GILEAD

I AM MORE THAN...

...MY HIV+ STATUS

I am more than an infection risk

I am more than a medical statistic

I am more than a number

I AM MORE THAN...

...MY LIFESTYLE

I am free spirited

I am energetic

I am present

I AM MORE THAN...

...MY DEPRESSION

I want to overcome feeling like this

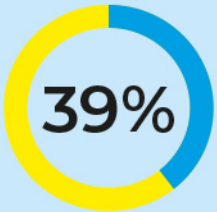
I want to escape these negative thoughts

I want to be able to be positive about my future

NOW THAT YOU KNOW ME WHAT NEXT?

Fictional patient

Psychological difficulties can result from an HIV diagnosis and the challenges of living with HIV[1]



of PLHIV are reported to suffer from depression[2]

PLHIV experience suicidal feelings due to their status – particularly in those more-recently diagnosed[3]

1. NHIVNA. A national nurse-led audit of the standards for psychological support for adults living with HIV. 2015.
2. Tran BX *et al*. Int J Environ Res Public Health 2019;16: 1772.
3. British Psychological Society Stigma Survey UK, 2015.

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ORIGINAL RESEARCH

The association between use of chemsex drugs and HIV clinic attendance among gay and bisexual men living with HIV in London

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Objectives

To investigate the association between chemsex drug use and HIV clinic attendance among gay and bisexual men in London.

Methods

A cross-sectional survey of adults (> 18 years) diagnosed with HIV for > 4 months, attending seven London HIV clinics (May 2014 to August 2015).

Participants self-completed an anonymous questionnaire linked to clinical data. Sub-optimal clinic attenders had missed one or more HIV clinic appointments in the past year, or had a history of non-attendance for > 1 year.

Results

Over half (56%) of the 570 men who identified as gay or bisexual reported taking recreational drugs in the past 5 years and 71.5% of these men had used chemsex drugs in the past year. Among men reporting chemsex drug use (past year), 32.1% had injected any drugs in the past year. Sub-optimal clinic attenders were more likely than regular attenders to report chemsex drug use (past year; 46.9% *vs.* 33.2%, $P = 0.001$), injecting any drugs (past year; 17.1% *vs.* 8.9%, $P = 0.011$) and recreational drug use (past 5 years; 65.5% *vs.* 48.8%, $P < 0.001$). One in five sub-optimal attenders had missed an HIV clinic appointment because of taking recreational drugs (17.4% *vs.* 1.8%, $P < 0.001$). In multivariable logistic regression, chemsex drug use was significantly associated with sub-optimal clinic attendance (adjusted odds ratio = 1.71, 95% confidence interval: 1.10–2.65, $P = 0.02$).

Conclusions

Our findings highlight the importance of systematic assessment of drug use and development of tools to aid routine assessment. We suggest that chemsex drug use should be addressed when developing interventions to improve engagement in HIV care among gay and bisexual men.

Keywords: chemsex, gay men, HIV, patient engagement, recreational drugs

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Introduction

In the UK, life expectancy for people living with HIV who are successfully treated with antiretroviral therapy (ART) is now similar to that of the general population [1]. ART is also an effective means of reducing HIV

transmission [2]. However, the individual and public health benefits of HIV treatment can only be achieved if people with HIV are aware of their status and have sustained engagement with care.

The past few years have seen growing concern about the potential health impacts of 'chemsex' or use of drugs with disinhibiting effects during sex – particularly crystal methamphetamine (crystal meth), gamma-butyrolactone (GBL) and mephedrone. Recreational drug use is more prevalent among men who have sex with men (MSM) than the general population [3,4], and sexualized drug use is more prevalent among MSM who are HIV-positive [5–8]. One in five MSM in London (21%) reported taking part in chemsex in the past year [9], compared with nearly one-third (30%) of sexually active HIV-positive gay men in the UK and ~ 40% of HIV-positive gay men in London [10,11].

The immediate impact of the disinhibiting effects of chemsex drugs is evident from a number of studies that have found an association between chemsex, sexual risk behaviour and sexually transmitted infection (STI) diagnosis [5,6,8–15]. Little is known, however, about any association between chemsex drugs and engagement with HIV care. This requires examination, as those who engage poorly with HIV care are more likely to have a detectable viral load and poorer health outcomes [16–18], including increased mortality [19–22]. The evidence to date has shown that people who acquire HIV through injecting drugs are particularly vulnerable to disengagement from HIV care [23], and drug/alcohol dependency is associated with poor HIV clinic attendance [29] but the impact of chemsex drugs on health-seeking behaviour among MSM with HIV has yet to be investigated.

HIV remains a highly stigmatized condition which has an impact on mental health. Depression and anxiety are reported by half of people with HIV, compared with a quarter of the general public [24]. One-quarter of people living with HIV reported moderate or severe depressive symptoms compared to one in ten HIV-negative controls [25] and suicide rates among men with HIV are particularly high during the first year after diagnosis [26]. Mental health, stigma, isolation, poverty and complex social circumstances contribute to non-attendance at HIV clinics [27]. Depression, anxiety and lower life satisfaction are furthermore associated with chemsex [10,14,15,28] and it is important to consider factors relating to mental and social well-being in any analysis of chemsex and HIV clinic attendance.

The REACH project (Retention and Engagement Across specialised Care services for HIV) set out to understand patterns of HIV outpatient attendance among people with HIV to develop cost-effective interventions to optimize engagement in care [29]. As part of the project, we conducted a cross-sectional survey of men and women attending HIV outpatient clinics in London, UK. The key variables associated with sub-optimal attendance among men and women attending London HIV services were younger age, longer time since HIV diagnosis, having children, not being registered with a GP, not being a homeowner, symptoms of neurocognitive impairment, drug/alcohol dependency and poorer recent health. Given the previously reported prevalence of chemsex among HIV-positive MSM, in this paper, we focused on the subsample of gay and bisexual men from REACH to examine the association between use of chemsex drugs and HIV clinic attendance. We describe crystal meth, GBL and mephedrone as 'chemsex drugs' and we use the term 'recreational drugs' to include any chemical substance (excluding alcohol) used for pleasure.

Methods

Study design

The design was a cross-sectional survey of people attending HIV outpatient clinics in London, UK. The methods used in this study have been described in detail elsewhere [29].

Setting and sampling

Participants were recruited from seven HIV clinics in London (May 2014 to August 2015) and classified according to their clinic attendance. Regular clinic attenders had attended all their HIV clinic appointments in the past year. Sub-optimal clinic attenders had missed at least one HIV clinic appointment in the past year, or had experienced a period of non-attendance for a year or more that had ended within the past year. Men who self-identified as gay or bisexual (in response to a question about sexuality) were selected from the overall sample to be included in the following analysis.

Data collection

Local research staff systematically approached clinic attendees in order to achieve a sample of at least 100 regular attenders and 100 sub-optimal attenders per clinic. They took written informed consent to participate. No financial incentive was offered for participation. The anonymous self-completion pen-and-paper questionnaire contained 80 questions and took 20–30 min to complete. Questionnaire responses were linked to clinical data by clinic staff.

Measures

The following questions were included: sexual orientation, date of birth, ethnic group, country of birth, current relationship status, number of children, current work status, years in full-time education after 16 years, and month and year of HIV diagnosis. Participants were asked to rate their health in the past 4 weeks on a five-point Likert scale, to report whether HIV affected their day-to-day activities and whether they had enough money for their basic needs. They were asked if they had ever injected any non-prescribed drugs and, if so how recently, about their recreational drug use in the past 5 years, their use of specific recreational drugs in the past year, and whether they had ever missed an appointment at the clinic because of drinking alcohol or taking recreational drugs. Participants on ART were asked how many doses they had missed in the past week.

Items from the following scales were included in the questionnaire: all four items from the Patient Health Questionnaire [30], all three items from the European AIDS Clinical Society (EACS) screening questions for neurocognitive impairment [31], all seven items from the Strive Internalised Stigma scale [32], five items from the Duke-UNC Social Support Questionnaire [33], and three items from the environmental mastery subscale of the Psychological Well-Being Scales [34,35], which asked about the participant's capacity to manage 'the demands of everyday life'.

Clinics collected data on current CD4 count and viral load, whether participants were currently on ART and whether they had experienced drug/alcohol dependency or mental health issues in the past 12 months.

Data analyses

The χ^2 test was used to examine differences in the proportions of men who were regular and sub-optimal attenders, and who reported using or not using chemsex drugs in the past year. The Mann–Whitney *U*-test was used for comparisons involving continuous variables. We examined the association between background characteristics and variables measuring physical, mental and social well-being which may be confounded with use of chemsex drugs (crystal meth, GBL and/or mephedrone).

Binary logistic regression was used to analyse associations between explanatory variables and attendance pattern. Variables were selected for inclusion in the model if they were associated with use of chemsex drugs and/or attendance pattern. Crude odds ratios (ORs) were calculated for each variable, and factors that were significantly associated in univariate analysis ($P < 0.05$) were incorporated into multivariable logistic regression models. Associations are reported as OR and adjusted OR (aOR) with 95% confidence intervals (CIs). We conducted a sensitivity analysis to examine whether any effect of chemsex drugs remained significant for men currently on ART.

Ethical approval

Ethical approval for the study was obtained from the National Research Ethics Service Committee London – City Road & Hampstead (reference 14/LO/0039).

Results

The overall sample included a total of 983 men and women; the following results are based on the 570 men (58.0% of the sample) who identified as gay or bisexual. Regular clinic attenders represented 58.9% of the men (336/570) and the remaining 40.1% (234/570) were sub-optimal attenders. This includes 152 irregular attenders (26.7%) who missed at least one HIV clinic appointment in the past year and 82 non-attenders (14.4%) who had experienced a period of non-attendance for a year or more. Sub-optimal attenders were significantly less likely to be on ART (79.1% *vs.* 93.5%, $P < 0.001$) or have an undetectable viral load (< 50 copies/mL; 71.4% *vs.* 86.2%, $P < 0.001$). Sub-optimal attenders on ART were also less likely to have an undetectable viral load (87.4% *vs.* 92.1%, $P = 0.09$). There was no significant difference between groups in terms of their current CD4 count, with 89.2% of all participants having a CD4 count of at least 350 cells/μL.

Clinic attendance, recreational drug and alcohol use

Table 1 describes participants' use of recreational drugs and the association between use of drugs or alcohol and clinic attendance. As there were no significant differences between irregular attenders and non-attenders on any of these measures, they are grouped together as sub-optimal attenders. More than half of the men reported taking recreational drugs in the past 5 years and, among them, 71.5% had used chemsex drugs in the past year. One in five men had ever injected any drugs. Among men who had used chemsex drugs in the past year, one-third (32.1%) also reported injecting any drugs over the same period and 41.9% reported ever injecting themselves. Almost all of the men who had injected any drugs in the past year also reported using chemsex drugs in the past year (67/68, 98.5%). Use of chemsex drugs was more prevalent than use of ketamine, heroin or crack cocaine, and mephedrone was the most popular recreational drug,

Table 1 Recreational drug and alcohol use, by clinic attendance

Characteristic	All (n = 570)	Regular attenders (n = 336)	Sub-optimal attenders (n = 234)	P-value
Taken any recreational drugs in past 5 years				
Yes	311 (55.6)	161 (48.8)	150 (65.5)	< 0.001
Ever injected any drugs				
In last year	68 (12.3)	29 (8.9)	39 (17.1)	0.01
1–5 years ago	19 (3.4)	9 (2.8)	10 (4.4)	
More than 5 years ago	20 (3.6)	10 (3.1)	10 (4.4)	
Never	448 (80.7)	279 (85.3)	169 (74.1)	
Chemsex drugs used in the past 12 months				
Crystal methamphetamine	130 (23.9)	26 (17.6)	74 (33.0)	< 0.001
Mephedrone	179 (33.0)	89 (27.9)	90 (40.2)	0.002
Gamma-butyrolactone (GBL)	135 (24.9)	62 (19.4)	73 (32.6)	< 0.001
Any chemsex drug	211 (38.9)	106 (33.2)	105 (46.9)	0.001
Other drugs used in the past 12 months				
Ketamine	92 (16.9)	36 (11.3)	56 (25.0)	< 0.001
Heroin	4 (0.7)	0 (0.0)	4 (1.8)	0.03
Crack cocaine	34 (6.3)	19 (6.0)	15 (6.7)	0.43
Other recreational drugs	133 (24.5)	67 (21.0)	66 (29.5)	0.02
Clinic-reported drug/alcohol dependency in past 12 months				
Yes	78 (15.1)	24 (7.8)	54 (25.5)	< 0.001
Missed clinic appointment due to drugs				
Yes	46 (8.2)	6 (1.8)	40 (17.4)	< 0.001
Missed clinic appointment due to alcohol				
Yes	17 (3.2)	7 (2.2)	10 (4.9)	0.08

Data are quoted as n (%).

taken by one-third of all participants, followed by crystal meth and GBL, taken by one-quarter of all participants.

Sub-optimal attenders were significantly more likely than regular attenders to report taking recreational drugs in the past 5 years (65.5% *vs.* 48.8%, $P < 0.001$). They were more likely to report ever having injected any drugs and to have done so in the past year (17.1% *vs.* 8.9%, $P = 0.011$). Almost one in five sub-optimal attenders had missed an appointment at the HIV clinic because of taking recreational drugs (17.4% *vs.* 1.8%, $P < 0.001$) but few men reported missing an appointment because of alcohol use. Clinical data indicated that sub-optimal attenders were more likely to have had issues of drug/alcohol dependency in the past 12 months (25.5% *vs.* 7.8%, $P < 0.001$). While sub-optimal attenders were more likely to have used most of each of the recreational drugs listed in the past year, there were no significant differences between groups on use of crack cocaine. The men who reported using one or more of the three chemsex drugs in the past year were more likely to be sub-optimal attenders than men who did not (46.6% *vs.* 31.0%, $P = 0.001$).

Associations with use of chemsex drugs

Among those on ART, chemsex drug users were more likely to report missing doses of ART on one or more days in the past week (27.1% *vs.* 12.5%, $P < 0.001$). Among regular attenders, those who had used chemsex drugs were significantly more likely to have a detectable viral load than those who had not (21.6% *vs.* 9.1%, $P = 0.002$). The association between chemsex drugs and detectable viral load was also found among sub-optimal attenders, but did not reach statistical significance at $P < 0.05$. Among this group of men, 35.0% of chemsex drug users had a detectable viral load compared with 23.7% of non-users ($P = 0.07$).

We examined associations between use of chemsex drugs in the past year and background characteristics, as well variables measuring physical, mental and social well-being (Table 2).

Compared with men who had not used chemsex drugs in the past year, those who had were younger (median age = 40.1 *vs.* 47.9 years, $P < 0.001$), less likely to have children (2.9% *vs.* 7.0%, $P = 0.04$), more likely to be in work (72.0% *vs.* 64.0%, $P = 0.04$), and more recently diagnosed with HIV (58.8% *vs.* 44.0%, $P = 0.001$). They were also more likely to have had mental health issues in the past 12 months (29.1% *vs.* 20.0%, $P = 0.02$) and score higher on the internalized stigma scale (1.0 *vs.* 0.0, $P = 0.03$).

Associations with sub-optimal clinic attendance

We compared regular attenders with sub-optimal attenders using the same background characteristics and measures of physical, mental and social well-being listed in

Table 2 Background characteristics, physical, mental and social well-being, by use of chemsex drugs in the past year

Characteristic	All (n = 570)	No chemsex drugs (n = 332)	Chemsex drugs (n = 211)	P-value
Age group				
≤ 30 years and under	40 (7.4)	10 (3.0)	30 (14.2)	<0.001
31–45 years	241 (44.4)	123 (37.0)	118 (55.9)	
> 45 years	262 (48.3)	199 (59.9)	63 (29.9)	
Ethnic group				
White (*vs.* other ethnicity)	417 (77.9)	247 (75.8)	170 (81.3)	0.13
Country of birth				
UK (*vs.* outside UK)	312 (57.6)	190 (57.2)	122 (58.1)	0.84
Relationship status				
Not in a relationship	269 (50.1)	160 (48.6)	109 (52.4)	0.52
Not co-habiting	66 (12.3)	39 (11.9)	27 (13.0)	
Co-habiting	202 (37.6)	130 (39.5)	72 (34.6)	
Children				
Has children (*vs.* none)	29 (5.4)	23 (7.0)	6 (2.9)	0.04
Work status				
In work	359 (67.1)	210 (64.0)	149 (72.0)	0.04
Student	11 (2.1)	5 (1.5)	6 (2.9)	
Unemployed	83 (15.5)	52 (15.9)	31 (15.0)	
Other	82 (15.3)	61 (18.6)	21 (10.1)	
Education after 16 years				
None	75 (14.3)	53 (16.7)	22 (10.7)	0.11
Up to 2 years	80 (15.3)	51 (16.0)	29 (14.1)	
≥ 3 years	368 (70.4)	214 (67.3)	154 (75.1)	
Years since HIV diagnosis				
< 10 years	270 (49.7)	146 (44.0)	124 (58.8)	0.001
Self-reported health in past 4 weeks				
Excellent or very good	251 (46.2)	163 (49.1)	88 (41.7)	0.14
Good	144 (26.5)	79 (23.8)	65 (30.8)	
Fair or poor	148 (27.3)	90 (27.1)	58 (27.5)	
HIV affects day-to-day activity				
No	297 (55.4)	179 (54.1)	118 (57.6)	0.12
Yes, a little	181 (33.8)	109 (32.9)	72 (35.1)	
Yes, a lot	58 (10.8)	43 (13.0)	15 (7.3)	
Clinic-reported mental health issues in past 12 months				
Yes	118 (23.6)	60 (20.0)	58 (29.1)	0.02
PHQ4: Self-reported anxiety and depression in past 2 weeks				
Normal	412 (78.5)	250 (78.1)	162 (79.0)	0.29
Mild	63 (12.0)	43 (13.4)	20 (9.8)	
Moderate	50 (9.5)	27 (8.4)	23 (11.2)	
Self-reported neurocognitive impairment				
Self-reported symptoms	207 (38.3)	126 (38.1)	81 (38.8)	0.87
Internalized stigma score	563 (1.0, 2.0)	332 (0.0–2.0)	204 (1.0–2.0)	0.03
Social support scale				
Low social support	76 (14.8)	41 (12.9)	35 (17.8)	0.13
Environmental mastery score	556 (11.0, 3.0)	322 (11.0–3.0)	207 (11.0–4.0)	0.28
Money for basic needs				
All the time (*vs.* not)	302 (55.9)	187 (56.5)	115 (55.0)	0.74

The data represent n (median, interquartile range). For example 563 (1.0, 2.0) where n = 563, median = 1.0 and IQR = 2.0.

Table 2. Sub-optimal attenders were significantly younger (43.5 *vs.* 46.1 years, $P = 0.003$), were more likely to have children (9.5% *vs.* 2.4%, $P < 0.001$), had spent less time in full-time education (< 2 years post-16: 35.9% *vs.* 24.8%, $P = 0.004$) and were more likely to have been diagnosed with HIV for longer (> 10 years: 57.3% *vs.* 45.2%, $P = 0.003$). Sub-optimal attenders were significantly more likely than regular attenders to self-report fair or poor health in the past 4 weeks (34.2% *vs.* 22.4%, $P = 0.002$). Clinical data indicated that they were more likely to have had mental health issues in the past 12 months (30.2% *vs.* 18.1%, $P = 0.002$) and they were more likely to report symptoms of neurocognitive impairment (49.1% *vs.* 31.9%, $P < 0.001$). They scored significantly lower than regular attenders on the environmental mastery scale (10.0 *vs.* 11.0, $P = 0.002$) and were less likely to report that they had money for basic needs all the time (45.1% *vs.* 63.2%, $P < 0.001$).

Table 3 Factors associated with sub-optimal HIV clinic attendance

Characteristic	OR (95% CI)	*P*-value	aOR (95% CI)	*P*-value
Use of chemsex drugs (past 12 months)	1.77 (1.25–2.52)	0.001	1.71 (1.10–2.65)	0.02
Background				
Age	0.88 (0.81–0.96)	0.003	0.80 (0.70–0.91)	0.001
Has children	4.24 (1.86–9.71)	0.001	8.21 (2.99–22.5)	< 0.001
Working full or part-time	1.30 (0.91–1.86)	0.15	1.0 (0.60–1.66)	0.99
< 2 years post-16 education	1.69 (1.17–2.45)	0.006	1.61 (1.01–2.56)	0.04
> 10 years diagnosed with HIV	1.62 (1.16–2.27)	0.005	1.56 (0.97–2.51)	0.06
Physical, mental and social well-being				
Health (past 4 weeks)				
Excellent or very good	1		–	–
Good	1.46 (0.96–2.21)	0.075	1.09 (0.66–1.81)	0.74
Fair or poor	2.08 (1.38–3.12)	< 0.001	1.23 (0.69–2.18)	0.48
Mental health issues (past 12 months)	1.97 (1.30–2.96)	0.001	1.52 (0.90–2.56)	0.12
Neurocognitive impairment	2.06 (1.46–2.91)	< 0.001	1.77 (1.08–2.89)	0.02
Internalized stigma score	1.02 (0.92–1.13)	0.77	0.87 (0.76–1.01)	0.06
Environmental mastery score	0.91 (0.85–0.97)	0.002	1.0 (0.91–1.10)	0.95
Not always money for basic needs	2.09 (1.49–2.94)	< 0.001	1.55 (0.94–2.55)	0.09

OR, odds ratio; aOR, adjusted OR.

Multivariable analysis indicates that use of chemsex drugs is significantly associated with sub-optimal clinic attendance (aOR = 1.71, 95% CI: 1.10–2.65, $P = 0.02$), adjusting for background variables and factors associated with physical, mental and social well-being which were significantly associated with use of chemsex drugs and/or engagement in HIV care in binary logistic regression. Table 3 shows the crude ORs and aORs for all factors included in the model. Our sensitivity analysis found that this effect remained when including only men who were on ART (aOR = 2.02, 95% CI: 1.24–3.29, $P = 0.005$).

Discussion

We found that a high proportion of HIV-positive gay and bisexual men in London reported using chemsex drugs in the past year, particularly mephedrone, and that this is associated with engagement in HIV care. One-third of the men who had used chemsex drugs also reported injecting any drugs in the past year. Our findings are consistent with previous survey research which found that 40% of sexually active HIV-positive gay men in London were using chemsex drugs and that 1 in 10 reported 'slamsex' (sex facilitated by the injection of these substances) [10].

We know that people who inject drugs are more likely to engage sub-optimally in HIV care [23], but this is the first study to indicate that using chemsex drugs may be detrimental to HIV clinic attendance. Use of each of the three chemsex drugs was associated with less regular attendance at the HIV clinic and nearly half of sub-optimal attenders reported use of chemsex drugs in the past year. We found that use of these drugs was independently associated with disengagement from HIV care, adjusting for background and factors associated with well-being, and the effect remained when men who were not on ART were excluded from the analysis. In addition, one in five sub-optimal attenders said that they had missed appointments at the HIV clinic because of taking recreational drugs. This was more likely to be reported than missing appointments due to alcohol use. The associations between using chemsex drugs, non-adherence to ART and viral suppression are not conclusive but suggest a potential for increased risk of HIV transmission among men who engage in chemsex, which requires further investigation.

We found large proportionate differences between regular and sub-optimal attenders in clinic-reported mental health, and self-reported health, neurocognitive impairment and financial disadvantage, as well as a significant difference in environmental mastery or the participant's ability to manage the responsibilities of daily life. Our data support the proposition that gay and bisexual HIV-positive men who are burdened with a range of health and socioeconomic problems are less likely to prioritize their HIV care [36]. This highlights the need to manage the complex psychological, social and economic issues that influence engagement in care.

However, most of the factors associated with physical, mental and social well-being were not significantly related to HIV clinic attendance in the multivariable model when use of chemsex drugs was included. This may be indicative of the position of these factors on the causal pathway linking use of chemsex drugs with disengagement from HIV care. 'Slamsex' has been associated

with depression, anxiety and drug-related disorders among HIV-positive MSM [37] and our data indicate that further investigation is required to disentangle the factors that need to be addressed to improve attendance at HIV clinics.

Our findings support previous work which shows that disengagement from HIV care is independently associated with being younger, less educated and diagnosed for longer [38–44]. Among the small proportion of gay and bisexual men in this study who reported having children, we found that this was significantly associated with disengagement.

The survey data in this study were collected entirely in London. Although it is possible that the factors identified as driving disengagement from HIV care among gay and bisexual HIV-positive men may differ outside London, findings from our analysis of the complete dataset (including heterosexual men and women) were similar to those from our analysis of UK CHIC data, and are also congruent with data from the ASTRA study, which included study sites across the UK [45,46]. We included HIV clinics from across London (central, north, south, east and west) with the aim of recruiting a representative sample of people living with HIV in London, but it should be noted that the study is based on a convenience sample of people attending these clinics. It is reassuring, however, that our data on use of chemsex drugs is similar to data from a national survey [10]. This is a cross-sectional survey which cannot provide evidence of a causal link between drug use and HIV clinic attendance and is unable to assess the impact of unmeasured confounders on the analysis. Not all use of chemsex drugs is sexualized [5] and exploration of the mediating factors between use of these drugs and engagement in care is required.

Our findings support the call to add a 'fourth 90' to UNAIDS's 90–90–90 targets for global HIV control [47] – 90% diagnosis of HIV, 90% treatment, 90% viral suppression AND 90% mental wellness [48]. While chemsex support is now available for MSM at many sexual health clinics in London, our findings reinforce the conclusions of a recent audit by the British HIV Association [49] which found variable reporting of assessment for well-being and alcohol and recreational drug use in UK clinics, and recommended the use of tools to aid routine assessment. The British HIV Association suggest implementation of the following measures: active solicitation of drug use history, a systematic approach to identifying and tracing individuals at risk, provision of mental health and addiction services in clinic, and multidisciplinary, holistic support. The use of chemsex drugs should be considered when developing interventions to improve engagement in HIV care among gay and bisexual men.

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Author contributions

FMB and CS were joint chief investigators of the study. VA, S Michie, S Morris, MS, CHM, AE, VCD, CS and FMB conceived the study and secured funding. They were responsible for the planning and delivery of the study. ARH was responsible for study coordination, data collection and analysis. All authors contributed to the development of the study design and establishment of procedures. ARH led on preparing the manuscript. All authors critically reviewed and approved the final version.

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