

ORIGINAL ARTICLE

The rise in legal highs: prevalence and patterns in the use of illegal drugs and first- and second-generation “legal highs” in South London gay dance clubs

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Abstract

Aim: To assess the prevalence of use of established illegal psychoactive drugs and emergent psychoactive drugs, the so-called “legal highs”, amongst gay club-goers who are considered to be “early adopters” of drug trends.

Design: Three *in situ* surveys were conducted in July 2010 with customers at two dance clubs (night-clubs) in an area known for its “gay-friendly” night time economy. The surveys assessed the prevalence of self-reported lifetime, past year, past month, fieldwork day use and planned use of illegal drugs and “legal highs”.

Setting: This is a field study.

Participants: The participants were 308 customers in two “gay-friendly” clubs in South London, United Kingdom.

Measurements: Two-page research instrument was designed for *in situ* drug surveys.

Findings: Our sample had higher rates of self-reported lifetime and recent use of established illegal drugs than the general population. Mephedrone emerged from near obscurity to become the most popular illegal drug in this survey, with 41% having taken it in the past month and 27% having either taken and/or planning to take it on the fieldwork night. Regarding second-generation “legal highs”, 11% of the sample had taken NRG-1 in the past month and 3% had taken and/or planned to take it on the fieldwork night.

Conclusions: This survey suggests that the popularity of mephedrone surpasses other drugs, both legal and illegal, despite having been banned by the UK government prior to this survey being conducted. “Early adopters” of drug trends appear to be undeterred by the legal classification of emergent psychoactive substances. Given the global nature of the trade in “legal highs”, this study has implications for other countries where mephedrone use is emerging.

Keywords: Dance clubs, drugs, gay, club-goers, mephedrone, London, epidemiology

Introduction

In order to capture data on adult drug use, a key source of information is national household surveys such as the UK British Crime Survey (BCS), the US National Survey on Drug Use and Health and Australia's National Drug Strategy Household Survey. However, these household surveys underestimate adult drug use due to their non-random non-response rates (Newcombe, 2007; Reuter & Stevens, 2007). Firstly, they miss those living in student halls, hostels and institutions and secondly, they exclude adults active in the night time economy (NTE) who by definition are more likely to be out when household surveys are conducted (Roe, 2005, p. 9). Both of these groups have higher than average rates of drug use (Chivite-Matthews et al., 2005; Roe & Man, 2006, pp. 53–55). As a result, in order to further understand patterns and prevalence of adult drug use, adults active in the NTE have been targeted through interview-based research (e.g. Hunt et al., 2010), magazine- or Internet-based surveys of self-selecting samples (e.g. McCambridge et al., 2005, 2006, 2007) and *in situ* NTE surveys with bar and club customers (e.g. Riley et al., 2001; Deehan & Saville, 2003).

Furthermore, surveys targeted at adults active in the NTE are more adept at capturing emergent drug trends than national household surveys, such as the BCS, which do not adapt quickly to new psychoactive substances that appear on leisure scenes (e.g. Duff et al., 2009). For example, the 2009/2010 BCS did not include mephedrone or other synthetic cathinones (Hoare & Moon, 2010), whereas an online survey of dance music fans/club-goers by a dance magazine collected data in 2009, published in February 2010, reported lifetime and past month use prevalence rates of 42% and 34%, respectively, for mephedrone (Mixmag, 2010). In the most recent Mixmag online survey lifetime and past month use of mephedrone were 61% and 25%, respectively (Mixmag, 2011). The emergence of mephedrone has also been noted elsewhere in Europe (e.g. Brunt et al., *in press*; EMCDDA, 2010a, 2010b), and in Australia, where mephedrone use has been captured in interviews with regular ecstasy users and experts who have routine contact with ecstasy users (Matthews & Bruno, 2010).

Unlike national household surveys, online surveys and research undertaken outside of NTE settings, *in situ* NTE surveys can capture data on changing trends and patterns of drug use from samples of adult drug users when and where it happens, further improving our understanding of drug use in the context in which it takes place. Targeted surveys of adults active in the NTE consistently show that those who attend electronic dance music (hereafter dance) clubs (also referred to as nightclubs) have much higher rates of reported drug use than the general population, ranging from 79% to 94% for lifetime use (Measham et al., 2001; Deehan & Saville, 2003). *In situ* surveys of bar and club customers in the city of Manchester in the United Kingdom in 2005–2008 found that almost all club customers and over two-thirds of bar customers reported having tried an illicit drug at least once, whilst over three-quarters of club customers and over one-third of bar customers reported having had a drug within the past month (Measham & Moore, 2009). These surveys suggest that the prevalence and patterns of drug use vary depending not only on whether people are active in the NTE but also on the social context of use, including venue type, with club-goers reporting significantly higher levels of drug use than bar customers. Drug use is also higher in certain music or stylistic “scenes”, such as amongst club-goers attending dance events playing “hard dance” music compared with the same venues when playing other genres of dance music (Measham & Moore, 2009).

Furthermore, studies suggest that minority sexual orientation (e.g. lesbian, gay, bisexual) and/or minority sexual behaviour (e.g. men who have sex with men and women who have sex with women) are also associated with higher levels of drug use. Research undertaken

amongst gay and bisexual communities indicates higher prevalence rates than the general population in both the United Kingdom (Beddoes et al., 2010) and the United States (Pantalone et al., 2010). A study of bar and club customers in Manchester found that the highest lifetime and recent drug use amongst bar customers was reported in Manchester's Gay Village (Measham & Moore, 2009).

Therefore, we might anticipate that club-goers attending "gay-friendly" dance clubs playing "hard dance" music would be at the forefront of emergent drug trends and could be considered as "early adopters". This study set out to explore the current prevalence and patterns of drug use amongst these "early adopters", capturing data on both the use of established, illegal drugs and also the so-called "legal highs" or novel and emergent psychoactive substances, through surveys of customers at South London gay-friendly dance clubs playing "hard dance" music. The study was conducted 10 weeks after the first generation of the so-called "legal highs" – including mephedrone – was classified by the UK government in April 2010, but whilst the second-generation "legal high" naphyrone (thought to be contained in NRG-1) remained legal, in order to explore the possible displacement in light of recent legislative change. Hence, the study presented here is the first *in situ* survey of adults active in the UK NTE and presents data on emergent psychoactive substances, including mephedrone and naphyrone.

Methods

Study setting

The study was undertaken in two gay-friendly dance clubs in South London in July 2010 chosen because they are two of the largest such venues in the United Kingdom. The venues were surveyed on three nights across two consecutive weekends. Club A was surveyed on a Friday, then again on the following Friday, playing "hard dance" music each night, whilst Club B was surveyed on a Saturday and played "soulful" house music to a slightly different customer base. The dance clubs surveyed could be characterised as "gay-friendly" or gay and mixed supported by our findings on self-defined sexual orientation of respondents reported below. The study personnel (four females, two males; four whites, two Asians) were based in the smoking/"chill out" area outside each venue during the survey. These areas were chosen as they were quieter and better illuminated than inside the venues, there were tables and chairs, and given that they were beyond the entrance and security screening of each venue, all individuals who participated in the study had entered the venue. Information regarding the survey was displayed on the clubs' Internet sites in the days preceding the study and on posters on clubs' walls during the fieldwork period, explaining the confidential nature of the research and providing a link to the researchers' website (www.clubbingresearch.com) for more information. Additionally, the study was supported by club management, and staff (including promoters, security staff and medical staff) were briefed about the survey in advance. All were assured of anonymity. This assurance was given in the context of active police surveillance and arrests within dance events in the United Kingdom and elsewhere (Race, 2009).

The study was approved by Lancaster University Research Ethics Committee (reference 45558, 27/05/2010).

Participants

The study sample was an opportunistic sample collected in a specific type of leisure setting. As a result generalisations made from this sample best apply to populations with similar

characteristics – gay and bisexual respondents, men who have sex with men, women who have sex with women, “hard dance” music fans and club-goers active in NTEs – all of whom have been characterised as “early adopters” of drug trends.

Customers at the survey settings were approached by one of the study personnel whilst they were in these outdoor areas. The purpose and nature of the study was explained to them, anonymity was assured and they were asked whether they were willing to participate. Where an individual declined to participate in the study, this was recorded so that the rate of inclusion could be determined. Surveys were conducted earlier in the evening to approach customers at their lowest levels of intoxication during their night out (Measham & Moore, 2009).

Data collection

The study utilised the research design and survey instrument developed by Measham in the 1990s and 2000s for *in situ* surveys with thousands of dance club customers (Measham et al., 2001) and bar customers (Measham & Brain, 2005) in the UK NTE. Given this, there was no pilot survey. The research instrument was a two-page survey upon which interviewers recorded information collected from respondents regarding basic socio-demographic data and use of alcohol, cigarettes and psychoactive drugs. The list of drugs was determined prior to the survey by the authors and both legal and illegal drugs were included. Additionally, participants were able to self-volunteer the use of other drugs not present in the survey list.

Data analysis

Data were analysed and are presented descriptively as mean \pm SD where appropriate.

Results

Study population

Club A was surveyed on Friday, 2 July 2010, then again on the following Friday (9 July 2010), whilst Club B was surveyed on Saturday, 10 July 2010. Overall, 308 club customers participated in the survey (17% of those attending the three club nights across the two venues, $n = 1838$). Overall, 28 refused to participate and 8% of those approached by interviewers.

On the first Friday night at Club A, 94 respondents participated in the survey (18% of club customers in the club). Eleven male and one female refusals were noted. The average bar spending per head for customers across the night was £12.78. On the second Friday night at Club A, 101 respondents participated in the survey (16% of club customers). Five male and one female refusals were noted. The average bar spending per head was £12.97. On the third survey night, on Saturday night at Club B, 113 respondents participated in the survey (16% of club customers) with an average bar spending per head of £10.46. Seven male, two female and one transgender refusals were noted.

Demographics

Eighty-two percent of those who completed the survey were male, in part reflecting the gender bias in club attendance (Measham et al., 2001) and in part because the surveys were

undertaken in two “gay-friendly” venues. Such venues are more likely to cater for, and be frequented by gay men rather than lesbians (Pritchard et al., 2002). This is confirmed by the low proportion of self-defined lesbians in our sample (3%) compared with gay men (67%). In terms of sexual orientation, 70% of the sample defined themselves as gay or lesbian, 17% as straight, 9% as bisexual, 1% as transgender with 3% reporting that they considered their sexual orientation to be “other”. The mean \pm SD age was 29.8 ± 8 (range 18–64) years. Eighty-one percent considered themselves to be resident in London, 13% resident elsewhere in the United Kingdom and 6% reported that they were non-UK residents. The majority (75%) of those who participated defined their ethnicity as white, 10% as black, 10% as mixed race, 4% as Asian and 1% defined themselves as an another ethnic background. The majority of participants (69%) were in full time employment, 16% in higher education, 7% in part time employment, 6% unemployed, 1% in further education, whilst 1% defined themselves as having a long-term sickness or disability.

Usual drinking frequency

Ninety-three percent of those surveyed reported that they currently drink alcohol, 5% reported that they had stopped drinking alcohol and 2% reported that they had never consumed alcohol. The self-assessed usual frequency of alcohol consumption is shown in Fig. 1.

In terms of alcohol use on the night of the survey, 79% reported that they had already consumed alcohol and were planning on drinking more alcohol during the course of their night out, 17% stated that they were not drinking on the fieldwork night and 4% had consumed alcohol but were not planning on further drinking. Interestingly, the majority of those who were drinking alcohol that evening had already been drinking prior to entry into the club, with less than 1% not having consumed alcohol prior to entry but planning on doing so after arrival. However, given the relatively low average bar spending per customer in each

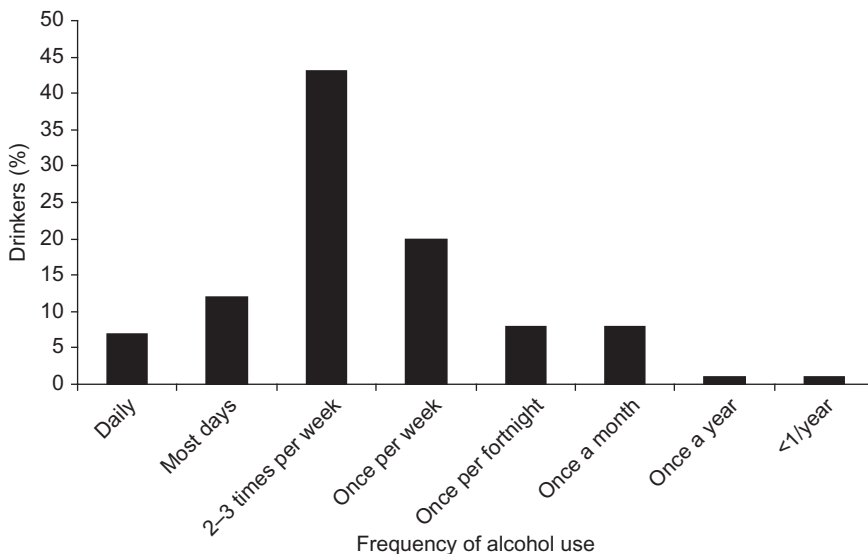


Figure 1. Self-assessed usual frequency of alcohol consumption in those reporting that they drink alcohol.

club on the fieldwork night, which included both alcoholic and soft drinks, consumption levels were moderate.

Self-reported drug use

Two hundred and seventy three (89%) of those surveyed reported that they had tried an illegal drug at least once in their lifetime. The frequencies of self-reported drug use for lifetime, past year, past month, already taken on fieldwork day, planning on fieldwork night and combined use and/or planned use on fieldwork night are shown in Table I. Half of the sample (154 respondents) reported either already having used and/or planning to use one or more illegal drugs on the fieldwork night. Customers at Club A on the first two survey nights had higher levels of use/planned use of any illegal drug on the fieldwork night (53%)

Table I. Self-reported lifetime, past year, past month, fieldwork day use and planned use frequencies from the three surveys ($n = 308$, % of whole sample)

| | Lifetime | Past Year | Past Month | Already had today | Planning tonight | Had today &/or planning tonight |
|------------------|----------|-----------|------------|-------------------|------------------|---------------------------------|
| Any illegal drug | 273 | 240 | 209 | 131 | 130 | 154 |
| % | 89 | 78 | 68 | 43 | 42 | 50 |
| Cannabis | 238 | 149 | 101 | 41 | 22 | 47 |
| % | 77 | 48 | 33 | 13 | 7 | 15 |
| Cocaine | 224 | 183 | 136 | 37 | 37 | 49 |
| % | 73 | 59 | 44 | 12 | 12 | 16 |
| Ecstasy pills | 214 | 151 | 93 | 26 | 35 | 47 |
| % | 69 | 49 | 30 | 8 | 11 | 15 |
| MDMA powder | 177 | 140 | 86 | 21 | 31 | 35 |
| % | 58 | 46 | 28 | 7 | 10 | 11 |
| Ketamine | 176 | 141 | 92 | 32 | 37 | 44 |
| % | 57 | 46 | 30 | 10 | 12 | 14 |
| Mephedrone | 166 | 161 | 126 | 63 | 68 | 82 |
| % | 54 | 52 | 41 | 21 | 22 | 27 |
| Speed | 150 | 68 | 26 | 7 | 10 | 10 |
| % | 49 | 22 | 8 | 2 | 3 | 3 |
| Viagra | 113 | 80 | 30 | 2 | 12 | 12 |
| % | 37 | 26 | 10 | 1 | 4 | 4 |
| GHB | 106 | 67 | 44 | 16 | 19 | 21 |
| % | 34 | 22 | 14 | 5 | 6 | 7 |
| GBL | 84 | 74 | 57 | 37 | 36 | 42 |
| % | 27 | 24 | 19 | 12 | 12 | 14 |
| Methamphetamine | 65 | 30 | 18 | 6 | 6 | 8 |
| % | 21 | 10 | 6 | 2 | 2 | 3 |
| MDAI | 19 | 18 | 13 | 4 | 4 | 6 |
| % | 6 | 6 | 4 | 1 | 1 | 2 |
| Heroin | 11 | 3 | 2 | 1 | 0 | 1 |
| % | 4 | 1 | 1 | <1 | 0 | <1 |
| NRG-1 | 49 | 41 | 35 | 7 | 7 | 9 |
| % | 16 | 13 | 11 | 2 | 2 | 3 |

Note: MDMA, 3,4-Methylenedioxyamphetamine; GHB, Gamma-hydroxybutyrate; GBL, Gamma-butyrolactone; MDAI, Methylenedioxy aminoindane; NRG-1, Brand name of drug thought to contain naphyrone methylenedioxy aminoindane (MDAI).

compared with Club B (45%) on the third survey night. London residents, UK residents and non-UK residents had similar levels of illegal drug use on the fieldwork night (50%, 50% and 47%, respectively).

Mephedrone was the most common drug already used and/or planned on the fieldwork night (27% of those surveyed). Additionally, it was the second most commonly used drug within the past month and past year (41% and 52%, respectively), with only cocaine being more frequently used (44% and 59%, respectively). The majority of mephedrone use had occurred within the 12 months prior to the survey, with under 2% reporting that they had taken it more than a year ago.

The survey also provides data on the use of second-generation “legal highs” such as methylenedioxy aminoindane (MDAI) and NRG-1. Of the sample 11% reported having used NRG-1 in the past month, with 3% having used and/or planning to use it on the fieldwork night. Of the sample 4% reported having used MDAI in the past month and 2% on the fieldwork night.

Some respondents volunteered the names of a number of other drugs which were not included in the predetermined survey list due to space constraints. The lifetime prevalence of use rates of these drugs were as follows: NRG-2, 7 respondents; NRG-3, 4 respondents; magic mushrooms, 23 respondents; LSD, 17 respondents; “other legal highs”, 9 respondents and “poppers”/volatile nitrites, 1 respondent. It is likely that these are underestimates as respondents were not directly asked about their use of these drugs.

Discussion

This is the first *in situ* NTE drug survey to be undertaken after the emergent use and subsequent legal classification of mephedrone in the United Kingdom in April 2010. Whilst less than 2% of the sample had tried mephedrone more than a year before survey, over one-quarter of respondents reported taking mephedrone on the fieldwork night. This illustrates the rapid rise in popularity and availability of mephedrone from the summer of 2009 in the United Kingdom (Measham et al., 2010), suggesting that by the summer of 2010 mephedrone had overtaken all other drugs in terms of incorporation into the weekend repertoires of gay club-goers. This is juxtaposed against a general lowering of levels of ecstasy use both in the general population (NHS, 2011) and amongst club-goers (Mixmag, 2011) in recent years compared with almost ubiquitous ecstasy consumption by 1990s “ravers” (Release, 1997; Sherlock & Conner, 1999; Measham et al., 2001). Just how rapid the emergence and growth in the use of mephedrone has been is evident in that almost all self-reported mephedrone users had only tried the drug within the past year. Given that mephedrone and other substituted cathinones were banned 10 weeks prior to this study, the high prevalence of mephedrone, at least amongst London gay club-goers, suggests that legal status is not the most significant influence on availability or use.

There was evidence of the use of second-generation “legal highs” such as MDAI and NRG-1, whose main active ingredient – naphyrone – was classified just weeks after this study. However, it does not appear that in this study population there was significant displacement from mephedrone to second-generation “legal highs” when mephedrone and other substituted cathinones were banned. Four possible explanations for this lack of significant displacement are raised here. Firstly, some of those surveyed reported stockpiling mephedrone prior to its ban. Secondly, the authors witnessed that a street trade in this area of South London has already developed, with mephedrone being sold for £20–25 per gram in close proximity to the dance clubs on the survey nights. Thirdly, anecdotally a preference

was expressed by some respondents for the effects of mephedrone over other “legal highs”, by those who had tried them. Fourthly, naphyrone was subject to scrutiny during the field-work period (Brandt et al., 2010), with analyses suggesting that the content and purity of these second-generation “legal highs” were increasingly varied (Ramsey et al., 2010). There is also the possibility that users switched to other “legal highs” not specified in our survey instrument.

One limitation is that data collection was undertaken in the smoking areas of each survey setting, risking an over-representation of cigarette smokers in the sample. However, as well as being smoking areas, they were the only outdoor areas at each dance club. The surveys were undertaken during the summer and on the survey nights these outdoor areas served not just as smoking areas but also as “chill out” spaces for customers to socialise and cool down from high temperatures inside the clubs. Furthermore, the prevalence of smoking in our sample (71%) is similar to that in an online survey of dance music fans/club-goers (73%) (Mixmag, 2010).

In summary, this *in situ* survey undertaken in gay-friendly dance clubs in South London provides crucial data on the prevalence of legal and illegal drug use amongst a population which tends to be at the vanguard of changing drug trends. Of particular note is the high prevalence of mephedrone use despite its classification under the UK Misuse of Drugs Act 1971 10 weeks prior to the survey. The popularity of mephedrone suggested by this study should be placed in the national context of a recent reduction in the availability, purity, prevalence and associated deaths for established illegal drugs in the United Kingdom such as ecstasy and cocaine (Hoare & Moon, 2010; Measham et al., 2010; Bird 2010) and in an international context where supply disruption resulting in reduced availability/purity of established drugs (Brunt et al., 2009) contrasts with easy access to a growing range of “legal high” products that are internationally traded and “aggressively marketed” online (EMCDDA, 2010b, p. 21; Schmidt et al., 2011). Given this global online trade and that other countries, including North America, Australia and elsewhere in Europe, are also identifying the emergent use of new psychoactive substances such as mephedrone, particularly amongst populations active in NTEs, international collaboration on epidemiology, risk assessment and policy development is vital.

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