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# Prevalence of drug use during sex among swingers and perceived benefits and risks – a cross-sectional internet survey in the Netherlands

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## ABSTRACT

**Objectives** Drug use during sex has been associated with sexually transmitted infections (STI). While a growing body of research has investigated drug use during sex among men who have sex with men, data in swingers is limited. Swingers are heterosexual couples who have sex with others and singles who have sex with these couples. Our study assessed the prevalence of drug use during sex and perceived benefits and risks among swingers.

**Methods** In 2018, 1005 swingers completed an online questionnaire that was advertised at Dutch swinger-websites. We assessed the associations between drug use during sex <6 months (any drug use excluding alcohol and erection medicines) and sociodemographic characteristics, alcohol use and condomless sex using backward multivariable logistic regression analysis. We compared drug use, motives, beliefs and experienced effects between heterosexual male, bisexual male and female drug-using swingers using  $\chi^2$ -tests.

**Results** Drug use during sex was reported by 44% (443/1005): 51% in women, 44% in bisexual men and 39% in heterosexual men ( $P<0.01$ ). Condomless vaginal (46%) and anal sex (22%) was higher in drug-using swingers (vs 34% and 13% in non-drug-using swingers,  $P<0.001$ ). Among drug-using swingers, XTC (92%), GHB (76%) and laughing gas (69%) were mostly used. Prolonging sex (68%) and increasing arousal (66%) were the most reported motives. Most reported positive effects were feeling happy (78%) and increasing energy (78%). Ninety-four per cent considered drug use to be pleasurable. The most reported negative effect was feeling tired (53%), 7% reported that they might become addicted or felt uncomfortable having sex without drugs.

**Conclusion** This study among a large group of swingers shows that drug use during sex is highly prevalent. STI clinics should discuss drug use during sex among swingers and provide information on safer sex and drug use, while acknowledging the perceived benefits, such as the increased quality of sex.

## INTRODUCTION

Swingers, that is heterosexual men and women who as a couple have sex with others, are a generally older sexually-active group that show high rates of sexually transmitted infections (STI) and sexual risk

behaviour, such as unprotected sex with multiple sex partners and group sex.<sup>1–3</sup> Although swingers self-identify as heterosexual, they also engage in same-sex sexual behaviour.<sup>4,5</sup> Swingers can play a role in the transmission of STI, both within their own network and to other populations.<sup>1,6</sup>

The use of drugs might be a determining factor for sexual risk behaviour, due to disinhibiting effects of drugs and thereby overruling of intentions to practice safe sex.<sup>7</sup> Indeed, drug use during sex has been associated with sexual risk behaviour in swingers<sup>8</sup> and an increased risk for STI in female swingers.<sup>1</sup> Aside from the sexual health risks, drug use during sex has been associated with psychosocial harms, such as addiction.<sup>7,9</sup>

A previous study from our research group showed that approximately 40 per cent of swingers visiting the STI clinic reported using drugs in the preceding 6 months.<sup>1</sup> This percentage is four times higher than the estimated drug use prevalence in the general adult population in the Netherlands.<sup>10</sup> Gamma-hydroxybutyric acid (GHB), 3,4-Methylenedioxyamphetamine (MDMA), laughing gas, cannabis and poppers are mostly used during sex by swingers.<sup>1</sup>

The data available among swingers suggests that drug use during sex is common and associated with sexual health risks. However, we lack knowledge about the perceived benefits and risks of drug use during sex and the intention to quit drug use among swingers. This information is important to identify specific beliefs and healthcare needs of swingers and tailor STI control strategies and drug use interventions to their beliefs and needs. Tailoring ensures that prevention and care will be more effective in benefitting the individual and public health. This study assessed patterns of drug use during sex, sexual risk behaviour, motives, beliefs, experienced effects and intention to quit drug use among heterosexual male, bisexual male and female swingers in a national cross-sectional internet survey.

## METHODS

### Data collection

In 2018, an online survey was advertised at national swinger websites to recruit a broad sample of swingers in the Netherlands. Convenience sampling was used. A banner with a link to the survey was

published on four (out of twelve that were approached) websites. The participating websites included two swinger dating websites, one swinger club website and one online magazine for swingers, the non-participating websites were eight swinger club websites. Participants were requested to fill in the survey individually and participate in the survey once. Participants who were 'part of a heterosexual couple and as a couple had sex with others' or 'singles who had sex with other heterosexual couples' were invited to complete the questionnaire. Participants who did not meet this definition of swinging, were aged 18 years or younger and/or did not swing in the last year were excluded from the analysis.

## Materials

The online survey was developed on the basis of extensive work with swingers in STI clinical practice. The survey consisted of questions on sociodemographic characteristics, sexual behaviour, STI testing and drug use during sex. In those reporting drug use during sex, additional questions about the drug types, frequency, motives, beliefs, experienced effects and intention to quit drug use were asked. Beliefs (eg, I consider drug use during sex to be pleasurable) and intention to quit drug use during sex in the next 12 months were measured on a five-point Likert Scale (totally disagree – totally agree). Motives and experienced effects were measured by multiple choice questions, and participants had the option to provide multiple answers (questions can be found in online supplementary file I).

## Definitions

Heterosexual male swingers were defined as men who reported having sex with female swing partners. Bisexual male swingers were men who reported having sex with both female and male swing partners and men who were part of a heterosexual couple who reported having sex with male swing partners. Female swingers were all women.

Sex with a condom was defined as always using a condom when having sex with swing partners. Condomless sex was defined as inconsistent condom use (ie, never, sometimes, usually) with swing partners. STI testing was defined as having had an STI test in the preceding 12 months.

Drug use during sex was defined as the use of any drug (listed in online supplementary file II) during sexual activities while swinging in the preceding 6 months, excluding alcohol and erection medicines (referred to as 'drug use during sex'). Number of drugs used was calculated as the sum of all drugs used in the preceding 6 months, and categorised into one drug, two–three drugs, four–five drugs and  $\geq$ six drugs (tertiles). Alcohol use was defined as using at least three units of alcohol during one swing session.

## Statistical analysis

Sociodemographic characteristics, sexual risk behaviour, STI testing, alcohol and drug use during sex were described among all participants and subgroups (heterosexual male, bisexual male and female swingers) were compared using chi-square tests or unpaired *t*-tests. Factors (swingers subgroup, age, educational level, alcohol use, condomless sex) possibly associated with drug use during sex (outcome) were tested using multivariable logistic regression analysis. The stepwise backward procedure was used, which means that variables were deleted from the model starting with the least significant one, until only significant variables remained. *P*-values  $<0.05$  were considered statistically significant. Interaction terms between subgroup and significant factors

(age, educational level, alcohol use, condomless sex) were added to the regression model to assess whether associations were different for subgroups. *P*-values  $<0.10$  were considered statistically significant for effect modification. When there was significant effect modification, regression analyses were stratified for subgroups.

Further analyses were restricted to drug-using swingers. Descriptive statistics and chi-square tests were used to describe proportions of motives, beliefs, experienced effects, and intention to quit and differences between subgroups. *P*-values  $<0.05$  were considered statistically significant. All analyses were performed using SPSS V21 (IBM SPSS Statistics for Windows, IBM Cooperation, Armonk, New York, USA).

## RESULTS

Between May and August 2018, 1005 swingers fully completed the questionnaire which represented a completion rate of 68% (1005/1478) of those who started the survey but had not completed it. All 1005 participants met the inclusion criteria of recent swinging and being aged older than 18 years. More than half of participants (58%, 580/1005) engaged in swinging at least once per month, 30% (306/1005) once per 3 months and 12% (119/1005) one or two times per year. More heterosexual men (40%, 402/1005) than bisexual men (31%, 311/1005) and women (29%, 292/1005) completed the survey.

### Characteristics of study population and subgroups

The median age of participants was 47 years (IQR 39–54 years). Heterosexual men (median age: 48 years) and bisexual men (median age: 49 years) were older than women (median age: 42 years) (all *P*-values  $<0.001$ ). Heterosexual men and bisexual men were more often higher educated than women (62% and 62% vs 53%, *P*=0.033).

Condomless vaginal sex was reported by 39% (393/1005), condomless oral sex by 96% (964/1005) and both did not differ between subgroups (respectively *P*=0.490 and *P*=0.991). Condomless anal sex was reported by 17% (170/1005) and was higher among bisexual male (19%) and female swingers (19%) than heterosexual male swingers (13%; *P* $<0.001$ ). STI testing was reported by 64% and was similar for subgroups (*p*=0.051). The STI clinic (44%) and general practitioner (40%) were the most reported testing locations for all subgroups (online supplementary file III).

### Drug and alcohol use during sex

Drug use during sex in the preceding 6 months was reported by 44% (443/1005) (95% CI: 41% to 47%) of all participants: 51% among women (149/292), 44% among bisexual men (137/311) and 39% (157/402) among heterosexual men (*P*=0.002). Using at least three units of alcohol during sex was reported by 42% (418/1005) and did not differ between subgroups.

### Drug use during sex, condomless sex and STI testing

Condomless vaginal sex was reported by 46% among drug-using swingers (compared with 34% in non-drug-using swingers, *P* $<0.001$ ), condomless anal sex by 22% in drug-using swingers (compared with 13% in non-drug-using swingers, *P* $<0.001$ ) and condomless oral sex by 98% in drug-using swingers (compared with 95% in non-drug-using swingers, *P*=0.020). STI testing was reported by 75% drug-using swingers (compared with 56% in non-drug-using swingers, *P* $<0.001$ ). The STI clinic was

**Table 1** Logistic regression analysis with drug use during sex in the preceding six months as outcome among all participants

	All participants (n=1005)	Drug use during sex (n=443)		
	% of total (n)	% within groups (n)	OR (95% CI)	aOR † (95% CI)
<b>Swingers' subgroup</b>				
Heterosexual male	40.0 (402)	39.1 (157)	1	1
Bisexual male	30.9 (311)	44.1 (137)	1.23 (0.91 to 1.66)	1.19 (0.87 to 1.63)
Female	29.1 (292)	51.0 (149)	<b>1.63 (1.20 to 2.21)**</b>	<b>1.88 (1.35 to 2.60)***</b>
<b>Age group ‡</b>				
19–43	34.6 (347)	39.8 (138)	1	1
44–52	36.1 (362)	48.9 (177)	<b>1.45 (1.08 to 1.95)*</b>	<b>1.52 (1.11 to 2.08)**</b>
53–74	29.2 (293)	43.3 (127)	1.16 (0.85 to 1.59)	1.14 (0.81 to 1.61)
<b>Educational level §</b>				
Practical	40.9 (411)	47.7 (196)	1	
Theoretical	59.1 (594)	41.6 (247)	0.78 (0.61 to 1.01)	NS
<b>Vaginal sex</b>				
No/with condom ¶	51.4 (612)	39.4 (241)	1	1
Without condom	39.1 (393)	51.4 (202)	<b>1.63 (1.26 to 2.10)***</b>	<b>1.51 (1.13–2.10)**</b>
<b>Anal sex **</b>				
No	33.4 (336)	34.8 (117)	1	1
With condom	49.7 (499)	45.9 (229)	<b>1.59 (1.19 to 2.11)**</b>	<b>1.74 (1.29 to 2.34)***</b>
Without condom	16.9 (170)	57.1 (97)	<b>2.49 (1.71 to 3.63)***</b>	<b>1.98 (1.29 to 3.03)**</b>
<b>≥3 units of alcohol at one swing session</b>				
No	58.4 (587)	47.5 (279)	1	1
Yes	41.6 (418)	39.2 (164)	<b>0.71 (0.55 to 0.92)**</b>	<b>0.72 (0.55 to 0.94)*</b>

Significant associations are in bold. \*\*\*<0.001, \*\*<0.01, \*<0.05.

As condomless oral sex was reported by 96% (964/1005), oral sex was not included in this analysis.

†Stepwise backward regression model, non-significant factors were deleted from the model: educational level.

‡Age groups were based on tertile distributions. The age of three participants was missing and excluded pairwise from analysis.

§Educational level categories were based definitions used by the Statistics Netherlands ([www.cbs.nl](http://www.cbs.nl)).

¶Categories no and with condom were combined into one low-risk category: only 23 participants reported no vaginal sex.

\*\*Anal sex was independently associated with drug use during sex (aOR: 1.56 (1.06–2.30)\*)

NS, Not significant.

the most reported STI testing location in drug-using swingers (57% vs 31% in non-drug using swingers,  $P<0.001$ ) and the general practitioner in non-drug-using swingers (49% vs 31%,  $P<0.001$ ).

### Drug use during sex and associated determinants

In the multivariable model, being a woman, aged 44–52 years (compared with aged 19–43 years), having condomless vaginal sex, anal sex with condom, condomless anal sex and no alcohol use were independently associated with drug use during sex (table 1). The association between alcohol use and drug use during sex differed significantly for subgroups ( $P=0.080$ , significant effect modification). The use of at least three units of alcohol during one swing session was significantly associated with no drug use during sex only in women (aOR: 0.48, 95% CI: 0.30 to 0.77).

### Patterns of drug use among drug-using swingers

Among drug-using swingers, XTC/MDMA (92%, 409/443), GHB/GBL (76%, 338/443) and laughing gas (69%, 304/443) were the most reported drugs. None of the swingers reported to have injected drugs. Half of drug-using swingers reported to use drugs during sex once per month. The use of four or more different drugs during sex in the preceding 6 months was reported by 69% (305/443). No differences in the drugs used or use patterns were found between subgroups (table 2).

### Motives, beliefs and experienced effects among drug-using swingers

The majority of heterosexual male, bisexual male and female drug-using swingers indicated to consider drug use during sex to be pleasurable (94%), acceptable (84%) and exciting (66%) (table 3). The most reported motives for using drugs were prolonged sex (68%), increased arousal (66%), decreased inhibitions (64%) and intensification of sexual sensations (61%). Prolonged sex was more important for men than women ( $P<0.001$ ). Increased energy (78%), happy feeling (78%) and lovingly/intimate feeling (77%) were the most reported experienced positive effects for all subgroups (table 3).

Half of respondents considered drug use during sex to be unhealthy (47%) but only a minority considered drug use to be unwise (14%) or dangerous (15%) (table 4). Feeling tired (53%) was the most reported experienced negative effect and this was more often reported by women than men ( $P=0.012$ ). One in four reported that drug use during sex had a negative effect on their health. One in five reported to feel depressed the days after using drugs during sex and this was more often reported by heterosexual male and female swingers than bisexual male swingers ( $P=0.013$ ). Only 4% had the intention to quit drug use. This percentage was higher among women than heterosexual men and bisexual men ( $P=0.017$ ) (table 4).

### DISCUSSION

This large study shows that almost half of swingers who completed an online survey in the Netherlands reported drug

**Table 2** Drug types, frequency of drug use, number of drug types compared between heterosexual, bisexual men and women who reported drug use during sex in the preceding six months (n=443)

	Drug-using swingers (n=443) % of total (n)	Heterosexual male drug- using swingers (n=157) % of total (n)	Bisexual male drug- using swingers (n=137) % of total (n)	Female drugs-using swingers (n=149) % of total (n)	P-value
<b>Frequency drug use during sex</b>					0.401
Once per month	51.0 (226)	52.9 (83)	46.7 (64)	53.0 (79)	
2–3 times per month	34.8 (154)	33.1 (52)	37.2 (51)	34.2 (51)	
Once per week	10.6 (47)	12.1 (19)	9.5 (13)	10.1 (15)	
Several times per week	3.6 (16)	1.9 (3)	6.6 (9)	2.7 (4)	
<b>Number of drug types used</b>					0.257
1 drug	7.7 (34)	7.6 (12)	4.4 (6)	10.7 (16)	
2–3 drugs	23.3 (103)	25.5 (40)	24.8 (34)	19.5 (29)	
4–5 drugs	30.0 (133)	33.1 (52)	27.7 (38)	28.9 (43)	
≥6 drugs	38.8 (172)	33.8 (53)	43.1 (59)	40.3 (60)	
<b>XTC/MDMA</b>	92.3 (409)	91.1 (143)	91.2 (125)	94.6 (141)	0.410
<b>GHB/GBL</b>	76.3 (338)	75.2 (118)	78.8 (108)	75.2 (112)	0.700
<b>Laughing gas</b>	68.6 (304)	69.4 (109)	71.5 (98)	65.1 (97)	0.487
<b>Cannabis</b>	50.6 (224)	50.3 (79)	51.1 (70)	50.3 (75)	0.989
<b>Poppers</b>	46.7 (207)	39.5 (62)	51.1 (70)	50.3 (75)	0.076
<b>Ketamine</b>	47.7 (71)	45.2 (71)	49.6 (68)	47.7 (71)	0.749
<b>Speed</b>	30.0 (133)	29.9 (47)	28.5 (39)	31.5 (47)	0.851
<b>Cocaine</b>	21.2 (94)	24.8 (39)	19.7 (27)	18.8 (28)	0.384
<b>4-FA</b>	7.4 (33)	7.0 (11)	6.6 (9)	8.7 (13)	0.763
<b>2-CB</b>	5.0 (22)	3.2 (5)	8.0 (11)	4.0 (6)	0.149
<b>Crystal meth</b>	1.6 (7)	1.3 (2)	2.2 (3)	1.3 (2)	0.800
<b>3 MMC</b>	3.4 (15)	3.2 (5)	4.4 (6)	2.7 (4)	0.760
<b>Mephedrone</b>	2.9 (13)	3.2 (5)	4.4 (6)	1.3 (2)	0.314
<b>Heroin</b>	0.2 (1)	0.6 (1)	NA	NA	NA
<b>Naphyrone</b>	1.0 (0)	NA	NA	NA	NA
<b>Magic mushrooms</b>	4.1 (18)	5.1 (8)	2.9 (4)	4.0 (6)	0.657
<b>MXE</b>	1.8 (8)	0.6 (1)	1.5 (2)	3.4 (5)	0.203
<b>Basecoke</b>	1.4 (6)	1.3 (2)	1.5 (2)	1.3 (2)	0.991

P-values of  $\chi^2$  tests or Fisher exact tests (if cells have an expected count less than 5).

Significant differences between subgroups are in bold.

2-CB, 2,5-dimethoxy-4-bromophenethylamine; 4-FA, 4-Fluoroamphetamine; GHB/GBL, Gamma-hydroxybutyric acid/Gamma-butyrolactone; 3 MMC, 3-Methylmethcathinone; MXE, Methoxetamine; NA, Not applicable; XTC/MDMA, Ecstasy/3,4-Methylenedioxyamphetamine.

use during sex (44%) and this finding is in line with a previous study among swingers visiting the STI clinic in the Netherlands.<sup>1</sup> Another online survey among swingers in Belgium found a drug use prevalence of 19%.<sup>8</sup> One possible explanation for the lower drug use prevalence found in the study of Platteau et al<sup>8</sup> could be that some drug types, such as laughing gas, were not included in the definition of drug use. Our study shows that XTC/MDMA, GHB/GBL and laughing gas were the most popular drugs. The majority of drug-using swingers used four or more different drugs in the preceding 6 months.

We found an independent association between being a female swinger and drug use during sex. This difference was not found in previous studies,<sup>1,8</sup> but these studies did not differentiate between heterosexual and bisexual male swingers. These studies<sup>1,8</sup> compared female swingers with all male swingers, whereas drug use seems to be higher among bisexual male swingers than heterosexual male swingers. In the general population, recreational drug use is mostly higher among men compared with women.<sup>10</sup> A possible explanation might be that women more often take drugs during sex to be physically and mentally capable of receiving esoteric sex acts with multiple sex partners by increasing arousal levels and facilitating easier

intercourse. We did not observe differences in the specific drugs used or drug use patterns between heterosexual male, bisexual male and female swingers, but it should be noted that some drugs were used by too few participants to be able to detect differences between subgroups. Drug use patterns among swingers seem to be comparable with MSM with regard to the drug use prevalence during sex,<sup>11,12</sup> the drugs used<sup>12,13</sup> and polydrug use.<sup>11</sup> Nevertheless, the use of laughing gas during sex seems to be more common among swingers than MSM.

Condomless vaginal and anal sex were associated with drug use during sex, and this finding was in line with previous studies.<sup>1,8</sup> Anal sex with a condom was also associated with drug use during sex, but this was due to the fact that anal sex in itself was reflected by this measure and having anal sex was associated with drug use during sex. The high drug use prevalence and its association with sexual risk behaviour indicate that swingers are an important target population for prevention strategies. These strategies should address the practice of safer sex in all swingers along with drug use-related harm reduction in drug-using swingers, such as the provision of information on safer drug use and psychosocial support. STI clinics are frequently visited by swingers.<sup>2,14</sup> Our study shows that more drug-using swingers

**Table 3** Motives, positive beliefs and experiences of drug use during sex compared between heterosexual, bisexual male and female swingers who reported drug use during sex

	All participants (n=443)	Heterosexual male swingers (n=157)	Bisexual male swingers (n=137)	Female swingers (n=149)	P-value
	% (n)	% (n)	% (n)	% (n)	
<b>Motives*</b>					
Prolonged sex	67.9 (301)	74.5 (117)	76.6 (105)	53.0 (79)	<0.001
Increased arousal	66.4 (294)	65.6 (103)	70.8 (97)	63.1 (94)	0.371
Decreased inhibitions	64.3 (285)	65.0 (102)	62.8 (86)	65.1 (97)	0.900
Intensification sexual sensations	61.2 (271)	61.1 (96)	65.0 (89)	57.7 (86)	0.454
Increased sexual desire	43.1 (191)	45.2 (71)	46.0 (63)	38.3 (57)	0.334
Increased intimacy	42.7 (189)	40.1 (63)	51.1 (70)	37.6 (56)	0.051
Increased quality of sex	40.0 (177)	42.0 (66)	48.9 (67)	29.5 (44)	<b>0.003</b>
Increased self-confidence	26.2 (116)	28.0 (44)	19.7 (27)	30.2 (45)	0.098
Group sex	13.3 (59)	15.3 (24)	16.8 (23)	8.1 (12)	0.052
Partners more attractive	12.2 (54)	15.3 (24)	13.1 (18)	8.1 (12)	0.129
Experimenting	6.1 (27)	5.1 (8)	5.1 (7)	8.1 (12)	0.485
Decreased pain	5.4 (24)	1.3 (2)	6.6 (9)	8.7 (13)	<b>0.005</b>
Everybody does it	2.7 (12)	1.9 (3)	2.2 (3)	4.0 (6)	0.490
Social pressure	2.2 (10)	1.3 (2)	1.5 (2)	4.0 (6)	0.287
Craving	1.6 (7)	2.5 (4)	0.7 (1)	1.3 (2)	0.574
Being part of a community	1.6 (7)	0.6 (1)	1.5 (2)	2.7 (4)	0.343
Less concerns STI	0.2 (1)	0.0 (0)	0.7 (1)	0.0 (0)	NA
<b>Positive beliefs: drug use during sex is†</b>					
Pleasurable	93.9 (416)	93.0 (146)	92.0 (126)	96.6 (144)	0.187
Acceptable	84.4 (374)	85.4 (134)	84.7 (116)	83.2 (124)	0.873
Exciting	65.7 (291)	69.4 (109)	59.1 (81)	67.8 (101)	0.147
<b>Experienced positive effects*</b>					
Happy feeling	78.3 (347)	81.5 (128)	73.7 (101)	79.2 (118)	0.261
Increased energy	77.9 (345)	79.6 (125)	81.8 (112)	72.5 (108)	0.141
Lovingly/intimate feeling	76.7 (340)	76.4 (120)	83.2 (113)	71.1 (106)	0.051
Decreased inhibitions	73.4 (325)	68.2 (107)	73.7 (101)	78.5 (117)	0.120
Relaxed feeling	69.1 (306)	68.8 (108)	66.4 (91)	71.8 (107)	0.612
Increased arousal	60.0 (266)	57.3 (90)	67.2 (92)	56.4 (84)	0.119
Intensified experience of light and sound	46.5 (206)	47.8 (75)	47.4 (65)	44.3 (66)	0.801
More comfortable in making physical contact	41.5 (184)	43.9 (55)	46.7 (64)	34.2 (51)	0.074
Postponed orgasm	41.3 (183)	55.4 (87)	56.9 (78)	12.1 (18)	<0.001
Intensified orgasm	37.2 (165)	29.3 (46)	39.4 (41)	43.6 (65)	<b>0.027</b>
Making contacts easier	33.2 (147)	36.3 (57)	38.7 (53)	24.8 (37)	<b>0.024</b>
Less aware of place and time	30.0 (133)	31.2 (49)	27.0 (37)	31.5 (47)	0.647
Being able to have harder sex	23.7 (105)	19.1 (30)	24.1 (33)	28.2 (42)	0.171
Forget my problems	20.3 (90)	17.8 (28)	22.6 (31)	20.8 (15)	0.583
Being more alert	11.1 (49)	11.5 (18)	10.2 (14)	11.4 (17)	0.930
Feeling comfortable days after using	8.6 (38)	8.9 (14)	12.4 (17)	4.7 (7)	0.058

P-values of  $\chi^2$ -tests or Fisher exact tests (if cells have an expected count less than 5).

Significant differences between subgroups are in bold.

\*All possible answering options on multiple choice questions are displayed.

†Scales (4: agree, 5: totally agree) are displayed.

NA, not applicable.

than non-drug-using swingers reported STI testing, indicating self-selection for STI testing in drug-using swingers. The STI clinic was the most reported STI testing location for drug-using swingers. STI clinics could therefore play an important role in delivering these prevention strategies. However, swingers are often under-recognised in STI clinics. A previous study showed that half of STI clinic-attending swingers whose sexual behaviour is in line with the swinger definition do not identify themselves to be a swinger.<sup>15</sup> Moreover, many STI clinics internationally

do not specifically ask about swinging behaviour<sup>15</sup> and drug use during sex. Therefore, a first step would be to openly discuss (a) swinging behaviour in STI clinics and (b) drug use during sex.

When delivering health information on safer sex and drug use, it is important to tailor messages to the beliefs and perceptions of the target population to increase people's motivation and ability to process the message carefully, thereby increasing the chance of persistent changes in behaviour.<sup>16</sup> Our study shows that drugs were mostly used to increase the perceived quality of

**Table 4** Negative beliefs, experiences and intention to quit drug use during sex compared between heterosexual, bisexual male and female swingers who reported drug use during sex.

	All participants (n=443)	Heterosexual male swingers (n=157)	Bisexual male swingers (n=137)	Female swingers (n=149)	P-value
	% (n)	% (n)	% (n)	% (n)	
<b>Negative beliefs: drug use during sex is *</b>					
Unhealthy	46.7 (207)	46.5 (73)	46.7 (64)	47.0 (70)	0.996
Unwise	13.8 (61)	13.4 (21)	10.2 (14)	17.4 (26)	0.203
Dangerous	15.1 (67)	14.0 (22)	16.1 (22)	15.4 (23)	0.879
<b>Experienced negative effects†</b>					
Feeling tired days after using	53.3 (236)	49.0 (77)	47.4 (65)	63.1 (94)	<b>0.012</b>
Damaging my health	25.5 (113)	23.6 (37)	27.0 (37)	26.2 (39)	0.774
Feeling depressed the days after using	20.3 (90)	22.3 (35)	12.4 (17)	25.5 (38)	<b>0.013</b>
Functioning less well at work days after using	16.0 (71)	17.8 (28)	15.3 (21)	14.8 (22)	0.741
Having less energy for my kids days after using‡	14.9 (48)	15.7 (19)	14.3 (15)	14.6 (14)	0.951
Having headache	12.9 (57)	12.1 (19)	13.1 (18)	13.4 (20)	0.936
Insomnia days after using	10.8 (48)	13.4 (21)	7.3 (10)	11.4 (17)	0.222
Feeling sick	8.8 (39)	5.7 (9)	6.6 (9)	14.1 (21)	<b>0.024</b>
Feeling uncomfortable to have sex without drugs	7.4 (33)	7.6 (12)	9.5 (13)	5.4 (8)	0.406
Possibility of addiction	7.4 (33)	8.9 (14)	6.6 (9)	6.7 (10)	0.689
Need higher dose of drugs to get the same effects	3.8 (17)	5.7 (9)	4.4 (6)	1.3 (2)	0.092
<b>Intention to quit drug use in the next 12 months*</b>	3.6 (16)	3.2 (5)	0.7 (1)	6.7 (10)	<b>0.017</b>

P-values of  $\chi^2$  tests or Fisher exact tests (if cells have an expected count less than 5).

Significant differences between subgroups are in bold.

\*Scales (4: agree, 5: totally agree) are displayed.

†All possible answering options on multiple choice questions are displayed.

‡Only among participants who reported to have children (n=713).

sex by prolonging sex, increasing arousal and decreasing inhibitions, and this was similar for subgroups. On average, drug-using swingers had more positive than negative beliefs on drug use. The majority thought that drug use during sex was pleasurable, acceptable and exciting. When delivering information about possible sexual and psychosocial health risks of drug use during sex it is important to acknowledge these perceived benefits, such as the increased quality of sex. Prolonging sex and postponing an orgasm might be more important topics to discuss with men, and decreasing pain might be more important for women. Only a minority indicated an intention to quit drug use. These results suggest that the majority of drug-using swingers might not consider their drug use to be problematic. Nevertheless, half of drug-using swingers felt tired the days after using, one in four reported that drug use had a negative effect on their health and one in five felt depressed the days after using drugs during sex. Seven per cent indicated that they might become addicted or felt uncomfortable to have sex without drugs. STI clinics could ask drug-using swingers about these negative experiences and, when needed, refer them to addiction or mental healthcare services.

To our knowledge, this is one of the first studies that assessed drug use during sex among swingers. Another strength of our study is the reach of a large group of swingers by advertising the survey on several swinger websites. Swingers are a hidden population for research and their behaviour is under-studied. Moreover, we assessed a large variety of different aspects of drug use during sex and we compared these aspects between heterosexual male, bisexual male and female swingers. Nevertheless, our study should be viewed in light of some limitations. It should be noted that all answers were self-reported, which gave insight into the beliefs and experiences of swingers, but we could not provide proportions of drug-using swingers who would meet the clinical diagnosis of depression or addiction. Another general limitation

of this study was the lack of information on swingers who did not participate in the survey. Therefore, we cannot ensure that the results can be generalised to the total population of swingers in the Netherlands. As virtual venues, such as the internet, are more often used by drug-using swingers to meet with swing partners than physical venues, such as clubs,<sup>4</sup> the drug use prevalence might have been overestimated. However, the prevalence estimates of drug use were comparable with a previous study that recruited swingers at STI clinics in the Netherlands.<sup>1</sup> Another limitation of this study was the cross-sectional design. We were unable to assess causal relationships between drug use and determinants. Beliefs and other psychosocial determinants were not measured among swingers who did not use drugs, which limited our assessment of determinants of drug use to sociodemographic characteristics, sexual risk behaviour and alcohol use.

## CONCLUSION

This study shows that drug use during sex is highly prevalent among swingers and associated with condomless sex. This indicates that STI clinics should not only ask about drug use during sex among MSM, but also among swingers. When providing

## Key messages

- ▶ Drug use during sex was highly prevalent among swingers (44%).
- ▶ Condomless sex was higher among drug-using swingers than non-drug using swingers.
- ▶ When providing health information about safer sex and drug use, it is important to acknowledge swingers' perceived benefits, such as the increased quality of sex.

information about safer sex and drug use during sex, it is important to acknowledge the perceived benefits of drug use during, such as the increased quality of sex. Seven per cent indicated that they might become addicted or felt uncomfortable to have sex without drugs. STI clinics could ask about these negative experiences and, when needed, refer them to addiction or mental healthcare services.

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