Research paper

Polydrug use among nightclub patrons in a megacity: A latent class analysis

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A B S T R A C T

Background: Nightclubs are places with a high prevalence of binge drinking and illicit drug use. The aim of this study was to evaluate the characteristics of polydrug use, including licit and illicit drugs, among 2420 nightclub patrons in a probabilistic sample in the city of São Paulo, Brazil,

Methods: The study was conducted in 2013. A latent class analysis (LCA) of polydrug use, accounting for binge drinking (BD) and other drug use (cannabis, cocaine, ecstasy, tobacco, ketamine, inhalants and hallucinogens) in the past 12 months was performed using Mplus. Multinomial logistic regression was used to evaluate latent class associations with sociodemographic characteristics and variables that characterise type of nightclub and frequency of attendance.

Findings: A three-class LCA model best described polydrug use patterns. We found a "no polydrug use" class (55%), a "moderate polydrug use" class (35%) and a "high level polydrug use" class (10%). Compared to "no polydrug use", patrons in the two "polydrug use classes" were more likely to be men, young adults (<34 years), have attended nightclubs three times or more per month and have attended hip-hop and rock music nightclubs. Patrons in the "high level polydrug use" class were more likely to attend electronic (aOR = 9.9, 95% CI: 5.4–8.1, $p < 0.001$) and hip-hop music nightclubs (aOR = 10.1, 95% CI: 6.2–16.5, $p < 0.001$).

Conclusion: LCA is a useful method to identify groups of polydrug users among nightclub patrons. The three groups identified represented the diversity of patrons of São Paulo nightclubs. Frequency of attendance and the nightclub's musical style were highly correlated with polydrug use.

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Introduction

São Paulo is the most populous city in Brazil and in the Southern hemisphere, with more than 11 million inhabitants (IBGE, 2014). The nightlife of São Paulo is arguably one of its greatest attractions, as observed by tourists and experts worldwide. According to a CNN (Cable News Network) survey, São Paulo offers the 4th best nightlife in the world, receiving a grade of nine out of 10 for working hours, people and experience (Manson, 2014). The night-time economy is lucrative, raising US$ 770 million (R$ 2.4 billions) annually (Muniz, Silva, & Maffezzolli, 2014) for the Brazilian economy.

In "the city that never sleeps", patrons can attend all types of nightclubs, from the regular venue with pop-dance music, to electronic music nightclubs that open at dawn and close the next afternoon. Patrons can choose nightclubs from a diverse range of musical styles, such as funk (high sexual connotation dance and lyrics), "forró" (typical Brazilian ballroom dance), electronic and flashback. Besides music preferences, venues in São Paulo are characterised by the socioeconomic class and sexual orientation of their patrons. This is often related to the neighbourhood where the club is located and the cost of entry (Silva, 2014).

Worldwide, nightclubs are generally places visited by youths and young adults who are seeking entertainment and where the use of alcohol and other drugs act as important mediators (Demant, 2013). According to Calafat et al. (2011), the recreational context of the nightclub is associated with the misuse of alcohol and other drugs, and contributes to increased risk behaviour inside these venues (Duff, 2008). Moreover, patrons of music festivals and dance events have been found to have more experience of illegal drugs use than other groups in the population (Chinet, Stéphan, Zobel, & Halfon, 2007; Winstock, Griffits, & Stewart, 2001).

In the United Kingdom, a nightlife survey demonstrated that the vast majority of club drug users were polysubstance users, with over 70% also reporting hazardous alcohol consumption (Winstock et al., 2001). One of the major concerns about polydrug use is that the effects of the individual drugs are usually boosted, and harmful physiological effects can accumulate in the body (Quek et al., 2013) and increase the likelihood of physical and physiological damage (Smith, Farrell, Bunting, Houston, & Shevlin, 2011).

In several European countries, music preference and venue choice seem to predict illegal drug use (Calafat, Fernández, Juan, & Becoña, 2008). A Danish study that focused on drug initiation at music festivals, found a higher prevalence of first cannabis and tobacco use among attendees of rock festivals (Hesse, Tutenges, & Schliewe, 2010). The same group of researchers found that patrons who prefered hip-hop or electronic music festivals were more likely to be polydrug users, while patrons who prefered pop music were less likely to have used all illicit drugs (Hesse & Tutenges, 2012).

In Brazil, a population survey has shown that nightclubs are the location of choice for young people to practise binge drinking (Sanchez et al., 2011), however, to date no epidemiological survey has identified patterns of consumption of alcohol and drugs among patrons of these venues. All major studies about the nightlife environment have been conducted in Europe (Bellis et al., 2008), North America (Carlson, Wang, Falck, & Siegal, 2005) and Oceania (McKetin, Chalmers, Sunderland, & Bright, 2014), leaving a large gap in knowledge about this behaviour in less wealthy and more unequal countries.

Diagnosis of the risks is the first step in the development of effective harm reduction policies for a given population, thus it is necessary to understand the São Paulo nightlife scene. In this sense, science can inform policy by identifying which groups are more exposed to risks and should be targeted by nightlife harm reduction initiatives, such as: providing free water; organising a "chill out" area with appropriate ventilation, regulation of temperature, and places to sit; staff training for a responsible drinking service and first-aid support during alcohol and drugs intoxication (Van Havere, Vanderplasschen, Lammertyn, Broekaert, & Bellis, 2011).

The study reported here, called "Balada com Ciência" (www.baladacomciencia.com.br) was designed to evaluate the prevalence of risk behaviours practised by nightclub patrons in the city of São Paulo, with an emphasis on alcohol and illicit drug use. We set out to evaluate how concurrent polydrug use is grouped among nightclub patrons by the use of latent class analysis (LCA) and to explore how these different patterns of drug use are associated with sociodemographic factors, frequency of attendance and the music style of the venue.

Methodology

Recruitment and procedures for obtaining informed consent and protecting the rights of study participants was approved by the Research Ethics Committee of the Federal University of São Paulo (Universidade Federal de São Paulo – UNIFESP) (protocol number 795276).

Sampling

We defined "nightclubs" as establishments that have controlled entry and exit of patrons, sell alcoholic beverages and have a dance floor. A portal survey (Voas et al., 2006), was conducted at nightclubs in São Paulo during the first half of 2013, and data were collected from their patrons. Cluster sampling was performed in two stages; the selection of nightclubs (first stage) consisted of a systematic sample of 40 nightclubs, with a probability of inclusion proportional to their maximum capacity. The patron selection (second stage) was a systematic sample of every third person in the entrance lines of the selected nightclubs (Voas et al., 2006).

The nightclub frame list was created by an active search of magazines, guides which specialised in leisure activities and a search of the first 10 pages from a Google search using the following key words: "São Paulo, Nightclubs and Discos" (in Portuguese). The final sampling list consisted of 150 nightclubs from which 40 nightclubs and potential replacements were drawn. The statistical model used in this study (draw and inferential process for large samples in clusters) requires at least 30 primary sample units to allow a proper performance of the statistical analyses (Levy and Lemeshow, 2008). To guarantee that we would have at least 30 nightclubs participating in the survey, we contacted the original 40 selected nightclubs and 7 replacements, resulting in an acceptance rate of 66% (31/47). The replacements had the same capacity, were located in the same neighbourhood, and were subject to the same probability of selection as the original nightclub sampled. An adjustment factor for non-response was used by weighting the 31 nightclubs in order to make them equivalent to the 40 selected nightclubs. The adjustments were estimated by a logistic regression model with agreement to participate in the study as the dependent variable and establishment size as the explanatory variable. The nightclub (clusters) weights were equal to the inverse selection probability multiplied by the non-response adjustment factor.

A target sample size of 1600 patrons was calculated considering an absolute precision of 5% and a 95% confidence interval (CI), with two-stage cluster sampling and a design effect of two (Lwanga & Lemeshow, 1991). A total of 2912 patrons were initially approached. This was to account for an estimated refusal rate of 30% and a maximum loss to follow-up from entrance to exit of 40% (Clapp et al., 2007).

More details on sample weights and study design are presented in Carlini et al. (2014).

Data collection

Data collection took place between January and July 2013 (from summer to winter, with an average temperature of 20 °C). The research team visited 31 nightclubs, each one on a different night, from time of opening (approximately 10:30 pm) until the club was closed (approximately 7:00 am). To select the day of data collection, we asked the club manager to indicate the most popular day at each of the venues. In most nightclubs, we collected data on Friday and Saturday nights (75%). The remaining (25%) data collection was spread across the other nights of the week.

The nightclubs

Most nightclubs in our sample were open from 11:00 pm to 7:00 am, which is usual for nightclubs in São Paulo, however, three closed between 9:00 am and noon.

We stratified our sample by venue capacity, to guarantee inclusion of small, medium and large nightclubs. These were located across São Paulo's five regions (North, East, South, Centre and West) and this guaranteed socioeconomic diversity.

The study nightclubs were as representative as possible of the diversity of nightclubs in the city, ranging from venues aimed at couples' ballroom dancing to indoor raves or funk festivals in slum areas. Since our intention was to collect data from different kinds of nightclubs (different regions, social classes, capacity, sexual orientations, and music style), we selected similar replacement nightclubs to account for any refusals.

Nightclubs in São Paulo have different musical styles, ranging from those that play a variety of types of music on the same night