



## Research paper

# Differences in prevalence, socio-behavioral correlates, and psychosocial distress between club drug and hard drug use in Taiwan: Results from the 2014 National Survey of Substance Use



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## ABSTRACT

**Background:** This study examined variation between users of ‘club’ and ‘hard’ drugs in Taiwan in terms of prevalence of use and demographics and psychosocial characteristics.

**Methods:** Data were derived from a survey of 17,837 Taiwanese civilians, aged 12–64 years, using stratified, multi-stage, random sampling. Participants completed a computer-assisted self-interview on tablet computers which covered use of legal substances, sedatives/hypnotics and prescription analgesics; use of illicit drugs/inhalants, risky sexual experiences; expectations of drugs; and psychological distress.

**Findings:** Approximately 1.29% of respondents reported ever using an illicit drug in their lifetime; prevalence estimates of club drugs (mainly ketamine, marijuana, and ecstasy) were slightly higher than hard drugs (mainly methamphetamine and heroin). Concurrent use of legal substances, particularly problematic use of alcohol and tobacco, as well as non-medical use of prescription drugs, were strong correlates of illicit drug use in general, with club drug use exhibiting an extremely strong association with alcohol use. Club drug users were demographically different from hard drug users, including in terms of their gender, age, and level of educational attainment. They were also more likely to be divorced or widowed, to report risky sexual partnerships and more depressive symptoms than hard drug users.

**Conclusions:** Our findings indicate drug type specific distinct psychosocial characteristics, which may warrant further attention in the design of treatment and intervention programs.

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## Introduction

Addiction to psychoactive substances, including alcohol consumption, tobacco smoking, and illicit drug use, are major contributors to the global burden of disease (Lim et al., 2012; Whiteford et al., 2013). Periodic evaluation of the prevalence of such behaviors is essential to assess aspects of public health. However, reliable estimates of unsanctioned drug use are often

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limited in the literature (Gowing et al., 2015). Many reports are based on treatment settings or incarcerated populations, whereas population-based surveys are rare except in some industrialized countries, such as the United States (Center for Behavioral Health Statistics and Quality, 2015), Canada (Government of Canada, 2015), European countries (Mounteney et al., 2016), Australia (Australian Institute of Health and Welfare, 2014), and Japan (Kiyoshi, Liu, & Shimane, 2013).

Regional variation is an important factor to consider in interpreting surveys of psychoactive substance use. For example, methamphetamine has been one of the core hard drugs used in many Asian countries, whereas cocaine is more prevalent in North America (United Nations Office on Drugs and Crime, 2015). Use of some types of substance is specifically prevalent in certain areas, for example betel nuts in many Asian countries (Warnakulasuriya, Chaturvedi, & Gupta, 2015). Furthermore, the prevalence of use of illicit drugs tends to change with time (Chen et al., 2009; Johnston, O'Malley, Bachman, & Schulenberg, 2010).

Taiwan underwent drastic changes in type of drug misuse during the 1990s, when methamphetamine use surged to become the most common illicit drug for incarceration. As a result, the country adopted a series of amendments in the legal enactment of addictive substance control (Li, 2012). In 1999 ecstasy was upgraded to a Schedule II controlled drug because of its increased popularity among young people. However, to date national estimates of illicit drug use have been mainly derived from arrestees (Lee, Hsu, & Tsay, 2013) or people receiving treatment in medical institutions (Hsu, Lin, & Tsay, 2014). Most epidemiological studies on illicit drug use in Taiwan have been limited to indirect estimates or surveys among high-risk groups/subpopulations. One study used capture-recapture modeling with data from both the judiciary and medical systems to estimate the size of the illicit drug user population in the northern Taiwan (Chiang, Chen, Chang, Sun, & Chen, 2007). One approach involved surveying, via street outreach, adolescents with experience of truancy (Chou, Ho, Chen, & Chen, 2006) or those absconding from home (Wang, Chen, Lew-Ting, Chen, & Chen, 2010) and found high risk of using illicit drugs. Another approach was to recruit regular tobacco and alcohol users via social networks (Ting et al., 2015). In terms of subpopulation, school-attending adolescents have been the most frequently surveyed. National surveys of school-attending adolescents have found that the most commonly consumed illegal drugs or inhalants in Taiwan changed from methamphetamine, sniffing glue, and flunitrazepam in the early 1990s (Chou, Liou, Lai, Hsiao, & Ghang, 1999) to so-called club drugs, such as ecstasy, ketamine, and marijuana, in the period from 2004 to 2006 (Chen et al., 2009). For comparison, one study examining social networks between 2007 and 2010 revealed that ketamine became as commonly used as ecstasy among regular tobacco and alcohol users (Ting et al., 2015).

The population-based National Health Interview Survey did not include questions on illicit drug use until its more recent waves in 2005 (National Health Research Institutes, 2007) and 2009 (National Health Research Institutes, 2011). However, the questions on illicit drug use were separated from the main interview and were completed by respondents at the end of the interview, which constrained the time that could be allocated for examination of illicit drug use. Whether or not there have been major changes at a national level in the prevalence of use of illicit drugs, particularly the contrast in the use and user profiles of club drugs versus hard drugs remains unknown.

The 2014 National Survey of Substance Use in Taiwan was the third national survey to include questions about drug use, but the first one dedicated to illicit drug use, among people aged 12–64 years. It covered a broad range of psychoactive substances, with a detailed list of non-medical use of sedatives/hypnotics,

prescription analgesics, and illicit drugs or inhalants. Based on these data this study aimed to examine the differences in prevalence, correlates, and psychological distress between club drug and hard drug use in the general population of Taiwan.

## Methods

### Participants

The 2014 National Survey of Substance Use was conducted as a face to face interview with a nationally representative sample (excluding citizens held in institutions) of individuals aged 12–64 years. Potential participants were selected using stratified, multistage, probability proportional to size random sampling. Based on cluster analysis, the whole nation was divided into 49 strata. In each sampling stratum, household registration data (October 2013) was used as the sampling frame to select a sample of 28,664. Detailed methods (e.g., clustering-based stratification, sampling process, and participation rate) are available in Supplementary methods. A total of 17,837 participants completed the interview, with a response rate of 62.2%. This study was approved by the Research Ethics Committee of the National Taiwan University Hospital (NTUH-REC no. 201309034RIN).

### Comparison with national surveys 2005 and 2009

The National Health Interview Survey was initiated in 2001 and has been conducted every four years using similar sampling methods (stratified, multi-stage, random sampling) and targeting people aged 12–64. Although its main focus is physical health, in 2005 and 2009 an Appendix of questions was added about use of illicit drugs – National Health Interview and Drug Abuse Survey (National Health Research Institutes, 2007; National Health Research Institutes, 2011). The number of respondents completing the illicit drug Appendix was less than that completing the main questionnaire. However the number of respondents completing the questions about illicit drug use increased over the two waves – 17,187 persons (74.2%) for the survey in 2005 and 18,870 persons (80.6%) for the survey in 2009. In terms of mode of administration of the questionnaire, in 2005 this was conducted using paper-and-pencil whereas in 2009 this was done using computer-assisted self-interview.

### Instruments

The National Survey of Substance Use (2014) was dedicated to illicit drug use and the questionnaire was re-designed to cover more types of drugs and drug-related psychosocial distress. A computer-assisted self-interview was uploaded on touch-screen tablet computers. The questionnaire consisted of seven main sections: (1) demographics; (2) use of legal substances, including tobacco, alcohol, and betel nuts; (3) use of sedatives/hypnotics and prescription analgesics, including their non-medical use (taking medications without prescription or at a greater frequency or quantity than prescribed); (4) use of illicit drugs/inhalants, including 21 types of drugs or inhalants (glue, pentazocine, ecstasy, N<sub>2</sub>O, phencyclidine, methamphetamine, LSD, heroin, GHB, marijuana, cocaine, ketamine, PMMA, 2C-B, FM2, Ma Gu, 5-MeO-DIPT, K2, mephedrone, bath salts, and methadone) and 2 “bogus” drugs; (5) risky sexual experience, including inconsistent condom use, multiple sexual partners, group sex, or one-night stand; (6) expectations of ecstasy, ketamine, marijuana, and methamphetamine; and (7) psychological well-being measured using the Center for Epidemiological Study-Depression Scale (CES-D) (Radloff, 1977; Yang, Soong, Kuo, Chang, & Chen, 2004), among others.

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