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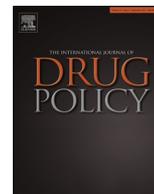
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Chemsex, risk behaviours and sexually transmitted infections among men who have sex with men in Dublin, Ireland

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ABSTRACT

Background: Drug use for or during sex ('chemsex') among MSM has caused concern, because of the direct effects of the drugs themselves, and because of an increased risk of transmission of sexually transmitted infections (STIs). This study aimed to assess the prevalence of chemsex, associated behaviours and STIs among attendees at Ireland's only MSM-specific sexual health clinic in Dublin over a six week period in 2016.

Methods: The questionnaire collected demographic data, information on sexuality and sexual practice, self-reported history of treatment for STIs, and chemsex use. Key variables independently associated with treatment for STIs over the previous 12 months were identified using multivariable logistic regression. **Results:** The response rate was 90% (510/568). One in four (27%) reported engaging in chemsex within the previous 12 months. Half had taken ≥ 2 drugs on his last chemsex occasion. One in five (23%) reported that they/their partners had lost consciousness as a result of chemsex. Those engaging in chemsex were more likely to have had more sexual partners ($p < 0.001$), more partners for anal intercourse ($p < 0.001$) and to have had condomless anal intercourse ($p = 0.041$). They were also more likely to report having been treated for gonorrhoea over the previous 12 months (adjusted OR 2.03, 95% CI 1.19–3.46, $p = 0.009$). One in four (25%) reported that chemsex was impacting negatively on their lives and almost one third (31%) reported that they would like help or advice about chemsex.

Conclusion: These results support international evidence of a chemsex culture among a subset of MSM. They will be used to develop an effective response which simultaneously addresses addiction and sexual ill-health among MSM who experience harm/seek help as a consequence of engagement in chemsex.

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Introduction

The use of recreational drugs is associated with potentially high-risk sexual behaviours and consequently an elevated risk of sexually transmitted infections (STIs) and HIV (McCarty-Caplan, Jantz, & Swartz, 2014). International evidence suggests that among men who have sex with men (MSM) who use drugs, there is a preference for 'sex-drugs', including alkyl nitrites ('poppers'), crystal methamphetamine ('crystal meth') and club drugs (including ketamine, 3,4-Methylenedioxymethamphetamine (MDMA)

('ecstasy') and gamma-hydroxybutyric acid/gamma-butyrolactone (GHB/GBL)) (McCarty-Caplan et al., 2014). A separate group of drugs, new psychoactive substances (NPS), have also become popular with MSM, with one of these, 4-methylmethcathinone (mephedrone), becoming the sixth most consumed substance in gay bars and nightclubs in the UK, after alcohol, tobacco, cannabis, MDMA, and cocaine (Winstock et al., 2011).

The underlying reasons for engaging in chemsex – the use of these drugs specifically for or during sex – are complex; the behaviours men engage in and the reasons for their use of drugs in sex are specific to each individual (Bourne, Reid, Hickson, Rueda, & Weatherburn, 2014). However, a range of overarching hypotheses have been proposed for why men engage in chemsex. One explanation is that they are 'sensation seeking', pursuing the most sensorily powerful sexual experiences (Melendez-Torres & Bourne,

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2016). Many of the drugs used for chemsex are stimulants (e.g. GHB/GBL, crystal meth, mephedrone) which increase heart rate and blood pressure; in addition they are known to trigger feelings of euphoria and sexual arousal and can facilitate long sexual sessions with multiple partners extending over several days (Page & Nelson, 2016). It has also been suggested that men use chemsex to escape the rigorous norms governing gay sexuality in order to engage more freely in risky sexual behaviours – the theory of ‘cognitive escape’ (Melendez-Torres & Bourne, 2016). Qualitative work with MSM in London meanwhile suggested that substance use is seen as a strategic resource in achieving sexual goals, by facilitating sexual self-confidence or self-esteem, and in overcoming concerns relating to body image or sexual performance (Bourne et al., 2015; Melendez-Torres and Bourne, 2016).

Regardless of the motivations for engaging in chemsex, the use of recreational drugs in this way can have serious implications for those taking them. Consumption of ‘chemsex drugs’ can lead to unwanted side effects including agitation, anxiety, paranoia, aggression, and psychoses. All drugs can lead to dependency and there have been reports of overdose with unconsciousness and death (Hockenhuil, Murphy, & Paterson, 2017; Lingford-Hughes, Patel, Bowden-Jones, Crawford, & Dargan, 2016; Ma & Perera, 2016). GHB/GBL in particular is associated with very high rates of overdose with one in five users reporting that they lose consciousness each year (Winstock, 2015).

In addition to concerns about the drugs themselves, chemsex has also been implicated as a potential risk factor for the spread of STIs and HIV. In a study by Heiligenberg et al. in Amsterdam, HIV-infected MSM reported more sex-related drug use than HIV negative MSM and sex-related drug use among the latter was associated with STI, even after adjusting for sexual behaviour (Heiligenberg et al., 2012). The use of chemsex drugs by MSM has also been shown to significantly increase the relative risk of infection with HIV (Ostrow et al., 2009), while chemsex has been implicated as a risk factor for the spread of transmissible enteric pathogens, including Shigella and Escherichia Coli (Bains, Crook, Field, & Hughes, 2016). In 2016, a retrospective review of case notes of MSM attending two South London sexual health clinics reported that chemsex was associated with higher risk sexual behaviours, higher likelihood of having been diagnosed with any STI over the study period and that HIV positive MSM were significantly more likely to participate in chemsex than those who were HIV negative (Hegazi et al., 2016).

While analysis of data from the European MSM Internet Survey (EMIS, 2010), the MSM Internet Survey in Ireland (MISI, 2015) and the Attitudes to and Understanding of Risk of Acquisition of HIV (AURAH, 2013–14) Study suggest that substantial numbers of respondents are using drugs associated with chemsex, these surveys did not ask respondents directly if they had used these drugs specifically for chemsex and hence it remains unclear as to whether these drugs were being used in this context or for other recreational purposes (Igoe et al., 2015; Kramer et al., 2016; Sewell et al., 2017).

Given international evidence on the growing popularity of chemsex, the potential risks associated with it, and the paucity of published information on this issue in Ireland there is a need to better understand the relationship between chemsex, risk and sexual risk behaviours and STI-risk among MSM in order to implement appropriate risk reduction and prevention strategies. Consequently, this study aimed to assess the prevalence of chemsex use among attendees at Ireland’s only MSM-specific outpatient sexual health clinic in Dublin. In addition, it aimed to better understand the attitudes towards, and harms arising from, engaging in chemsex and, specifically, to evaluate the relationship between chemsex and other sexual risk behaviours on self-reported history of treatment for STIs and HIV.

Methods

The methods are reported according to the STROBE guidelines for observational studies (von Elm et al., 2008). This study was carried out with the prior approval of the ethics committee in St. James’ and Tallaght Hospitals, Dublin, and with the informed written consent of the participants.

Definition of chemsex

Chemsex was defined as the use of drugs specifically for or during sex. The drugs included in this definition were ketamine, GHB/GBL, crystal meth, mephedrone, cocaine, NPS and other stimulants (including speed/amphetamine/ecstasy/eros/nexus/smiles). Alcohol, cannabis and poppers are generally excluded from definitions of chemsex, and they were not included in our definition (Knoops, Bakker, van Bodegom, & Zantkuijl, 2015).

Participants

The target population was defined as MSM attending the Gay Men’s Health Service (GMHS) in Dublin; the only MSM-specific sexual health service in Ireland. All attendees over a six week period (12 clinics) in 2016 were invited to participate. Respondents had to be 18 years of age or older, fluent in English or Portuguese and attracted to other men or have a history of having had sexual contact with a man.

Study instrument

Questionnaire content was developed based on surveys and qualitative research with MSM previously conducted nationally and internationally (Bourne et al., 2014; Frankis, Young, Lorimer, Davis, & Flowers, 2016; Igoe et al., 2015; Kramer et al., 2016; MISI, 2015). The survey explored the following domains; demographic history, binge alcohol consumption (consumption of six or more standard drinks on one occasion), sexuality (sexual identity, current partnership status), STI history (self-reported history of treatment for STIs within previous 12 months); sexual behaviours with men (last sexual contact, number of sexual contacts, engagement in condomless anal intercourse (CAI)) and self-reported chemsex activity within the previous 12 months (activity, number of partners, drugs used, frequency of use, methods of use, injecting use), attitudes towards and help-seeking for chemsex.

Survey procedure

A pilot survey was conducted with twenty attendees at GMHS and minor amendments were made to the questionnaire design. All attendees were approached by the surveyors (RG, NB, AS), provided with an information sheet about the study and asked to participate. Participants were invited to complete a paper-based questionnaire in English or Portuguese while they were waiting to attend their consultation. Completed questionnaires were deposited anonymously at a data collection point. The surveyors were not involved in the care of participants at the clinic.

Data collection and analysis

All data collected were anonymous. The drug use characteristics of those who reported that they had engaged in chemsex were examined.

Chi-squared tests were used to investigate for differences in socio-demographics, binge alcohol consumption (at least once monthly versus less than once monthly), sexuality, number of sexual contacts in the previous 12 months (ten or less versus more

than ten), number of anal sexual contacts in the previous 12 months (ten or less versus more than ten), and use of a condom at last anal intercourse (yes versus no) between men who reported that they had and had not engaged in chemsex within the previous 12 months.

Chi-squared tests were also used to investigate for differences in self-reported history of treatment for one of ten listed STIs within the previous 12 months between men who reported that they had and had not engaged in chemsex over that time period. In addition, logistic regression was used to identify whether chemsex use and/or other potential predictor variables were independently associated with a self-reported history of having been treated for one of the STIs in the previous 12 months. The predictor variables included in the model were age group (18–24 years, 25–39 years, 40+ years), level of education (university degree or higher versus not), country of birth (Ireland versus other), binge alcohol consumption (at least once monthly versus less than once monthly), number of sexual contacts in the previous 12 months (ten or less versus more than ten), number of anal sexual contacts in the previous 12 months (ten or less versus more than ten), use of a condom at last anal intercourse (yes versus no) and engagement in chemsex within the previous 12 months (yes versus no). Significance of the covariates was assessed by p-values (<0.05), odds ratios (OR) and 95% confidence intervals (CI) for association between predictor variables and the individual STIs listed.

Finally, the attitudes towards chemsex and help-seeking for chemsex by men who reported having engaged in chemsex are described.

Results

Of 568 attendees over the six week period, 510 agreed to participate and returned questionnaires, giving a response rate of 90%. Twenty four (5%) questionnaires were excluded because of failure to provide adequate information about engagement in chemsex, or they stated that they were heterosexual with no history of sexual contact with a man, or they failed to tick the box to say that they understood the information sheet, were over 18 and were happy to proceed with the survey. Of the remaining 486 respondents, 27% (n = 131) reported that they had engaged in chemsex within the previous 12 months.

Table 1 describes the socio-demographic characteristics of the 486 included respondents. Compared with other age groups, those aged 25–39 years were more likely to report that they had engaged in chemsex (p = 0.030) (Table 1). No significant differences were seen according to the other socio-demographic variables, or in relation to binge alcohol consumption.

Over half (56%) of those who engaged in chemsex made contact with their sexual partners through a website or smart phone application, and one in three (34%) had met their partners for chemsex at a gay café/bar/disco/nightclub or through friends (32%).

GHB/GBL was the drug most commonly reported as being used for chemsex (Table 2); over half (57%) of those who had engaged in chemsex had used GHB/GBL within the previous 12 months.

The association between chemsex and the sexual activity and sexual risk behaviours of respondents is reported in Table 3. Respondents were asked how many drugs they had used the last time they engaged in chemsex; of 104 respondents who answered this question, 52% had used one drug, 34% used two, 10% used three and 5% used four or more.

Of those who had engaged in chemsex, 9% reported that they had ever injected drugs for sex. One person reported that he had ever shared equipment.

One in five respondents reported that they (17%) and/or their partners (6%) had ever lost consciousness as a consequence of engaging in chemsex.

Two thirds (66%) reported their last sexual contact with a man within the previous seven days, and an additional 25% within the previous four weeks (Table 2). Over a third (37%) of respondents had sexual contact with more than ten men over the previous 12 months.

Those who had engaged in chemsex were 2.37 times (unadjusted odds ratio (OR) 2.37, 95% confidence interval (CI) 1.55–3.61, p < 0.001) more likely than those who had not to have had more than ten sexual partners over the previous 12 months.

One fifth (20%) of respondents had engaged in anal sex with more than ten men over the previous 12 months. Compared with those who had not, those who had engaged in chemsex were significantly more likely to have had anal sex with more than ten partners over the previous 12 months (unadjusted OR 2.03, 95% CI 1.26–3.27, p < 0.001).

Table 1
Socio-demographic characteristics of respondents.

Total	Total Respondents No. (%)	Engaged in chemsex No. (%)	Did not engage in chemsex No. (%)	p-value ^c
	486 (100)	131 (26.9)	355 (73.1)	
Age Group (years)(n = 483)				
18–24	118 (24.3)	27 (22.9)	91 (77.1)	0.030
25–39	283 (58.2)	89 (31.4)	194 (68.6)	
≥40	82 (16.9)	15 (18.3)	67 (81.7)	
Level of Education (n = 483)				
Below degree level	177 (36.6)	45 (25.4)	132 (74.6)	0.523
Degree or higher	306 (63.4)	86 (28.1)	220 (71.9)	
Country of Birth (n = 485)				
Ireland	285 (58.8)	68 (23.9)	217 (76.1)	0.081
Other	200 (41.2)	62 (31.0)	138 (69.0)	
Sexual identity (n = 486)				
Gay/Homosexual	438 (90.1)	117 (26.7)	321 (73.3)	0.233
Bisexual	38 (7.8)	9 (23.7)	29 (76.3)	
Other/no term	10 (2.1)	5 (50.0)	5 (50.0)	
Partnership status (n = 486)				
Single	331 (68.1)	91 (27.5)	240 (72.5)	0.948
Male partner/boyfriend	127 (26.1)	33 (26.0)	94 (74.0)	
Civil partner/married to man	18 (3.7)	4 (22.2)	14 (77.8)	
Female partner/girlfriend	10 (2.1)	3 (30.0)	7 (70.0)	

c = Chi-squared test.

Table 2
Drugs used for chemsex.

Drug(s) used for chemsex	Total Respondents No. (%)	% of those engaging in chemsex (n = 131)
Any drug listed	131 (27.0)	-
Ketamine	39 (8.0)	29.8
GHB/GBL	75 (15.4)	57.3
Crystal meth	28 (5.8)	21.4
Mephedrone	21 (4.3)	16.0
Cocaine	61 (12.6)	46.6
NSP	21 (4.3)	16.0
Other stimulants	79 (16.3)	60.3

Almost one third (32%) of respondents had CAI the last time they had engaged in anal sex. Compared with those who had not, those who had engaged in chemsex were significantly more likely to have had CAI the last time they had engaged in anal sex (unadjusted OR 1.55, 95% CI 1.02–2.36, $p=0.041$).

Overall, 6% of the study cohort reported that they had ever been diagnosed with HIV; no significant difference was seen in the proportion of respondents who reported having been diagnosed with HIV according to whether they reported that they had (8%) or had not (5%) engaged in chemsex ($p=0.097$).

On univariate analysis, those who reported that they had engaged in chemsex were significantly more likely than those who had not to report that they had been treated for at least one of the ten listed STIs over the previous 12 months (47% of those who had engaged in chemsex had been treated for at least one STI versus 33% of those who had not engaged) (unadjusted OR 1.83, 95% CI 1.22–2.75, $p=0.004$). Those who had engaged in chemsex were significantly more likely than those who had not to have been treated for HIV (8% vs. 3%; unadjusted OR 2.62, 95% CI 1.13–6.09, $p=0.021$), chlamydia (23% vs. 12%; unadjusted OR 2.16, 95% CI 1.29–3.62, $p=0.003$), syphilis (9% vs. 4%; unadjusted OR 2.65, 95% CI 1.18–5.98, $p=0.015$) and gonorrhoea (30% vs. 15%; unadjusted OR 2.47, 95% CI 1.53–3.98, $p<0.001$) within the previous 12 months.

Logistic regression was next used to identify whether engagement in chemsex remained independently associated with a self-reported history of having been treated for these STIs (any STI, HIV, chlamydia, syphilis, gonorrhoea) after adjusting for other variables. After adjustment, chemsex was only significantly associated with a self-reported history of treatment for gonorrhoea; compared with those who did not, those who reported that they had engaged in chemsex were twice as likely to report that they had been treated for gonorrhoea within the previous 12 months (adjusted OR 2.03, 95% CI 1.19–3.46, $p=0.009$)(Table 4).

Fig. 1 presents the responses from those who engaged in chemsex to a range of statements which aimed to assess attitudes to and motivations for engaging in chemsex. The majority of respondents who had engaged in chemsex agreed or strongly agreed that it provides a more intense experience (61%). Three quarters (75%) of respondents who engaged in chemsex agreed or strongly agreed that they enjoyed and were in control of their sex life. However, one in four (25%) reported that chemsex was impacting negatively on their lives.

The majority (52%) of respondents who had engaged in chemsex reported that they were more likely to do things during chemsex that they wouldn't do when sober, with a similar proportion (48%) agreeing that they were less likely to use a condom when engaging in chemsex. A substantial majority rejected the idea that they were engaging in chemsex as a result of pressure from their partner or from their friends or social circle; however, 9% (from a partner) and 10% (from friends/social circle) agreed that they were pressured to engage in chemsex.

Almost one third (31%) of those who had engaged in chemsex reported that they would like help or advice about chemsex. Two thirds (66%) of respondents agreed that an advice service about chemsex should be available for attendees at the sexual health service they were attending. When asked where they would like to be able to seek help or advice about chemsex, the two most popular sources identified were the sexual health service they were attending (24%) and online (19%).

Discussion

This is the first study to confirm anecdotal concerns that a substantial minority (27%) of MSM attending sexual health services in Dublin are engaging in chemsex.

Table 3
Association between chemsex and the sexual activity and sexual risk behaviours of respondents.

	Total Respondents No. (%)	Engaged in Chemsex		p-value ^c	Unadjusted Odds Ratio (95% CI)
		Yes No. (%)	No. (%)		
Last sexual contact with a man (n = 468)					
Within last 4 weeks	428 (91.5)	121 (28.3)	307 (71.7)	0.144	1.86 (0.80–4.31)
More than 4 weeks ago	40 (8.5)	7 (17.5)	33 (82.5)		
No. men sexual contact last 12 months (n = 475)					
≤10	282 (59.4)	57 (20.2)	225 (79.8)	<0.001 ^a	2.37 (1.55–3.61)
>10	176 (37.1)	66 (37.5)	110 (62.5)		
Not sure*	17 (3.6)	6 (35.3)	11 (64.7)		
No. men anal sex last 12 months (n = 480)					
≤10	373 (77.7)	88 (23.6)	285 (76.4)	<0.001 ^a	2.03 (1.26–3.27)
>10	96 (20.0)	37 (38.5)	59 (61.5)		
Not sure*	11 (2.3)	5 (45.5)	6 (54.5)		
CAI Last Anal Sex (n = 480)					
Used a condom (n = 316) or never had anal sex(n = 10)	326(67.9)	79 (24.2)	247 (75.8)	0.041	1.55 (1.02–2.36)
Did not use a condom	154(32.1)	51 (33.1)	103 (66.9)		

^cChi-squared test; 95% CI, 95% Confidence Interval; CAI, Condomless anal intercourse; *Not sure = respondents who were unable to remember how many men they had sexual contact/anal sex with over the preceding twelve months; ^aThose who were not sure were excluded from this analysis.

Table 4
Demographic and sexual risk factors independently associated with a self-reported history of having been treated for any of the listed STIs or HIV, Chlamydia, Syphilis or Gonorrhoea within the last 12 months.

	Any STI			HIV			Chlamydia			Syphilis			Gonorrhoea		
	%	OR	CI	%	OR	CI	%	OR	CI	%	OR	CI	%	OR	CI
Age Group															
18–24	36.4			1.7			11.0			3.4			22.0		
25–39	41.0	1.01	(0.61–1.66)	6.0	3.02	(0.66–13.92)	17.7	1.41	(0.69–2.90)	6.7	2.23	(0.61–8.24)	20.1	0.68	(0.37–1.23)
40+	24.4	0.56	(0.28–1.13)	4.9	2.01	(0.31–13.10)	12.2	1.47	(0.56–3.86)	2.4	0.93	(0.14–6.14)	9.80	0.45	(0.18–1.12)
Education															
Below degree	36.7	0.92	(0.59–1.42)	4.6	0.68	(0.56–1.82)	14.1	0.98	(0.55–1.77)	6.8	0.43	(0.17–1.08)	18.6	0.97	(0.67–1.67)
Degree/higher	36.9	1.55	(1.00–2.40)	4.5	0.79	(0.29–2.14)	15.7	1.57	(0.88–2.88)	4.2	2.86*	(1.06–7.70)	19.0	1.84*	(1.08–3.13)
Country of Birth															
Ireland	33.3	1.04	(0.67–1.61)	4.1	0.86	(0.31–2.37)	13.3	1.35	(0.73–2.47)	2.8	0.83	(0.32–2.18)	15.4	1.14	(0.65–1.97)
Other	42.0	2.19*	(1.29–3.69)	8.0	1.22	(0.30–4.95)	14.5	2.47*	(1.22–5.02)	5.9	0.75	(0.19–2.92)	20.0	1.53	(0.78–2.98)
Binge Alcohol Consumption															
> 1/month	36.0	1.62	(0.88–2.98)	11.5	3.53	(0.92–13.55)	15.6	1.69	(0.82–3.48)	4.4	2.84	(0.69–11.7)	14.2	2.14*	(1.05–4.37)
< 1/month	27.3	1.40	(0.90–2.17)	3.7	1.69	(0.66–4.30)	8.9	1.91*	(1.08–3.36)	7.8	2.06	(0.83–4.98)	18.7	1.06	(0.61–1.83)
Sexual contacts /12mths															
> 10	52.3	1.39	(0.87–2.19)	8.4	1.90	(0.72–4.97)	24.4	1.47	(0.82–2.63)	6.8	1.88	(0.73–4.82)	27.3	2.03*	(1.19–3.46)
< 10	31.4			2.9			11.5			4.0			14.2		
Anal sexual contacts/12mths															
> 10	57.3	1.40	(0.90–2.17)	7.1	1.69	(0.66–4.30)	30.2	1.69	(0.82–3.48)	8.3	2.84	(0.69–11.7)	35.4	2.14*	(1.05–4.37)
< 10	34.0			3.7			12.6			4.0			18.7		
UAI last anal intercourse															
Yes	42.2	1.40	(0.90–2.17)	7.1	1.69	(0.66–4.30)	20.1	1.91*	(1.08–3.36)	7.8	2.06	(0.83–4.98)	18.8	1.06	(0.61–1.83)
No	33.0			3.4			12.1			3.7			14.6		
Chemsex last 12 months															
Yes	47.3	1.39	(0.87–2.19)	8.4	1.90	(0.72–4.97)	22.9	1.47	(0.82–2.63)	9.2	1.88	(0.73–4.82)	29.8	2.03*	(1.19–3.46)
No															

√ = reference, mths = months; OR = adjusted odds ratio; 95% CI = 95% confidence interval; * = p < 0.05.

While different studies have used different definitions of 'chemsex', the results presented here for specific drugs correlate well with previous reports. For example, our finding that over half (57%) of those who had engaged in chemsex had used GHB/GBL is similar to that of Hegazi et al. who reported that of 101 men who reported engaging in chemsex at clinics in Brighton in 2015, over half (56%) had used GHB/GBL (Hegazi, Lee, Whittaker, Green, & Simms, 2016). The use of GHB/GBL for chemsex has caused particular concern internationally because of its association with physical dependence, potentially life-threatening withdrawal on stopping use, overdose and death (Hockenull et al., 2017; Lingford-Hughes et al., 2016). Its popularity as demonstrated in this study, together with our finding that one in five men/their partner had reportedly lost consciousness as a consequence of chemsex, highlights the need to ensure that local clinicians/emergency services are aware of chemsex, the drugs taken and their potential for dependency, withdrawal and overdose.

The European Monitoring Centre for Drugs and Drug Addiction has reported an unprecedented increase since 2010 in relation to the number, type and availability of NPS in Europe (New psychoactive substances in Europe, 2015). These trends are reflected in the results presented here, as is the frequency of polydrug use, with almost half of all respondents who reported engaging in chemsex taking two or more drugs on the last occasion on which they had engaged in chemsex. These findings demonstrate the evolving nature of recreational drug use including drugs used for chemsex. They have implications for addiction services which will need to expand from their traditional focus on tackling opiate dependency, to a new model of care which is able to adapt to new challenges as they emerge, tailoring interventions to meet the needs of different demographic subsets of the population.

These results demonstrate a relationship between engagement in chemsex and risk of having required treatment for gonorrhoea over the previous 12 months, a finding of particular note given that notifications of gonorrhoea in Dublin increased by 50% between 2015 (n = 1302) and 2016 (n = 1958), with MSM disproportionately affected (85% of cases in which the mode of transmission was known) (Cullen, O'Donnell, & Igoe, 2017). As noted in the introduction, the association between chemsex and STIs has been reported previously (Bains et al., 2016; Gilbert, Simms, Gobin, Oliver, & Hughes, 2013). While the associations reported in the present study between engagement in chemsex and other sexual risk taking behaviours (e.g. number of sexual partners, engagement in CAI) reflect the findings of the AURAH Study and provide a plausible explanation for some of the reported increases in gonorrhoea in Dublin (Sewell et al., 2017), these results should not however be taken as evidence of causation and additional work is required to further delineate these relationships.

A key finding in our study is that at least a proportion of those who engage in chemsex attend sexual health services; they should not therefore be considered as a 'hidden population' among the larger MSM population in terms of STI and HIV prevention, and it should be possible to reach these men via these clinics (Pettersson, Tikkanen, & Schmidt, 2016). Furthermore, our finding that the majority of men engaging in chemsex would like to be able to get advice about drugs at the sexual health service they are attending underlines the urgent need for sexual health clinics to work collaboratively with drug services to develop and evaluate interventions (Pakianathan, Lee, Kelly, & Hegazi, 2016), and to create centres of excellence based on dual working arrangements (McCall, Adams, Mason, & Willis, 2015). As noted in one report on how best to engage with MSM who take drugs for or during sex, individuals may not see their drug use as problematic and therefore would not think about accessing a drug service, or may have concerns about their drug use but do not identify as a

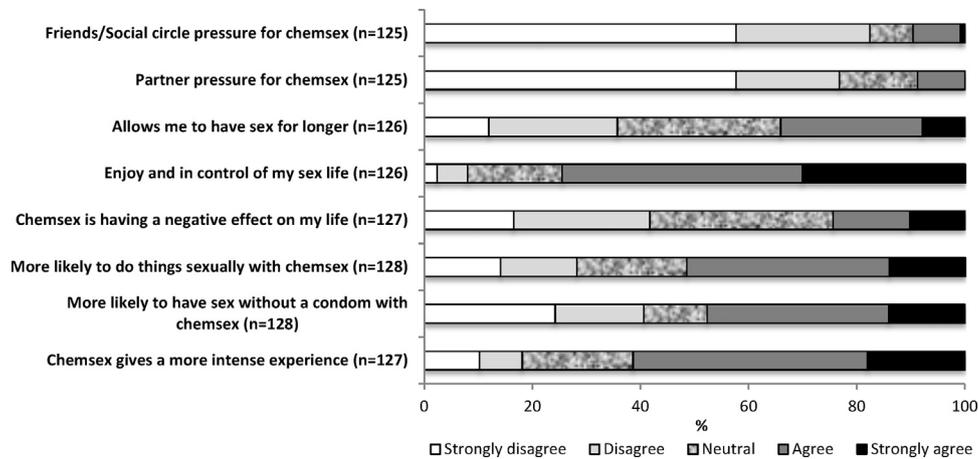


Fig. 1. Attitudes towards chemsex and motivations for engaging in chemsex.

'drug user' in the typical sense (Chemsex, 2015). A number of authors have therefore suggested the need for tailored services within sexual health settings for MSM engaging in chemsex, to be able address not only their sexual health needs but also to provide substance misuse and psychological support when required (Bourne et al., 2014; Pakianathan et al., 2016; Phillips, 2015).

The evolving role of social media and the internet in influencing sexual behaviour is evident in the results presented here with over half of those who engaged in chemsex making contact with their sexual partners through a website or mobile phone application ('app'). It has been suggested that both the growth in the use of chemsex drugs and the transmission of STIs has been facilitated by the development of location-based mobile phone applications ('apps') (Ahmed et al., 2016; Bourne et al., 2014; Petersson et al., 2016; Thomas et al., 2016). The use of these websites and apps has resulted in sexual network structure changing from a density-dependent factor into a density-independent factor and, from the perspective of STI prevention and control, has increased the potential for infection transmission, thereby making infection control increasingly challenging (Petersson et al., 2016). On the otherhand, technology may also provide health promotion opportunities to reach and engage with MSM, reflected in our finding that approximately one in five men engaging in chemsex would choose an online medium if help-seeking; how best to exploit the opportunities that this medium offers is likely to represent a question of critical importance for future European sexual health and drug policy agenda (European Drug Report, 2016; Thomas et al., 2016).

The majority of those who engaged in chemsex reported that they were in control of, and enjoyed, their sex lives. However, these results also suggest that at least a proportion of those engaging in chemsex are putting either themselves or their partners at risk, either from the effects of the drugs themselves or as a result of increased sexual risk taking behaviour(s) and consequent acquisition and transmission of STIs and HIV. In addition, one in four men agreed that chemsex is having a negative effect on their life, and one third reported that they would like help or advice in relation to chemsex. Qualitative research which aims to better understand the motivations for engaging in chemsex, the benefits and harms which those who engage in this activity associate with it, and to identify and develop the support services which may need to be developed in order to address the consequences of this activity, is ongoing at the GMHS.

Strengths and limitations

The strengths of this study include the large number of respondents, the high participation rate (90%) and the specific focus on use of drugs 'for or during sex'. As a cross-sectional survey, these results cannot be generalised to the MSM population in Ireland. Results are based on self-reported data, which may introduce recall and social desirability biases. While associations between chemsex, sexual risk taking behaviour and self-reported history of treatment for STIs have been demonstrated, these results cannot be interpreted as causal relationships. In addition, while the survey asked about chemsex activities, it did not assess this activity using validated measures of drug dependence/harm. Finally, while this work did not explore any of the social harms which may be associated with chemsex (e.g. loss of employment, relationship breakdown) these issues are being explored as part of the aforementioned qualitative study which is ongoing at the GMHS.

While acknowledging these limitations, these results nevertheless present a "snapshot" of chemsex activity and support anecdotal reports of chemsex activity among a portion of MSM living in Dublin. In response to these results, brief intervention training around chemsex has been provided to healthcare professionals working with MSM in two Irish cities, Dublin and Cork. An awareness campaign around the use of GHB/GBL was organised in conjunction with relevant bars and nightclubs in Dublin and there has been increased multidisciplinary working between addiction and sexual health services. In addition, the results were communicated to those tasked with implementation of Ireland's Sexual Health Strategy and were used to inform a number of recommendations in Ireland's latest National Drugs Strategy (Department of Health, 2017).

Conclusion

A proportion of those engaging in chemsex may be putting themselves/their partners at risk, either from the effects of the drugs themselves or as a result of increased sexual risk taking behaviour(s) and consequent acquisition of STIs. This data demonstrate the importance of creating awareness of chemsex as a public health concern and, in particular, the need to highlight the issue among sexual health and addiction service providers. At least a proportion of those engaging in chemsex are not a 'hidden population' – they attend traditional sexual health services and

efforts should therefore be made to engage with them through these services, in collaboration with those working in addiction services.

Conflicts of interest

None declared.

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