
Pylli et al. (2014)	Strong	Moderate	Weak	Weak	Strong	Strong	Weak
Rendina et al. (2015)	Strong	Weak	Weak	Strong	Strong	Strong	Weak
Sewell et al. (2017)	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Theodore et al. (2014)	Strong	Moderate	Weak	Strong	Weak	Weak	Weak
Tieu et al. (2014)	Strong	Moderate	Strong	Strong	Weak	Strong	Moderate
Tomkins, Ahmad, et al. (2018)	Strong	Weak	Strong	Strong	Weak	Strong	Weak
Wei et al. (2012)	Strong	Strong	Strong	Strong	Moderate	Strong	Strong
Wu et al. (2018)	Strong	Moderate	Strong	Strong	Moderate	Strong	Strong
Zhang et al. (2016)	Strong	Strong	Strong	Strong	Strong	Strong	Strong

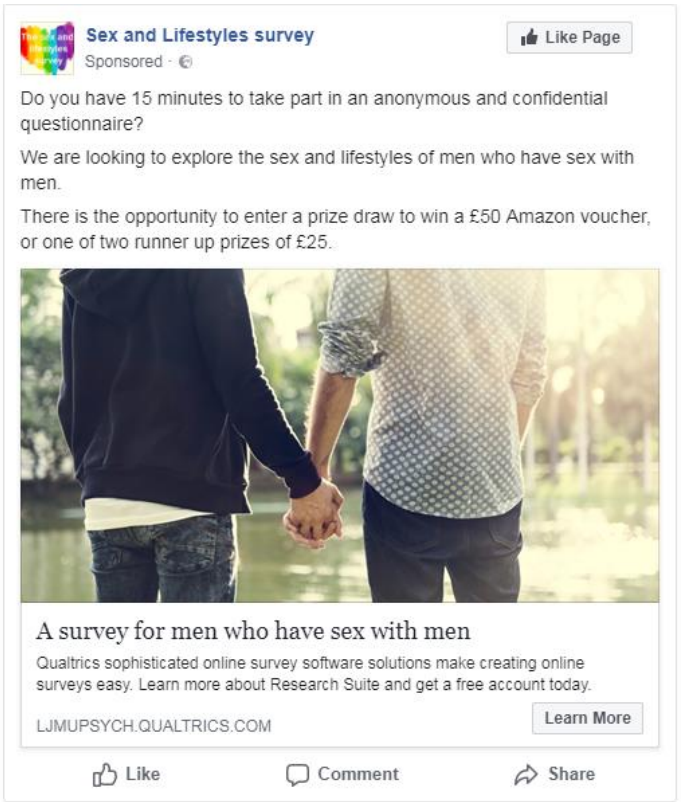
Trans women							
Benotsch et al. (2016)	Strong	Moderate	Weak	Strong	Strong	Moderate	Moderate
Colby et al. (2016)	Strong	Moderate	Moderate	Strong	Weak	Strong	Moderate
Grinsztejn et al. (2017)	Moderate	Weak	Weak	Weak	Strong	Strong	Weak
Santos et al. (2014)	Strong	Weak	Strong	Strong	Strong	Weak	Weak
Turner et al. (2017)	Strong	Weak	Strong	Strong	Strong	Strong	Moderate

Appendix 3. Facebook adverts for participant recruitment

Figure 1. Screenshot of The Sex and Lifestyles Survey Facebook Page.

Figure 2. Men who have sex with men adverts

2a. Facebook desktop advert 2b. Facebook mobile advert



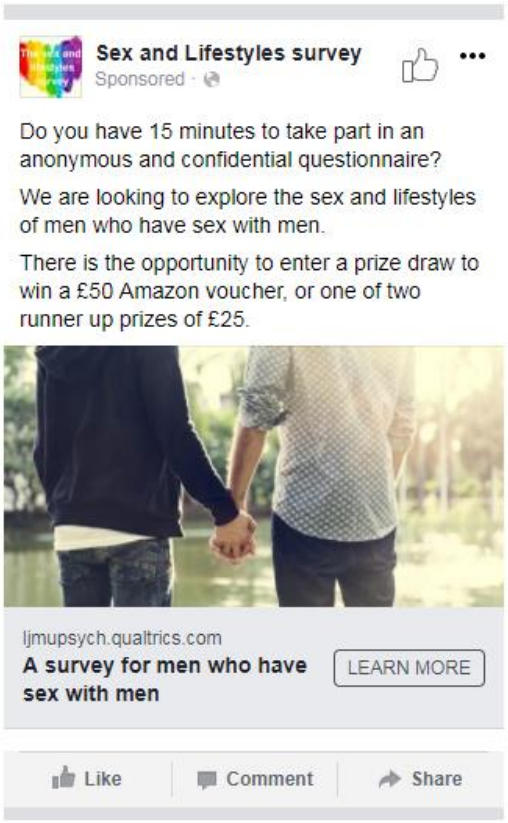


Figure 3. Women who have sex with women adverts

3a. Facebook desktop advert 3b. Facebook mobile advert

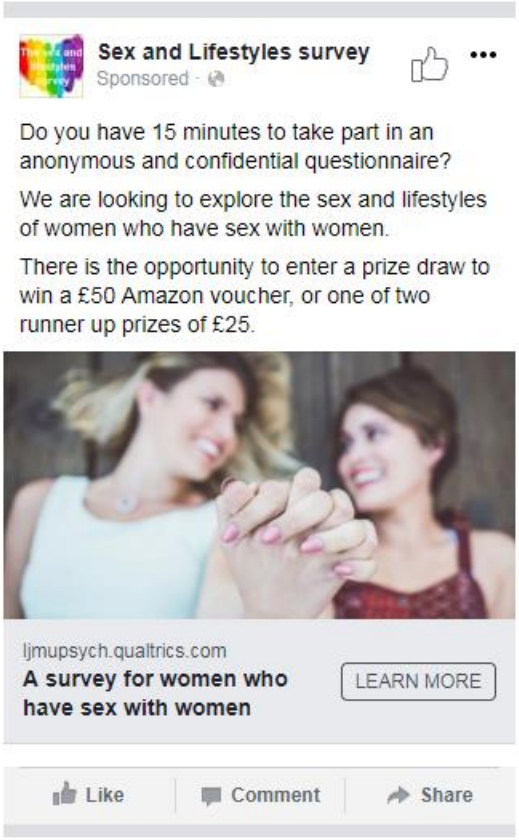


Figure 4. Trans people adverts

4a. Facebook desktop advert 4b. Facebook mobile advert

Figure 5. LGBT+ advert.

Figure 6. Additional MSM advert.

Men who have sex with men advert

The advert ran from 12/04/18 – 8/05/18 (26 days) with a maximum budget set of £6.67 per day. The advert was targeted at men living in the UK, aged 18 and above, and had showed interest in one of the following topics on Facebook:

- Advocate (gay press)
- Andrew Christian (underwear brand)
- Attitude (magazine)
- AussieBum (underwear brand)
- Buzzfeed LGBT
- Daddyhunt
- Gay bar
- Gay Love
- Gay News
- Gay Rights
- Gay Star News
- Gay Times
- Gay Times Magazine
- Gay village
- Gay-friendly
- Gay, Lesbian, Bisexual, Transgender, Straight Alliance
- GLAAD
- Grindr
- Homosexuality
- Jack'd
- LGBT adoption
- LGBT community
- LGBT Equality World Wide
- LGBT history
- LGBT music
- LGBT parenting
- LGBTQ Nation
- Manhunt.net
- Out (magazine)
- Pink (LGBT magazine)
- Pink News
- Pride in London
- Pride parade
- Queerty
- Same-sex marriage
- Same-sex relationship
- Scruff
- The Advocate
- The Lesbian, Gay, Bisexual & Transgender Community Center

Adverts appeared in Facebook and Instagram feeds, Facebook instant articles, and in Facebook Messenger Inbox. After 5 days, the advert was modified slightly to contain the inclusion criteria of being 18 and above, due to the number of participants getting excluded because of their age. Additionally, after 17 days, the advert was modified to target people aged 25+ to recruit older MSM. The total cost of the advert was £172.72 with 602 unique link clicks.

Two additional MSM adverts were ran targeting MSM aged 21 and above living in either London, or Manchester and Brighton and Hove. The advert for London ran from 23rd-26th May and the advert for Manchester and Brighton and Hove ran from 29th-31st May. Manchester and Brighton and Hove were grouped due to a smaller population size than London. Each advert cost £50 and were shown in Facebook and Instagram news feeds only. Potential participants were shown the advert if they showed an interest in one of the topics mentioned above. Data regarding the number of link clicks were not available for this types of advert.

Women who have sex with women advert

The advert ran from 12/04/18 – 8/05/18 (26 days) with a maximum budget set of £6.67 per day. The advert was targeted at women living in the UK, aged 18 and above, and had showed interest in one of the following topics on Facebook:

- Buzzfeed LGBT
- Gay bar
- Gay Life
- Gay Love
- Gay News
- Gay pride
- Gay Times
- Gay Times Magazine
- Gay, Lesbian, Bisexual, Transgender, Straight Alliance
- Homosexuality
- International Lesbian, Gay, Bisexual, Trans and Intersex Association
- Lesbian Connection
- Lesbian Pride
- Lesbian Romance
- Lesbian, Gay, Bisexual & Transgender Community Centre
- LGBT adoption
- LGBT community
- LGBT community centre
- LGBT culture
- LGBT Equality World Wide

- LGBT history
- LGBT music
- LGBT parenting
- LGBT social movements
- LGBT tourism
- LGBTQ Nation
- Love of Lesbian
- National Center for Lesbian Rights
- Pink (LGBT magazine)
- Pride parade
- Rainbow flag (LGBT movement)
- Same-sex marriage
- Same- sex relationship
- The Lesbian, Gay, Bisexual & Transgender Community Center

Adverts appeared in Facebook and Instagram feeds, Facebook instant articles, and in Facebook Messenger Inbox. After 5 days, the advert was modified slightly to contain the inclusion criteria of being 18 and above, due to the number of participants getting excluded because of their age. Additionally, after 17 days, the advert was modified to target people aged 25+ to recruit older WSW. The total advert cost was £172.83 with 361 unique link clicks.

Trans advert

The advert ran from 12/04/18 – 8/05/18 (26 days) with a maximum budget set of £6.67 per day. The advert was targeted at anyone living in the UK, aged 18 and above, and had showed interest in one of the following topics on Facebook:

- Gender-specific and gender-neutral pronouns
- Genderqueer
- National Center for Transgender Equality
- Transgender activism
- Transgender Day of Rememberance
- Transgender Law Center
- Transgenderism
- Transsexualism
- Transvestism

Adverts appeared in Facebook and Instagram feeds, Facebook instant articles, and in Facebook Messenger Inbox. After 5 days, the advert was modified slightly to contain the inclusion criteria of being 18 and above, due to the number of participants getting excluded because of their age. Additionally, after 17 days, the advert was modified to target people

aged 25+ to recruit older trans people. The total advert cost was £172.83 with 508 unique link clicks.

LGBT+ Advert

The LGBT+ advert was repeated three times, each for seven days and costing £100 at each repetition: from 18/04/18 – 25/04/18 the advert was targeted at people aged 18 and above; from 25/04/18 – 02/05/18 the advert was targeted at people aged 25 and above; and from 16/05/18 – 23/05/18 the advert was targeted at people aged 30 and above. Participants were identified as LGBT+ from a predetermined Facebook group, which was determined by potential participants showing an interest in one of the following topics on Facebook:

- Rainbow flag (LGBT movement)
- Gay pride
- LGBT history
- LGBT culture
- LGBT social movements
- Buzzfeed LGBT

Adverts appeared in Facebook and Instagram news feeds only. Data regarding the number of link clicks were not available for this types of advert.

Appendix 4. The LGBT+ Sex and Lifestyles Survey (online survey for Study 2)

LIVERPOOL JOHN MOORES UNIVERSITY PARTICIPANT INFORMATION SHEET.

Title of Project: LGBT+ Sex and Lifestyles Survey.

Matthew Hibbert – PhD Student. Public Health Institute.

Liverpool John Moores University, UK.

You are being invited to take part in a research study. Please read the following information and take time to decide if you want to take part or not. If you have any questions, you can contact the researcher at m.p.hibbert@2017.ljmu.ac.uk.

1. What is the purpose of the study?
This study is part of PhD research degree. The aim of the study is to explore the sexual behaviour and lifestyles of anyone who has had a sexual partner of the same gender, or identifies as trans. We are inviting people who live in the UK and are aged 18 or over to take part. If you are under 18 or do not currently live in the UK, you are not eligible for this study.

2. Do I have to take part?
No. It is up to you to decide whether you want to take part. If you would like to take part, after you have read this information, click next at the bottom of the page. You can stop the survey at any time. Incomplete surveys will not be included in the analysis. After you finish the survey we will not be able to remove you from the analysis as no personal identifying information is collected. Most of the questions will have a "prefer not to say" option or will allow you to skip the question.

3. What will happen to me if I take part?
If you decide to take part, you will be taken to an anonymous survey hosted by Qualtrics. The survey is split into 3 sections: About you (demographics); Sex and lifestyle (drug use and sexual health); and Thoughts and feelings (body image, experiences of discrimination, and wellbeing). Some of the questions are personal and ask about your sexual behaviour but you are free to skip these questions if you would like.

The survey will take approximately 15 minutes to complete and can be done on a smartphone, tablet or computer. There is the opportunity to enter a prize draw at the end of the survey, where there will be the chance to win £50 worth of shopping vouchers, or one of two runner up prizes of £25 worth of shopping vouchers. The prize draw will be open until the survey closes which will be before 31st September 2018, and winners will be notified by email within one month of the survey closing.

This is the first part of a bigger project and the researcher is hoping to conduct interviews to explore the issues further. The interviews are likely to happen towards the end of 2018. If you would like to receive more information about these interviews then the link at the end of the survey will allow you to enter your email address. Your email address will not be linked to your survey answers.

4. Are there any risks/benefits to being involved?
There are no direct benefits to taking part, however, the information gathered will be used to improve health promotion and help service provision. Some of the questions are quite personal and you might want to fill out the questionnaire in privacy. There are links during and at the end of the survey, to organisations that can provide further information and support if needed.

5. Will my taking part in the study be kept confidential?
Yes. All answers you give us will be anonymous and confidential. The survey does not contain any questions

which could be used to identify you and you will not be asked for your name and address. After the survey is complete, you have the option to go to another page to enter your email address to enter the prize draw and/or be contacted for future research. Your email address is not linked to any of your answers, and will only be used to contact you if you win a prize or to take part in future research. Only the lead researcher will have access to your email address.

This participant information sheet is available on our Facebook page: fb.me/SexAndLifestylesUK.

This study has received ethical approval from LJMU's Research Ethics Committee. If you would like to make a complaint, then please contact one of the following:

Contact Details of Researcher:
Matthew Hibbert, Public Health institute, Liverpool John Moores University, Henry Cotton Building, 15-21 Webster Street, Liverpool, L3 2ET, UK. 0151 231 4088, m.p.hibbert@2017.ljmu.ac.uk.

Contact Details of Academic Supervisor:
Vivian Hope, Public Health institute, Liverpool John Moores University, Henry Cotton Building, 15-21 Webster Street, Liverpool, L3 2ET, UK. 0151 231 4332, v.d.hope@ljmu.ac.uk.

Your involvement is greatly appreciated.

By continuing you are confirming you have read the information provided and are happy to participate. You understand that by completing this questionnaire you are consenting to be part of this research study and for your data to be used as described.

Do you currently live in the U.K.? (Forced response)

- ○ Yes
- ○ No

Skip To: End of Survey If Do you currently live in the U.K.? = No

Are you aged 18 or over? (Forced response)

- ○ Yes
- ○ No

Skip To: End of Survey If Are you aged 18 or over? = No

Where did you hear about this survey?

- ○ A community organisation post on social media (Facebook, Twitter, Instagram)
- ○ A shared post on social media (Facebook, Twitter, Instagram)
- ○ Sponsored Facebook or Instagram advertising
- ○ At a community event
- ○ Word of mouth
- ○ Other, please specify: _____

Section A: About you

Which of the following best describes how you think of yourself? (Forced response)

- ○ Male (including trans man)
- ○ Female (including trans woman)
- ○ Non-binary
- ○ In another way, please specify: _____
- ○ Prefer not to say

Is this the same gender you were assigned at birth? (Forced response)

- ○ Yes
- ○ No
- ○ Prefer not to say

What is your age?

▼ 18 ... 100

Which of the following best describes your ethnic group? (Forced response)

White

- ○ British
- ○ Irish
- ○ Any other White background

Mixed

- ○ White and Black African
- ○ White and Black Caribbean
- ○ White and Asian
- ○ Any other mixed background

Asian or Asian British

- ○ Indian
- ○ Pakistani
- ○ Bangladeshi
- ○ Any other Asian background

Black or Black British

- ○ African
- ○ Caribbean
- ○ Any other Black Background

Other ethnic groups

- ○ Chinese
- ○ Arab
- ○ Hispanic/Latino
- ○ Other ethnic group, please specify: _____
- ○ Prefer not to say

What is your country of birth?

▼ Afghanistan ... Zimbabwe

What is the highest level of education that you have completed?

- ○ Primary School (or less)
- ○ Qualifications at age 16 (GSCE, NVQ, O-Levels)
- ○ Qualifications at age 17/18 (A-levels, AS-levels, high school diploma, Scottish highers)
- ○ University/First/Undergraduate degree
- ○ Postgraduate degree
- ○ Other (please specify) _____

What is your current work situation? (please select all that apply)

- ☐ Full time employment (at least 30 hours per week)
- ☐ Part time employment (less than 30 hours per week)
- ☐ Self-employed
- ☐ Full time student/education
- ☐ Unemployed
- ☐ Long-term sickness or disability (for 3 months or more)
- ☐ Temporary sickness or disability (for less than 3 months)
- ☐ Carer
- ☐ Retired
- ☐ Other (please specify) _____

What is your current relationship status? (please select all that apply)

- ○ Living with a spouse or partner
- ○ In a relationship with a partner not living together
- ○ In relationships with more than one partner
- ○ No relationship and/or single

Which region of the UK do you currently live in?

- ○ East Midlands
- ○ East of England
- ○ London
- ○ North East
- ○ North West
- ○ South East
- ○ South West
- ○ West Midlands
- ○ Yorkshire and Humber
- ○ Northern Ireland
- ○ Scotland
- ○ Wales
- ○ Prefer not to say

Display This Question:

If Which region of the UK do you currently live in? = East Midlands

Please select where you live:

▼ Amber Valley ... West Lindsey

Display This Question:

If Which region of the UK do you currently live in? = East of England

Please select where you live:

▼ Babergh ... Welwyn Hatfield

Display This Question:

If Which region of the UK do you currently live in? = London

Please select where you live:

▼ Barking and Dagenham ... Westminster

Display This Question:

If Which region of the UK do you currently live in? = North East

Please select where you live:

▼ County Durham ... Sunderland

Display This Question:

If Which region of the UK do you currently live in? = North West

Please select where you live:

▼ Allerdale ... Wyre

Display This Question:

If Which region of the UK do you currently live in? = South East

Please select where you live:

▼ Adur ... Wycombe

Display This Question:

If Which region of the UK do you currently live in? = South West

Please select where you live:

▼ Bath and North East Somerset ... Wiltshire

Display This Question:

If Which region of the UK do you currently live in? = West Midlands

Please select where you live:

▼ Birmingham ... Wyre Forest

Display This Question:

If Which region of the UK do you currently live in? = Yorkshire and Humber

Please select where you live:

▼ Barnsley ... York

Display This Question:

If Which region of the UK do you currently live in? = Northern Ireland

Please select where you live:

▼ Antrim and Newtownabbey ... Newry, Mourne and Down

Display This Question:

If Which region of the UK do you currently live in? = Scotland

Please select where you live:

▼ Aberdeen City ... West Lothian

Display This Question:

If Which region of the UK do you currently live in? = Wales

Please select where you live:

▼ Blaenau Gwent ... Wrexham

How would you describe your sexual orientation? (Forced response)

- ○ Gay/Lesbian/Homosexual
- ○ Bisexual
- ○ Straight/Heterosexual
- ○ Queer
- ○ Asexual
- ○ In another way, please specify: _____
- ○ Prefer not to say

Section B: Sex and lifestyle

I have sex with (please select all that apply): (Forced response)

- ☐ Men
- ☐ Women
- ☐ Non-binary people
- ☐ Other, please specify: _____
- ☐ Prefer not to say

In the past 12 months have you taken any of the following (please select all that apply):

- ☐ Alcohol
- ☐ Amphetamine (speed)
- ☐ Cannabis (weed/pot)
- ☐ Cocaine
- ☐ Crack cocaine
- ☐ Ecstasy
- ☐ Heroin
- ☐ Ketamine (Vitamin K, K, Special K)
- ☐ GHB/GBL (Gina, Liquid Ecstasy, Liquid G)
- ☐ Mephedrone (Drone, MCAT, meow meow)
- ☐ Meth Amphetamine (Crystal meth, ice/glass, Tina)
- ☐ Viagra or other erectile dysfunction drug
- ☐ Poppers (Amyl or other nitrite inhalants)
- ☐ Other illicit drug or drugs, please specify: _____
- ☐ None of the above

Display This Question:

If In the past 12 months have you taken any of the following (please select all that apply): = Alcohol

Or Cannabis (weed/pot)

In the past 12 months have you been **under the influence** of any of the following during sex (please select all that apply):

- ☐ Alcohol
- ☐ Cannabis (weed/pot)
- ☐ None of the above

Display This Question:

If In the past 12 months have you been under the influence of any of the following during sex = Alcohol Or Cannabis (weed/pot)

AND are a man who has sex with men or a trans woman who has sex with men

Thinking of the last time you were under the influence of any of the following during **anal intercourse**, did you use a condom?

	Yes, all of the time	Yes, some of the time	No, none of the time	Not sure	I did not have anal intercourse
Alcohol	○	○	○	○	○
Cannabis	○	○	○	○	○

Display This Question:

If In the past 12 months have you taken any of the following (please select all that apply): = Amphetamine (speed), Or Cocaine, Or Ketamine (Vitamin K, K, Special K) Or GHB/GBL (Gine, Liquid Ecstasy, Liquid G), Mephedrone (Drone, MCAT, meow meow), Or Meth Amphetamine (Crystal meth, ice/glass, Tina), Or Poppers (Amyl or other nitrite inhalants), Or Ecstasy, Or Crack cocaine, Or Heroin, Or Viagra or other erectile dysfunction drug, Or Other illicit drug or drugs, please specify:

In the past 12 months have you taken any of the following **just before or during sex** (please select all that apply):

- ☐ Amphetamine (speed)
- ☐ Cocaine
- ☐ Crack cocaine
- ☐ Ecstasy
- ☐ Heroin
- ☐ Ketamine (Vitamin K, K, Special K)
- ☐ GHB/GBL (Gine, Liquid Ecstasy, Liquid G)
- ☐ Mephedrone (Drone, MCAT, meow meow)
- ☐ Meth Amphetamine (Crystal meth, ice/glass, Tina)
- ☐ Viagra or other erectile dysfunction drug
- ☐ Poppers (Amyl or other nitrite inhalants)
- ☐ Free text entry option
- ☐ None of the above

Display This Question:

If In the past 12 months have you taken any of the following just before or during sex (please tick... = Amphetamine (speed), Or Cocaine, Or Ketamine (Vitamin K, K, Special K) Or GHB/GBL (Gine, Liquid Ecstasy, Liquid G), Mephedrone (Drone, MCAT, meow meow), Or Meth Amphetamine (Crystal meth, ice/glass, Tina), Or Poppers (Amyl or other nitrite nhalants), Or Ecstasy, Or Crack cocaine, Or Heroin, Or Viagra or other erectile dysfunction drug, Or Other illicit drug or drugs, please specify:

AND are a man who has sex with men, or a trans woman who has sex with men

Thinking of the last time you had the following just before or during **anal intercourse**, did you use a condom?

	Yes, all of the time	Yes, some of the time	No, none of the time	Not sure	I did not have anal intercourse
Amphetamine (speed)	○	○	○	○	○
Cocaine	○	○	○	○	○
Crack cocaine	○	○	○	○	○
Ecstasy	○	○	○	○	○
Heroin	○	○	○	○	○
Ketamine (Vitamin K, K, Special K)	○	○	○	○	○
GHB/GBL (Gine, Liquid Ecstasy, Liquid G)	○	○	○	○	○
Mephedrone (Drone, MCAT, meow meow)	○	○	○	○	○
Meth Amphetamine (Crystal meth, ice/glass, Tina)	○	○	○	○	○
Viagra or other erectile dysfunction drug	○	○	○	○	○
Poppers (Amyl or other nitrite inhalants)	○	○	○	○	○
Free text entry option	○	○	○	○	○

Display This Question:

If In the past 12 months have you taken any of the following just before or during sex (please tick... = Amphetamine (speed), Or Cocaine, Or Ketamine (Vitamin K, K, Special K) Or GHB/GBL (Gine, Liquid Ecstasy, Liquid G), Mephedrone (Drone, MCAT, meow meow), Or Meth Amphetamine (Crystal meth, ice/glass, Tina), Or Poppers (Amyl or other nitrite

inhalants), Or Ecstasy, Or Crack cocaine, Or Heroin, Or Viagra or other erectile dysfunction drug, Or Other illicit drug or drugs, please specify:

Thinking of the last time you had drugs just before or during sex, how many different drugs did you take?

▼ 1 ... 10+

Display this Question:

If If In the past 12 months have you been under the influence of any of the following during sex = Cannabis (weed/pot)

OR

If In the past 12 months have you taken any of the following just before or during sex (please tick... = Amphetamine (speed), Or Cocaine, Or Ketamine (Vitamin K, K, Special K) Or GHB/GBL (Gine, Liquid Ecstasy, Liquid G), Mephedrone (Drone, MCAT, meow meow), Or Meth Amphetamine (Crystal meth, ice/glass, Tina), Or Poppers (Amyl or other nitrite inhalants), Or Ecstasy, Or Crack cocaine, Or Heroin, Or Viagra or other erectile dysfunction drug, Or Other illicit drug or drugs, please specify:

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I use drugs for sex because they give a more intense sexual experience.	○	○	○	○	○
I am more likely to have sex without a condom when I have used drugs for sex.	○	○	○	○	○
When I use drugs I do things sexually that I would not do sober.	○	○	○	○	○
Using drugs for sex is having a negative effect on my life.	○	○	○	○	○
I enjoy my sex life and am in control of my actions.	○	○	○	○	○
I use drugs for sex because they allow me to have sex for longer.	○	○	○	○	○
I feel pressured by my friends / social circle to use drugs for sex.	○	○	○	○	○
I feel pressured by my partner to use drugs for sex.	○	○	○	○	○

Display This Question:

If In the past 12 months have you been under the influence of any of the following during sex = Alcohol

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have alcohol before sex because it give a more intense sexual experience.	○	○	○	○	○
I am more likely to have sex without a condom when I have alcohol before sex.	○	○	○	○	○
When I have alcohol I do things sexually that I would not do sober.	○	○	○	○	○
Using alcohol for sex is having a negative effect on my life.	○	○	○	○	○
I enjoy my sex life and am in control of my actions.	○	○	○	○	○
I use alcohol for sex because it allows me to have sex for longer.	○	○	○	○	○
I feel pressured by my friends / social circle to have alcohol before sex.	○	○	○	○	○
I feel pressured by my partner to have alcohol before sex.	○	○	○	○	○

Have you attended a sexual health / GUM clinic in the past 12 months?

- ○ Yes
- ○ No
- ○ Not sure
- ○ Prefer not to say

In the last 12 months have you been diagnosed with any of the following (tick all that apply):

- [ ] Chlamydia
- [ ] Gonorrhoea
- [ ] Genital warts
- [ ] Herpes
- [ ] LGV (Lymphogranuloma venereum)
- [ ] Shigella
- [ ] Syphilis
- [ ] Hepatitis C
- [ ] None of the above

What is your HIV status?

- ○ Negative
- ○ Positive
- ○ Don't know

Display This Question:

If What is your HIV status? = Positive

Are you currently on antiretroviral medication?

- ○ Yes
- ○ No

Display This Question:

If Are you currently on antiretroviral medication? = Yes

Your last viral load was:

- ○ Undetectable
- ○ Detectable
- ○ Don't know

Display This Question:

If What is your HIV status? = Negative Or Don't know

When did you last have an HIV test?

- ○ In the last 3 months
- ○ Between 3 and 12 months
- ○ More than a year ago
- ○ Over 5 years ago
- ○ Never had an HIV test
- ○

Display This Question:

If I have sex with (tick all that apply): = Men

How many men have you had anal intercourse with in the last 12 months?

▼ 0 ... 100+

Display This Question:

If How many men have you had anal intercourse with in the last 12 months? > 0

How many of these were without a condom?

▼ 0 ... 100+

Display This Question:

If I have sex with (tick all that apply): = Women

How many women have you had sex with in the last 12 months?

▼ 0 ... 100+

Display This Question:

If I have sex with (tick all that apply): = Men

And If

What is your HIV status? Does not = Positive

Are you currently taking PrEP (Pre-exposure Prophylaxis)?

- ○ Yes
- ○ No

In the past 12 months has a person(s) done sexual things to you or make you do sexual things without your consent?

- ○ Yes
- ○ No
- ○ Not sure
- ○ Prefer not to say

If you would like help and support on this issue please contact one of the following organisations:

Galop, the leading LGBTQ+ anti-violence organisation, runs a Sexual Violence Casework and Support Service for all LGBTQ+ people aged 13+ who have experienced sexual assault, violence or abuse, however or whenever it happened. Galop's services are independent, confidential and free and open to those living in London or going through the criminal justice process in London. Galop is one of the leading organisations working with those who experience sexual assault in a chemsex context.

Online: www.galop.org.uk

Email: referrals@galop.org.uk

Telephone: 020 7704 2040

Survivors Manchester offers confidential support, information, practical and emotional support for boys and men affected by sexual violence, experienced in the past or present.

Online: www.survivorsmanchester.org.uk

Email: support@survivormanchester.org.uk

Telephone: 0808 800 5005 (Monday, Wednesday, Friday 10.00am–4.00pm; Tuesday & Thursday 11.00am–6.00pm).

Survivors' Network and LGBT Switchboard run a dedicated helpline which offers support to trans people including those who are non-binary or questioning who have experienced sexual violence at any point in their lifetime.

Online: http://www.switchboard.org.uk/projects/trans-survivors-switchboard/

Email: info@switchboard.org.uk (please put TSS in the subject).

Telephone: 01273 204050 (Sundays 1pm - 5pm).

Rape Crisis Centres are women-led and offer a range of support, advocacy, counselling and information in women-only safe space for women and girls who have experienced sexual violence.

Online: https://rapecrisis.org.uk/centres.php

National Rape Crisis helpline: 0808 802 9999 (between 12 noon-2.30pm and 7pm-9.30pm every day of the year).

Display This Question:

If I have sex with (tick all that apply): = Men

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I can choose safer sex with a man I have sex with regularly.	○	○	○	○	○
I am able to avoid behaviour that may put me at risk of HIV infection.	○	○	○	○	○
When I am drunk or high, I can avoid situations that I consider sexually risky.	○	○	○	○	○
If I ever did something risky, I am confident that I would go back to having safer sex right away.	○	○	○	○	○
I am confident that I can have safer sex even if my partner really doesn't want to.	○	○	○	○	○
I never lose sight of what I consider safer sex, no matter what I am feeling or if I am drunk or high.	○	○	○	○	○
When I am drunk or high, I can choose safer sex with a man I have never had sex with before.	○	○	○	○	○

If you have had sex with more than one person in the past 12 months, in the following questions, please think of "the person I am having sex with" as overall, rather than one person.

In the past 12 months, how satisfied have you been with the following:

	Not at all satisfied	A little satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
The quality of my orgasms	○	○	○	○	○
My ‘‘letting go’’ and surrender to sexual pleasure during sex	○	○	○	○	○
The way I sexually react to the person I am having sex with	○	○	○	○	○
My body’s sexual functioning	○	○	○	○	○
My mood after sexual activity	○	○	○	○	○
The pleasure I provide to the person I am having sex with	○	○	○	○	○
The balance between what I give and receive in sex	○	○	○	○	○
The person I am having sex with's emotional opening up during sex	○	○	○	○	○
The person I am having sex with's ability to orgasm	○	○	○	○	○
The person I am having sex with's sexual creativity	○	○	○	○	○
The variety of my sexual activities	○	○	○	○	○
The frequency of my sexual activity	○	○	○	○	○

Section C: Thoughts and feelings

Display This Question:

If identifies as female (including trans female) and has sex with women

Or If

Identifies as Female (including trans female) and Gay/Lesbian/Homosexual

Or If

Identifies as Female (including trans female) and Bisexual

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I often feel it best to avoid personal or social involvement with lesbian/bisexual women.	○	○	○	○	○
I have tried to stop being attracted to women in general.	○	○	○	○	○
If someone offered me the chance to be completely heterosexual, I would accept the chance.	○	○	○	○	○
I wish I weren't attracted to women.	○	○	○	○	○
I feel alienated from myself because of being attracted to women.	○	○	○	○	○
I wish that I could develop more erotic feelings about men.	○	○	○	○	○
I feel that being attracted to women is a personal shortcoming for me.	○	○	○	○	○
I would like to get professional help in order to change my sexual orientation from being attracted to women to straight.	○	○	○	○	○
I have tried to become more sexually attracted to men.	○	○	○	○	○

Display This Question:

If identifies as Male (including trans male) and Gay/Lesbian/Homosexual

Or If

Identifies as Male (including trans male) has sex with Men

Or If

Identifies as Male (including trans male) and Bisexual

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I often feel it best to avoid personal or social involvement with gay/bisexual men.	○	○	○	○	○
I have tried to stop being attracted to men in general.	○	○	○	○	○
If someone offered me the chance to be completely heterosexual, I would accept the chance.	○	○	○	○	○
I wish I weren't attracted to men.	○	○	○	○	○
I feel alienated from myself because attracted to men.	○	○	○	○	○
I wish that I could develop more erotic feelings about women.	○	○	○	○	○
I feel that being attracted to men is a personal shortcoming for me.	○	○	○	○	○
I would like to get professional help in order to change my sexual orientation from being attracted to men to straight.	○	○	○	○	○
I have tried to become more sexually attracted to women.	○	○	○	○	○

Display This Question:

If Is this the same gender you were assigned at birth? = No

And Which of the following best describes how you think of yourself? Is not Prefer not to say

The term trans will be used in the following questions, but please think of this term in whatever way you feel is the best fit (i.e. non-binary, gender variant, gender non-conforming etc). Please rate the following items using the rating scale below:

	Strongly disagree	Disagree	Agree	Strongly agree
Being around trans people makes me uncomfortable.	○	○	○	○
Life would be easier if I wasn't trans.	○	○	○	○
Most of my friends are trans.	○	○	○	○
I feel comfortable in bars with trans people.	○	○	○	○
I don't like thinking about being trans.	○	○	○	○
I don't like socialising with trans people.	○	○	○	○
When I think of being trans, I think mainly of positive things.	○	○	○	○
I feel comfortable in public.	○	○	○	○
I feel comfortable discussing being trans in public.	○	○	○	○
It is important to me to control who knows about my trans identity.	○	○	○	○
Most people have negative reactions to trans people.	○	○	○	○
Society punishes people who are trans.	○	○	○	○
I worry about being unattractive.	○	○	○	○
I worry about aging as a trans person.	○	○	○	○
I would prefer not to be trans.	○	○	○	○
Most people don't discriminate against trans people.	○	○	○	○
I feel comfortable being trans.	○	○	○	○
I am not worried about anyone finding out that I am trans.	○	○	○	○
Discrimination against trans people is still common.	○	○	○	○
Even if I could change my gender identity, I wouldn't.	○	○	○	○

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree	Not applicable to me
I often compare how I look with how other people look.	○	○	○	○	○	○	○	○
During the day, I think about how I look many times.	○	○	○	○	○	○	○	○
I often worry about whether the clothes I am wearing make me look good.	○	○	○	○	○	○	○	○
I often worry about how I look to other people.	○	○	○	○	○	○	○	○
I feel ashamed of myself when I haven't made an effort to look my best.	○	○	○	○	○	○	○	○
I feel like I must be a bad person when I don't look as good as I could.	○	○	○	○	○	○	○	○
I would be ashamed for people to know what I really weigh.	○	○	○	○	○	○	○	○
When I'm not exercising enough, I question whether I am a good person.	○	○	○	○	○	○	○	○
When I'm not the size I think I should be, I feel ashamed.	○	○	○	○	○	○	○	○

Have you taken any image or performance enhancing drugs in the last 12 months (e.g. anabolic steroids, growth hormone, hCG, Melanotan, non-prescribed diet pills)?

- ○ Yes
- ○ No
- ○ Prefer not to say

Display This Question:

If How would you describe your sexual orientation? = Gay/Lesbian/Homosexual Or Bisexual

Or In another way, please specify: Or Asexual Or Queer

In the last 12 months, have you experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your sexuality (please select all that apply)?

- ☐ At school or in education
- ☐ Getting hired or getting a job
- ☐ At work
- ☐ Getting housing
- ☐ Getting medical care
- ☐ Getting service in a store or restaurant
- ☐ Getting credit, bank loans, or a mortgage
- ☐ On the street or in a public setting
- ☐ From the police or in the courts
- ☐ Other (please specify) _____
- ☐ None of the above

Display This Question:

If Is this the same gender you were assigned at birth? = No

And Which of the following best describes how you think of yourself? Is not Prefer not to say

In the last 12 months, have you experienced discrimination, been prevented from doing something, or been hassled or made to feel inferior in any of the following situations because of your gender (please select all that apply)?

- ☐ At school or in education
- ☐ Getting hired or getting a job
- ☐ At work
- ☐ Getting housing
- ☐ Getting medical care
- ☐ Getting service in a store or restaurant
- ☐ Getting credit, bank loans, or a mortgage
- ☐ On the street or in a public setting
- ☐ From the police or in the courts
- ☐ Other (please specify) _____
- ☐ None of the above

The next questions are about how you feel about different aspects of your life. For each one, tell me how often you feel that way.

	Hardly ever	Some of the time	Always
How often do you feel that you lack companionship?	○	○	○
How often do you feel left out?	○	○	○
How often do you feel isolated from others?	○	○	○

How would you rate your health at this present time?

- ○ Very poor
- ○ Poor
- ○ Fair
- ○ Good
- ○ Very good

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.
In the past 30 days how often....

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Did you feel tired out for no good reason	○	○	○	○	○
Did you feel nervous	○	○	○	○	○
Did you feel so nervous that nothing could calm you down	○	○	○	○	○
Did you feel hopeless	○	○	○	○	○
Did you feel restless or fidgety	○	○	○	○	○
Did you feel so restless that you could not sit still	○	○	○	○	○
Did you feel depressed	○	○	○	○	○
Did you feel that everything was an effort	○	○	○	○	○
Did you feel so sad that nothing could cheer you up	○	○	○	○	○
Did you feel worthless	○	○	○	○	○

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to my ideal.	○	○	○	○	○	○	○
The conditions of my life are excellent.	○	○	○	○	○	○	○
I am satisfied with my life.	○	○	○	○	○	○	○
So far I have gotten the important things I want in life.	○	○	○	○	○	○	○
If I could live my life over, I would change almost nothing.	○	○	○	○	○	○	○

If you have any additional comments in relation to any of the answers you have given throughout the questionnaire, please enter them here:

_____

Thank you for completing the survey.

The aim of this survey is to understand why certain LGBT people engage in sex and drugs, as well as how this impacts on wellbeing. We have described this survey as looking into the sex and lifestyles of LGBT people, because we want to include everyone in our study, not just individuals who engage in sex and drugs, and because we also want to understand a wide range of peoples' experiences. This is the first fully inclusive LGBT research in the UK attempting to understand sex and drug use among LGBT people. The findings of this survey will be distributed through academic articles and the community organisations involved with recruitment.

If you would like to enter the prize draw for the chance to win £50 worth of shopping vouchers, or one of two runner up prizes of £25 worth of shopping vouchers, please click on the link below. Your email address will not be linked to the answers you have given. The prize draw will be open until the survey closes, which will be before 31st September 2018, and winners will be notified by email within one month of the survey closing. There will also be the opportunity to be contacted for future research, if you wish.

https://ljmupsych.qualtrics.com/jfe/form/SV_08SQxlRqaEjAA29

If you would like more information about this research, you can contact the researcher at:

Matthew Hibbert, Public Health institute, Liverpool John Moores University, Henry Cotton Building, 15-21 Webster Street, Liverpool, L3 2ET, UK. 0151 231 4088, m.p.hibbert@2017.ljmu.ac.uk.

If you would like further help and support please contact one of the following organisations:

London Friend offer counselling and support around issues such as same-sex relationships, sexual and gender identity and promoting personal growth and self-confidence. London Friend are also home to Antidote - the UK's only LGB&T drug and alcohol service. Our social groups provide a safe space to meet and socialise as an alternative to the bar and club scene.

Online: londonfriend.org.uk/

Antidote helpline: 020 7833 1674 (10am-6pm, Monday to Friday). Ask for one of the Antidote Team.

COAST (Chemsex Open Access Support Team) provides an open-minded, confidential drug, alcohol and wellbeing support for men who like men in Liverpool. They run drop-in clinics Monday 5pm-7pm at the Armistead and Thursday 3pm-6.30pm at the GUM clinic, Royal Liverpool Hospital.

Online: www.addaction.org.uk

Telephone: 07790560085 (Sam), 07790560039 (Peter), 01512 476560 (Armistead)

Email: coast@addaction.org.uk

LGBT Foundation is part of Manchester Integrated Drug and Alcohol Service and offers support to LGBT individuals affected by drugs, alcohol and chemsex. They offer one to one support, chemsex support, telephone and online support, referral for specialist GBL/GHB and alcohol detox and rehab, and access to mutual aid and peer support groups.

Online: http://lgbt.foundation/how-we-can-help-you/drug-and-alcohol-support

Telephone: 0345 3 303030

Email: Tyler.Andrew@lgbt.foundation

Prize draw

If you would like to be entered into the prize draw for the chance to win £50 worth of shopping vouchers, or one of two runner up prizes of £25 worth of shopping vouchers, please enter your email address below:

_____

The prize draw will be open until the survey closes, which will be before 31st September 2018, and winners will be notified by email within one month of the survey closing.

☐ If you live in the North West of England are happy to be contacted for future research, please tick this box.

Appendix 5: Recruitment Log

Advert	Cost	Duration	Start	End	Likes, shares, retweets	Ad location				
						Facebook feeds	Facebook instant articles	Instagram feeds	Facebook messenger	Twitter
MSM paid ad	£6.67/day	26 days	12/04/2018	08/05/2018	2 likes 2 comments	X	X	X	X	
Trans paid ad	£6.67/day	26 days	12/04/2018	08/05/2018	2 likes	X	X	X	X	
WSW paid ad	£6.67/day	26 days	12/04/2018	08/05/2018	19 likes, one comment	X	X	X	X	
Boost 1 - paid ad	£100	7 days	18/04/2018	25/04/2018	136 likes, 54 comments, 113 shares	X		X		
Boost 2 - paid ad	£100	7 days	25/04/2018	02/05/2018		X		X		
London friend	n/a	n/a	25/04/2018	n/a	11 retweets 5 likes					X
LGB&T partnership	n/a	n/a	11/05/2018	n/a	8 retweets 3 likes					X
COAST	n/a	n/a	18/05/2018	n/a	5 retweets 4 likes					X
GMHC	n/a	n/a	29/05/2018	n/a	1 retweet 2 likes					X
Boost 3 - paid ad	£50	2 days	23/05/2018	25/05/2018	26 likes, 2 comments, 7 shares	X		X		
Boost 4 - paid ad	£50	2 days	29/05/2018	31/05/2018		X		X		

Appendix 6: Information sheet for semi-structured interviews with MSM service users

LIVERPOOL JOHN MOORES UNIVERSITY

Participant Information Sheet

LJMU's Research Ethics Committee Approval Reference:

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of Study Qualitative interviews with men who have sex with men (MSM) engaging in sexualised drug use: experiences, intentions and service provision.

School/Faculty: Public Health Institute

Name and Contact Details and status of the Principal Investigator:

Matthew Hibbert, PhD student, m.p.hibbert@2017.ljmu.ac.uk.

Name and Contact Details of the Investigators:

Caroline Brett, C.E.Brett@ljmu.ac.uk.

Lorna Porcellato, L.A.Porcellato@ljmu.ac.uk.

Vivian Hope, V.D.Hope@ljmu.ac.uk (primary supervisor).

You are being invited to take part in a research study. Before you decide it is important for you to understand why the study is being done and what participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

1. **What is the purpose of the study?**
   The purpose of this PhD study is to investigate the experiences of sexualised drug use among MSM.

   This study hopes to answer the following questions…
   a. What experiences do MSM have when engaging in sexualised drug use?
   b. Does intention and behaviour differ around safer sex whilst under the influence of drugs?
   c. What are the experiences of sexual health clinics for MSM who have engaged in sexualised drug use?

2. Why have I been invited to participate?

You have been invited because you gave your email with permission to be contacted for future research, or you have self-selected from a community organisation or Facebook.

The inclusion criteria are identifying as a man who has sex with men and engaging in one of the following substances before or during sex in the past 12 months:

- Amphetamine (speed)
- Cocaine
- Crack cocaine
- Ecstasy (MDMA)
- Heroin
- Ketamine (Vitamin K, K, Special K)
- GHB/GBL (Gina, Liquid Ecstasy, Liquid G)
- Mephedrone (Drone, MCAT, meow meow)
- Meth Amphetamine (Crystal meth, ice/glass, Tina)
- Poppers (Amyl or other nitrate inhalants)

3. Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. You can withdraw at any time by informing the investigators without giving a reason and without it affecting your rights/any future treatment/service you receive.

4. What will happen to me if I take part?

We will talk you through the study procedures and give you the chance to ask any questions.

The interview will last for approximately one hour in a location best suited to you, ensuring your privacy. The researcher will ask you questions regarding your sexual history, drug use, current sexual practices, and experiences of sexual health clinics. You will be given a £20 Amazon voucher before the interview begins, as reimbursement for your time. You have the right to stop the interview at any time and you will get to keep the voucher.

5. Will I be recorded and how will the recorded media be used?

The audio recordings of your activities made during this study will be used only for analysis. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings.

Interviews will be audio recorded on a password protected audio recording device and as soon as possible the recording will be transferred to secure storage and deleted from the recording device.

6. What are the possible disadvantages and risks of taking part?

The questions asked may be personal and you may not want to answer some questions. If you get upset by anything asked or do not want to answer a certain question, please let the researcher know and they will move on. Similarly, if you do not want to take part in the interview anymore, please let the researcher know and the interview will be stopped without affecting your reimbursement.

If you are personally affected by participation in this research, you may wish to seek support/advice from:

COAST (Chemsex Open Access Support Team) provides an open-minded, confidential drug, alcohol and wellbeing support for men who like men in Liverpool. They run drop-in clinics Monday 5pm-7pm at the Armistead and Thursday 3pm-6.30pm at the GUM clinic, Royal Liverpool Hospital.
Online: www.addaction.org.uk
Telephone: 07790560085 (Sam), 07790560039 (Peter), 01512 476560 (Armistead)
Email: coast@addaction.org.uk

LGBT Foundation is part of Manchester Integrated Drug and Alcohol Service and offers support to LGBT individuals affected by drugs, alcohol and chemsex. They offer one to one support, chemsex support, telephone and online support, referral for specialist GBL/GHB and alcohol detox and rehab, and access to mutual aid and peer support groups.
Online: http://lgbt.foundation/how-we-can-help-you/drug-and-alcohol-support
Telephone: 0345 3 303030
Email: Tyler.Andrew@lgbt.foundation

The Armistead Centre is a free and confidential support, information and sexual health promotion service for the lesbian, gay, bisexual and trans (LGBT) community operated by Mersey Care NHS Foundation Trust. They provide a safe space for LGBT groups, one-to-one support, harm reduction advice on lifestyle, support for parents and carers of LGBT people, counselling and rapid HIV testing.
Online: https://www.thelivewelldirectory.com/Services/589
Telephone: 0151 247 6560

7. What are the possible benefits of taking part?

Whilst will be no direct benefits to you for taking part in the study, but it is hoped that this work will be used to improve sexual health services for MSM who engage in sexualised drug use.

8. What will happen to the data provided and how will my taking part in this project be kept confidential?

The information you provide as part of the study is the **research study data**. Any research study data from which you can be identified (e.g. from identifiers such as your name, date of birth, audio recording etc.), is known as **personal data**. This includes more sensitive categories of personal data (**sensitive data**) such as your sex life; or sexual orientation. Personal data does not include data that cannot be identified to an individual (e.g. data collected anonymously or where identifiers have been removed).

Personal data will be stored confidentially for 5 years after the study has finished. Personal data will be accessible to the principal researcher and primary supervisor only.

You will not be identifiable in any ensuing reports or publications.

We will use pseudonyms in transcripts and reports to help protect the identity of individuals and organisations unless you tell us that you would like to be attributed to information/direct quotes etc.

9. Limits to confidentiality

The Investigator will keep confidential anything they learn or observe related to illegal activity unless related to the abuse of children or vulnerable adults, money laundering or acts of terrorism.

In certain exceptional circumstances where you or others may be at significant risk of harm, the investigator may need to report this to an appropriate authority. This would usually be discussed with you first. Examples of those exceptional circumstances when confidential information may have to be disclosed are:

- The investigator believes you are at serious risk of harm, either from yourself or others
- The investigator suspects a child may be at risk of harm
- You pose a serious risk of harm to, or threaten or abuse others
- As a statutory requirement e.g. reporting certain infectious diseases
- Under a court order requiring the University to divulge information
- We are passed information relating to an act of terrorism

10. What will happen to the results of the research project?

The investigator intends to publish the results in a PhD thesis and in a scientific journal article.

11. Who is organising and funding/commissioning the study?

This study is organised and funded by Liverpool John Moores University.

12. Who has reviewed this study?

This study has been reviewed by, and received ethics clearance through, the Liverpool John Moores University Research Ethics Committee (Reference number: 18/PHI/036).

13. What if something goes wrong?

If you have a concern about any aspect of this study, please contact the relevant investigator who will do their best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you wish to make a complaint, please contact the chair of the Liverpool John Moores University Research Ethics

Committee (researchethics@ljmu.ac.uk) and your communication will be re-directed to an independent person as appropriate.

14. Data Protection Notice

The data controller for this study will be Liverpool John Moores University (LJMU). The LJMU Data Protection Office provides oversight of LJMU activities involving the processing of personal data, and can be contacted at secretariat@ljmu.ac.uk. This means that we are responsible for looking after your information and using it properly. LJMU's Data Protection Officer can also be contacted at secretariat@ljmu.ac.uk**.** The University will process your personal data for the purpose of research. Research is a task that we perform in the public interest.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained.

You can find out more about how we use your information by contacting secretariat@ljmu.ac.uk.

If you are concerned about how your personal data is being processed, please contact LJMU in the first instance at secretariat@ljmu.ac.uk. If you remain unsatisfied, you may wish to contact the Information Commissioner's Office (ICO). Contact details, and details of data subject rights, are available on the ICO website at: https://ico.org.uk/for-organisations/data-protection-reform/overview-of-the-gdpr/individuals-rights/

16. Contact for further information

Matthew Hibbert
Public Health Institute
Liverpool John Moores University
3rd Floor, Exchange Station
Tithebarn Street
Liverpool
L2 2QP
Email: m.p.hibbert@2017.ljmu.ac.uk

Thank you for reading this information sheet and for considering to take part in this study.

Note: A copy of the participant information sheet should be retained by the participant with a copy of the signed consent form.

Appendix 7: Consent form for semi-structured interviews with MSM service users

LIVERPOOL JOHN MOORES UNIVERSITY

CONSENT FORM

Title of Project: Qualitative interviews with MSM engaging in sexualised drug use: experiences, intentions and service provision.

Name of Researcher and School/Faculty

Matthew Hibbert, Public Health Institute.

1. I confirm that I have read and understand the information provided for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and that this will not affect my legal rights. ☐
3. I understand that any personal information collected during the study will be anonymised and remain confidential ☐
4. I agree to take part in the above interview ☐
5. I understand that the interview will be audio recorded and I am happy to proceed ☐
6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised. ☐

Name of Participant Date Signature

Name of Researcher Date Signature

Appendix 8: Semi-structured interview guide for MSM service users

- Tell me a bit about yourself.
    - Hobbies / interests.
    - What do you do on a weekend? Grindr?
    - How do you identify in terms of sexuality?

- Describe your first sexual experience with a man.

- Describe your last sexual experience with a man.
    - If chems mentioned, probe on no. of partners, types of activity.
    - If chems not mentioned probe on sexual experience with drug use then chemsex.

- How does engaging in drug use and sex/chemsex make you feel?
    - Physically during and after.
    - Wellbeing during and after.
    - Motivation

- When you are sober, what are your intentions around safe sex when under the influence of [drug], and does this differ in practice?
    - Condoms / PrEP.
    - Why does intentions / practice differ or not?

- Can you describe your most recent experience of a sexual health clinic?
    - Disclosure of chemsex/other drug use?
    - How were you treated by staff?
    - Typical advice / intervention
    - Signposting/condoms/injecting kits
    - Referred to any specialist services?
    - Was this typical of previous experiences?

- If you have sought help for chemsex/drug use, can you describe that process?
    - If not sought help, how would you get help if needed? Perceive any barriers to accessing help?
    - If sought help, was this process sufficient? What was good/ what was bad?
    - Ideally, what services would you like to see?

- Is there anything else you would like to add?

- If there is something we haven't covered would we be able to contact you via email?

Appendix 9: Information sheet for semi-structured interviews with NHS sexual health service providers

Participant Information Sheet for Health Care Providers

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of Study: Exploring perspectives on provision and accessibility of Pre-exposure prophylaxis (PrEP) and care for men who have sex with men (MSM) engaging in chemsex in North England and the West Midlands

School/Faculty: Public Health Institute, Faculty of Education, Health & Community

Name and Contact Details and status of the Principal Investigator: Professor Marie Claire Van Hout, Professor of Public Health Policy and Practice (M.C.VanHout@ljmu.ac.uk)

Name and Contact Details of the Investigators: Mr Jim McVeigh, Director of Public Health Institute and Reader in Substance Use Epidemiology (J.McVeigh@ljmu.ac.uk), Professor Viv Hope, Professor of Public Health (V.D.Hope@ljmu.ac.uk), Mrs Jennifer Germain, Researcher, (J.s.germain@2014.ljmu.ac.uk)

You are being invited to take part in a research study. Before you decide it is important for you to understand why the study us being done and what participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

15. What is the purpose of the study?

The project is exploring your awareness, experiences and perspectives of the use of PrEP among MSM and their engagement in chemsex, as it relates to current awareness of PrEP (including of eligibility, compliance, access, online sourcing of PrEP and sources of information); the impact of PrEP on HIV testing uptake and patterns of HIV testing, on sexual risk behaviours, hepatitis C risk and awareness, and other STIs; the barriers to accessing PrEP, and complexities around optimal PrEP service provision and care pathways for MSM engaging in chemsex.

16. Why have I been invited to participate?

You have been invited because you have been identified as a potential health professional via your NHS trust. Many other people have also been identified as potential participants and will be recruited to the research study.

17. Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. You can withdraw at any time by informing the investigators without giving a reason and without it affecting your rights or access to any future treatment/service you receive.

18. What will happen to me if I take part?

You will be asked to take part in a one off interview with a researcher. The interview will discuss your awareness, experiences and perspectives of the use of PrEP among MSM and consolations with MSM engaging in chemsex, as it relates to current awareness of PrEP (including of eligibility, compliance, access, online sourcing of PrEP and sources of information); the impact of PrEP on HIV testing uptake and patterns of HIV testing, on sexual risk behaviours, hepatitis C risk and awareness, and other STIs; the barriers to accessing PrEP, and complexities around optimal PrEP service provision. The interview should last approximately one to one and a half hours and will be conducted over the phone or via skype. You will be able to agree the date and time of the interview to suit you. You will be asked to complete a consent form agreeing that your take part in the research. Following the interview you will not be contacted by the research team again although you may contact us if you have any further question.

19. Will I be recorded and how will the recorded media be used?

Yes. However, the audio and/or video recordings of your activities made during this study will be used only for analysis and for illustration in conference presentations and lectures. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings.

Interviews will be audio recorded on a password protected audio recording device and as soon as possible the recording will be transferred to secure storage and deleted from the recording device.

20. What are the possible disadvantages and risks of taking part?

There are no disadvantages or risks from taking part in this research. If you are personally affected by participation in this research, you may wish to seek support/advice from your NHS trust

21. What are the possible benefits of taking part?

Whilst there will be no direct benefits to you for taking part in the study, but it is hoped that this work will inform discussion concerning the provision of PrEP in England.

22. What will happen to the data provided and how will my taking part in this project be kept confidential?

The information you provide as part of the study is the **research study data**. Any research study data from which you can be identified (e.g. from identifiers such as your name, audio recording etc.), is known as **personal data**. This includes more sensitive categories of personal data (**sensitive data**) such as your race; ethnic origin; politics; religion; trade union membership; genetics; biometrics (where used for ID purposes); health; sex life; or sexual orientation.
Personal data does not include data that cannot be linked to an individual (e.g. data collected anonymously or where identifiers have been removed).

If necessary, personal data will be stored confidentially for 5years after the study has finished. Personal data will be accessible to only to the research team and will not be transferred outside of the European Economic Area.

Personal data collected from you will be recorded using a linked code – the link from the code to your identity will be stored securely and separately from the coded data

We will not tell anyone that you have taken part in the interview. We will also not name you in any of our reports or publications. You will not be identifiable in any ensuing reports or publications. We will use pseudonyms in transcripts and reports to help protect the identity of individuals and organisations unless you tell us that you would like to be attributed to information/direct quotes etc.

The interview recordings will be transcribed by the research team and stored on password protected computers.

Anonymised data might be used for additional or subsequent research studies and we might share anonymised data with other investigators (e.g. in online databases). All personal information that could identify you will be removed or changed before information is shared with other researchers or results are made public.

23. Limits to confidentiality

Please note that confidentiality may not be guaranteed; for example, due to the limited size of the participant sample, the position of the participant or information included in reports, participants might be indirectly identifiable in transcripts and reports. The investigator will work with the participant in an attempt to minimise and manage the potential for indirect identification of participants.

The Investigator will keep confidential anything they learn or observe related to illegal activity unless related to the abuse of children or vulnerable adults, money laundering or acts of terrorism.

In certain exceptional circumstances where you or others may be at significant risk of harm, the investigator may need to report this to an appropriate authority. This would usually be discussed with you first. Examples of those exceptional circumstances when confidential information may have to be disclosed are:

- The investigator believes you are at serious risk of harm, either from yourself or others
- The investigator suspects a child may be at risk of harm
- You pose a serious risk of harm to, or threaten or abuse others
- As a statutory requirement e.g. reporting certain infectious diseases
- Under a court order requiring the University to divulge information
- We are passed information relating to an act of terrorism

24. What will happen to the results of the research project?

The investigator intends to *publish the results in journal articles and present the findings at conferences*

25. Who is organising and funding/commissioning the study?

This study is organised by Liverpool John Moores University and funded/commissioned by The Sexually Transmitted Infection Research Foundation.

26. Who has reviewed this study?

This study has been reviewed by, and received ethics clearance through HRA approval.

27. What if something goes wrong?

If you have a concern about any aspect of this study, please contact the relevant investigator who will do their best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you wish to make a complaint, please contact the chair of the Liverpool John Moores University Research Ethics Committee (researchethics@ljmu.ac.uk) and your communication will be re-directed to an independent person as appropriate.

28. Data Protection Notice

Liverpool John Moores University is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Liverpool John Moores University will keep identifiable information about you for 5 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting secretariat@ljmu.ac.uk . Your NHS site will use your name, and contact details to contact you about the research study, and make sure that relevant information about the study is recorded for your care, and to oversee the quality of the study. Individuals from Liverpool John Moores University and regulatory organisations may look at your medical and research records to check the accuracy of the research study. Your NHS site will pass these details to Liverpool John Moores University along with the information collected from you. The only people in Liverpool John Moores University who will have access to information that identifies you will be people who need to contact you to set up interview arrangements or audit the data collection process. The people who analyse the information will not be able to identify you and will not be able to find out your name, or contact details. Your NHS site will keep identifiable information about you from this study for 5 years after the study has finished.

16. Contact for further information

Professor Marie Claire Van Hout

Thank you for reading this information sheet and for considering to take part in this study.

Appendix 10: Consent form for semi-structured interviews with NHS sexual health service providers

LIVERPOOL JOHN MOORES UNIVERSITY
CONSENT FORM – Service providers

Exploring perspectives on provision and accessibility of Pre-exposure prophylaxis (PrEP) and care for men who have sex with men (MSM) engaging in chemsex in North England and the West Midlands

Professor Marie Claire Van Hout, Public Health Institute, Faculty of Education, Health and Community

1. I confirm that I have read and understand the information provided for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily	☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and that this will not affect my legal rights.	☐
3. I understand that any personal information collected during the study will be anonymised and remain confidential	☐
4. I agree to take part in an interview for the above study	☐
5. I understand that the interview audio recorded and I am happy to proceed	☐
6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised.	☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature
Name of Person taking consent *(if different from researcher)*	Date	Signature

Note: When completed 1 copy for participant and 1 copy for researcher

Appendix 11: Semi-structured interview guide for NHS sexual health service providers

PrEP

- Can you describe the complexities around effective provision of PrEP services for MSM in the
  North of England and the West Midlands?

- What are the barriers and enablers to providing PrEP to the MSM community?

- Can you describe optimal ways to support informed decision-making around PrEP delivery to MSM?

- Does PrEP have impact on sexual risk taking or on levels of STIs?

- How can we provide equitable PrEP access within the HIV cascade of care to the MSM community?

- Can you think of any recommendations to inform policy, practice and health professional training around PrEP delivery to MSM in the North of England and the West Midlands, and in the UK?

Chems

- Can you describe a time when you have discussed PrEP with a man who has sex with men who engages in chemsex?
  - Perceived barriers e.g. adherence, drug interactions
  - Outcome

- Can you describe generally a consultation with a man who has sex with men who engages in chemsex?
  - Frequency
  - Typical advice / intervention
  - Condoms/injecting kits/ sign posting

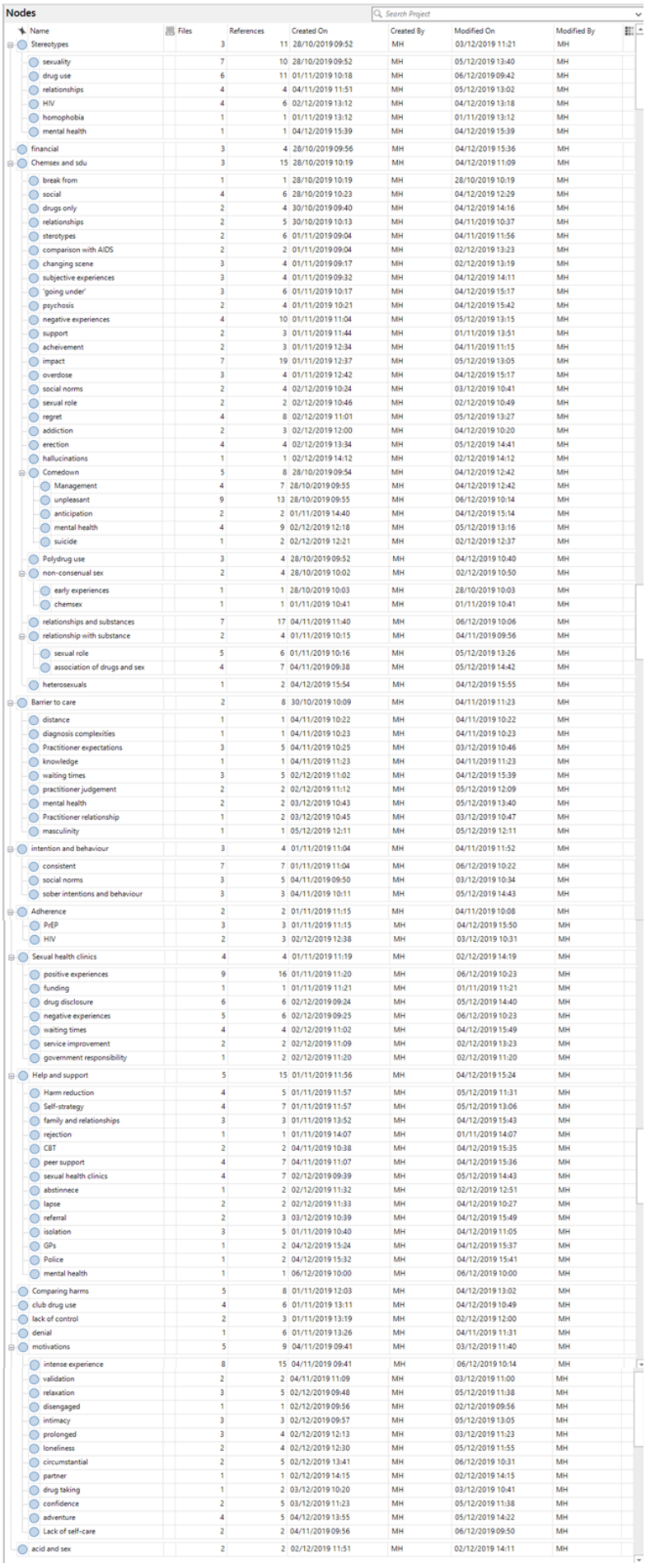
- Can you draw a referral pathway for a man who has sex with men who engages in chemsex?

- How do you decide if someone is in need of further help and support?
  - Information given to those in need/not in need

- What services do you currently provide for MSM engaging in chemsex and do you think this is sufficient?
  - Ideally what would you like to provide?
  - Barriers to providing services e.g. time/training

- Is there anything else you would like to add either in terms of PrEP or chemsex?

Appendix 12: Screenshot of coding framework after phase 2 of thematic analysis for service users



Nodes

Search Project

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drug use	6	11	01/11/2019 10:18	MH	06/12/2019 09:42	MH
relationships	4	4	04/11/2019 11:51	MH	05/12/2019 13:02	MH
HIV	4	6	02/12/2019 13:12	MH	04/12/2019 13:18	MH
homophobia	1	1	01/11/2019 13:12	MH	01/11/2019 13:12	MH
mental health	1	1	04/12/2019 15:39	MH	04/12/2019 15:39	MH
financial	3	4	28/10/2019 09:56	MH	04/12/2019 15:36	MH
Chemsex and sdu	3	15	28/10/2019 10:19	MH	04/12/2019 11:09	MH
break from	1	1	28/10/2019 10:19	MH	28/10/2019 10:19	MH
social	4	6	28/10/2019 10:23	MH	04/12/2019 12:29	MH
drugs only	2	4	30/10/2019 09:40	MH	04/12/2019 14:16	MH
relationships	2	5	30/10/2019 10:13	MH	04/11/2019 10:37	MH
sterotypes	2	6	01/11/2019 09:04	MH	04/11/2019 11:56	MH
comparison with AIDS	2	2	01/11/2019 09:04	MH	02/12/2019 13:23	MH
changing scene	3	4	01/11/2019 09:17	MH	02/12/2019 13:19	MH
subjective experiences	3	4	01/11/2019 09:32	MH	04/12/2019 14:11	MH
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psychosis	2	4	01/11/2019 10:21	MH	04/12/2019 15:42	MH
negative experiences	4	10	01/11/2019 11:04	MH	05/12/2019 13:15	MH
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acheivement	2	3	01/11/2019 12:34	MH	04/11/2019 11:15	MH
impact	7	19	01/11/2019 12:37	MH	05/12/2019 13:05	MH
overdose	3	4	01/11/2019 12:42	MH	04/12/2019 15:17	MH
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sexual role	2	2	02/12/2019 10:46	MH	02/12/2019 10:49	MH
regret	4	8	02/12/2019 11:01	MH	05/12/2019 13:27	MH
addiction	2	3	02/12/2019 12:00	MH	04/12/2019 10:20	MH
erection	4	4	02/12/2019 13:34	MH	05/12/2019 14:41	MH
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Management	4	7	28/10/2019 09:55	MH	04/12/2019 12:42	MH
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Polydrug use	3	4	28/10/2019 09:52	MH	04/12/2019 10:40	MH
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chemsex	1	1	01/11/2019 10:41	MH	01/11/2019 10:41	MH
relationships and substances	7	17	04/11/2019 11:40	MH	06/12/2019 10:06	MH
relationship with substance	2	4	01/11/2019 10:15	MH	04/11/2019 09:56	MH
sexual role	5	6	01/11/2019 10:16	MH	05/12/2019 13:26	MH
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knowledge	1	1	04/11/2019 11:23	MH	04/11/2019 11:23	MH
waiting times	3	5	02/12/2019 11:02	MH	04/12/2019 15:39	MH
practitioner judgement	2	2	02/12/2019 11:12	MH	05/12/2019 12:09	MH
mental health	2	2	03/12/2019 10:43	MH	05/12/2019 13:40	MH
Practitioner relationship	1	2	03/12/2019 10:45	MH	03/12/2019 10:47	MH
masculinity	1	1	05/12/2019 12:11	MH	05/12/2019 12:11	MH
intention and behaviour	3	4	01/11/2019 11:04	MH	04/11/2019 11:52	MH
consistent	7	7	01/11/2019 11:04	MH	06/12/2019 10:22	MH
social norms	3	5	04/11/2019 09:50	MH	03/12/2019 10:34	MH
sober intentions and behaviour	3	3	04/11/2019 10:11	MH	05/12/2019 14:43	MH
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PrEP	3	3	01/11/2019 11:15	MH	04/12/2019 15:50	MH
HIV	2	3	02/12/2019 12:38	MH	03/12/2019 10:31	MH
Sexual health clinics	4	4	01/11/2019 11:19	MH	02/12/2019 14:19	MH
positive experiences	9	16	01/11/2019 11:20	MH	06/12/2019 10:23	MH
funding	1	1	01/11/2019 11:21	MH	01/11/2019 11:21	MH
drug disclosure	6	6	02/12/2019 09:24	MH	05/12/2019 14:40	MH
negative experiences	5	6	02/12/2019 09:25	MH	06/12/2019 10:23	MH
waiting times	4	4	02/12/2019 11:02	MH	04/12/2019 15:49	MH
service improvement	2	2	02/12/2019 11:09	MH	02/12/2019 13:23	MH
government responsibility	1	2	02/12/2019 11:20	MH	02/12/2019 11:20	MH
Help and support	5	15	01/11/2019 11:56	MH	04/12/2019 15:24	MH
Harm reduction	4	5	01/11/2019 11:57	MH	05/12/2019 11:31	MH
Self-strategy	4	7	01/11/2019 11:57	MH	05/12/2019 13:06	MH
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lapse	2	2	02/12/2019 11:33	MH	04/12/2019 10:27	MH
referral	2	3	03/12/2019 10:39	MH	04/12/2019 15:49	MH
isolation	3	5	01/11/2019 10:40	MH	04/12/2019 11:05	MH
GPs	1	2	04/12/2019 15:24	MH	04/12/2019 15:37	MH
Police	1	2	04/12/2019 15:32	MH	04/12/2019 15:41	MH
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Comparing harms	5	8	01/11/2019 12:03	MH	04/12/2019 13:02	MH
club drug use	4	6	01/11/2019 13:11	MH	04/12/2019 10:49	MH
lack of control	2	3	01/11/2019 13:19	MH	02/12/2019 12:00	MH
denial	1	6	01/11/2019 13:26	MH	04/11/2019 11:31	MH
motivations	5	9	04/11/2019 09:41	MH	03/12/2019 11:40	MH
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validation	2	2	04/11/2019 11:09	MH	03/12/2019 11:00	MH
relaxation	3	5	02/12/2019 09:48	MH	05/12/2019 11:38	MH
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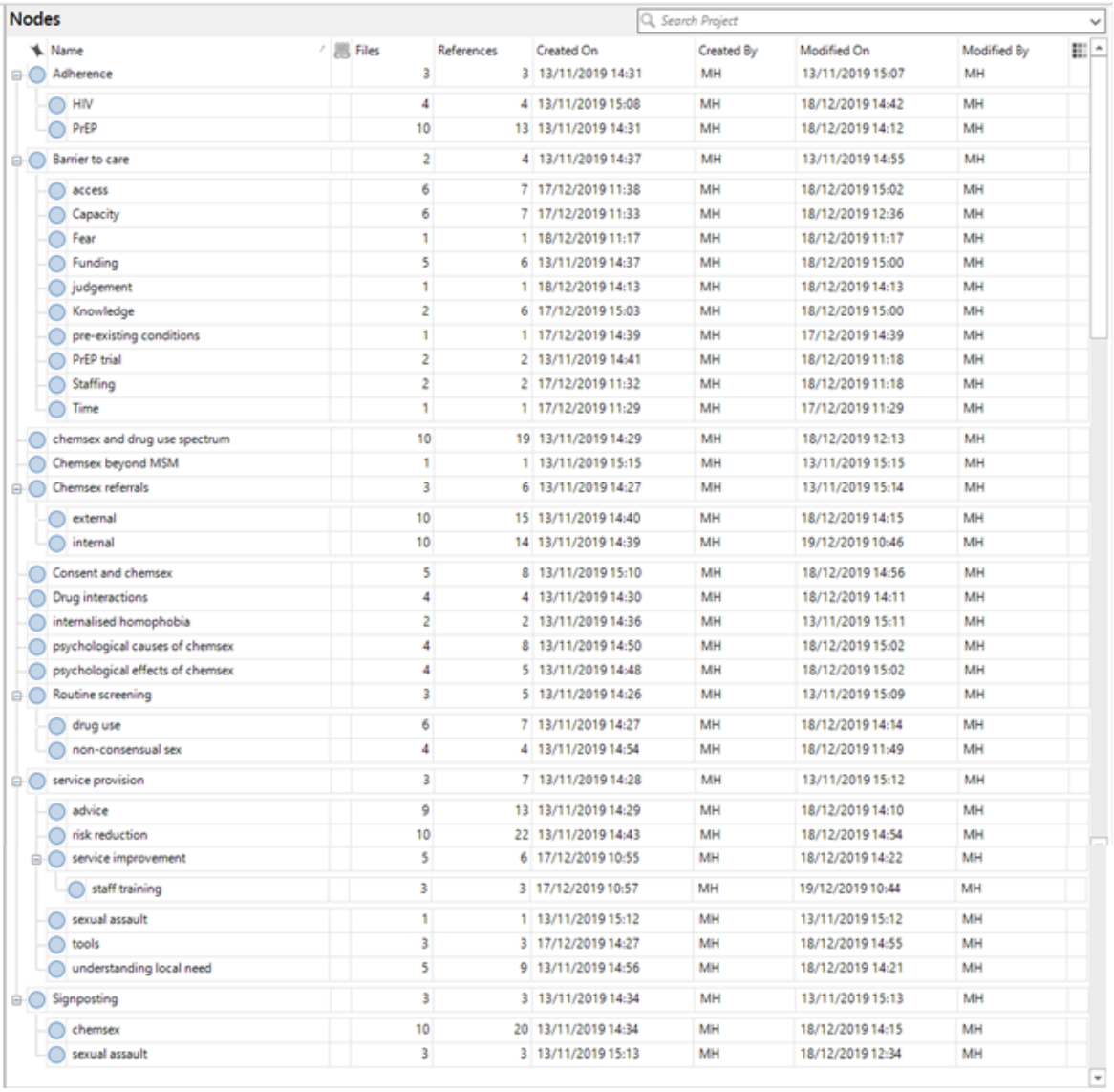
intimacy	3	3	02/12/2019 09:57	MH	05/12/2019 13:05	MH
prolonged	3	4	02/12/2019 12:13	MH	03/12/2019 11:23	MH
loneliness	2	4	02/12/2019 12:30	MH	05/12/2019 11:55	MH
circumstantial	2	5	02/12/2019 13:41	MH	06/12/2019 10:31	MH
partner	1	1	02/12/2019 14:15	MH	02/12/2019 14:15	MH
drug taking	1	2	03/12/2019 10:20	MH	03/12/2019 10:41	MH
confidence	2	5	03/12/2019 11:23	MH	05/12/2019 11:38	MH
adventure	4	5	04/12/2019 13:55	MH	05/12/2019 14:22	MH
Lack of self-care	2	2	04/11/2019 09:56	MH	06/12/2019 09:50	MH
acid and sex	2	2	02/12/2019 11:51	MH	02/12/2019 14:11	MH

Appendix 13: Screenshot of coding framework after phase 2 of thematic analysis for service providers



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Capacity	6	7	17/12/2019 11:33	MH	18/12/2019 12:36	MH
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Knowledge	2	6	17/12/2019 15:03	MH	18/12/2019 15:00	MH
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Chemsex referrals	3	6	13/11/2019 14:27	MH	13/11/2019 15:14	MH
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internal	10	14	13/11/2019 14:39	MH	19/12/2019 10:46	MH
Consent and chemsex	5	8	13/11/2019 15:10	MH	18/12/2019 14:56	MH
Drug interactions	4	4	13/11/2019 14:30	MH	18/12/2019 14:11	MH
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psychological causes of chemsex	4	8	13/11/2019 14:50	MH	18/12/2019 15:02	MH
psychological effects of chemsex	4	5	13/11/2019 14:48	MH	18/12/2019 15:02	MH
Routine screening	3	5	13/11/2019 14:26	MH	13/11/2019 15:09	MH
drug use	6	7	13/11/2019 14:27	MH	18/12/2019 14:14	MH
non-consensual sex	4	4	13/11/2019 14:54	MH	18/12/2019 11:49	MH
service provision	3	7	13/11/2019 14:28	MH	13/11/2019 15:12	MH
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risk reduction	10	22	13/11/2019 14:43	MH	18/12/2019 14:54	MH
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