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Health-compromising practices of undergraduate college students: Examining racial/ethnic and gender differences in characteristics of prescription stimulant misuse

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HIGHLIGHTS

- Illicit use of prescription stimulants (IUPS) is prevalent among college students.
- Associations were found between race, gender, and IUPS characteristics.
- Being Asian or Latino increased the odds of smoking stimulants.
- Being Female increased the odds of using stimulants to lose weight.
- Many of the associations remained after controlling for known correlates of IUPS.

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1. Introduction

Prescription stimulants such as amphetamines (e.g., Adderall), dextroamphetamines (e.g., Dexedrine), and methylphenidates (e.g., Ritalin and Concerta) are commonly prescribed medications for the treatment of attention-deficit hyperactivity disorder (ADHD). As the number of students diagnosed with ADHD attending college increases (Benson, Flory, Humphreys, & Lee, 2015), the availability of prescription stimulants on campus has increased (McCabe, Teter, & Boyd, 2006). The increased availability of prescription stimulants has paralleled the rise in the illicit use of prescription stimulants [IUPS] on college campuses; this is cause for concern because misuse of prescription stimulants is associated with a host of adverse psychological and physiological effects including abuse, addiction, dependence, psychosis, seizures, cardiovascular events, cardiac arrest, and death (Lakhan & Kirchgessner, 2012).

We characterize IUPS as use of any class of prescription stimulants in excess of what is prescribed by a physician, use without a prescription, and/or use for non-medical reasons (Bavarian, Flay, Ketcham, & Smit, 2015). Results from a 2015 national study involving 2450 students showed that 10.7% of college students used Adderall for non-medical reasons in the past year (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2016). Single campus studies have also demonstrated a relatively high prevalence. A recent investigation indicated that 13.9% of a sample of 682 college students reported engaging in non-medical use (i.e., use for academic performance) of prescription stimulants (Gallucci & Martin, 2015), while another single campus study estimated that 38% of a cohort of 984 college students reported non-medical use (Arria et al., 2013); these sets of data may underestimate the true prevalence of illicit use, as many studies focused on use for academic enhancement, which is just one form of illicit use.

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1.1. Characteristics of IUPS in the college population

Understanding students' preferred routes of administration, sources of drugs, monetary costs, and IUPS motives should have prevention and intervention implications. For this study, routes of administration are classified into the following categories: oral ingestion, nasal ingestion, intravenous injection, smoking, or other. Past studies have shown that oral administration is the preferred route; for instance, it accounted for 90% of non-medical users over a four year period (Garnier-Dykstra, Caldeira, & Arria, 2012). However, in the same study, 17% of college students also reported smoking prescription stimulants as their preferred route. The type of route of administration can significantly increase health and drug dependency risks, and thus, this behavior should be carefully monitored among misusers.

Next, we investigate monetary costs and sources; specifically, we are interested in how much money students spent per pill when they engaged in IUPS, and from whom they obtain these drugs. Although most students report paying little to no charge (Dupont, Coleman, Bucher, & Wilford, 2008), students have also reported paying $1–$5 per pill, paying $6–$10 per pill, and paying >$10 per pill (Bavarian et al., 2014). A student's willingness to pay more per pill may suggest a dependency issue, and is therefore, a necessary characteristic to examine. Additionally, determining the source(s) of the drug (e.g., self, friend and family) is an important step that will allow researchers to determine the extent of diversion. Studies of college students indicate that most users obtained stimulant medication from a peer or friend (Garnier-Dykstra et al., 2012). It is essential to investigate both the costs and sources of stimulant medication to understand the social and environmental context in which IUPS occurs and whether accessibility to prescription stimulants affects misuse.

Furthermore, investigating motivations for engaging in IUPS is crucial to understanding health behaviors and intentions. There is a widespread belief that stimulant drugs enhance cognitive skills; specifically, popular media perpetuates these cognitive-enhancing properties by calling them “smart pills” (Partridge, Bell, Lucke, Yeates, & Hall, 2011). As a result, past literature have indicated that the most salient motivation to engage in IUPS is academic in nature (e.g., to help with studying, to increase focus time; Dupont et al., 2008; Garnier-Dykstra et al., 2012; Teter, McCabe, LaGrange, Cranford, & Boyd, 2006). However, other studies have shown recreational motives (e.g., to get high) have been reported by 25–30% of non-medical users (Teter, McCabe, Cranford, Boyd, & Guthrie, 2005), which indicates that stimulant drugs may be used concurrently with other forms of substances (e.g., alcohol); the high-risk nature of this behavior is why understanding motives is particularly warranted.

Finally, there is limited research on how often IUPS produced student's desired outcomes (e.g., improved academic performance). One study has reported that 90% of students who used ADHD drugs non-medically believed it was helpful and that 70% reported an overall positive experience with IUPS (Rabiner et al., 2009). Despite reports of positive experiences, engaging in IUPS often also produced adverse events including poor sleep, headaches, stomachaches, and sadness (Rabiner et al., 2009). As experiences during trial behavior may predict subsequent behavior (e.g. Flay & Petraitis (1994); Flay, Synder, & Petraitis (2009)), more information is needed to investigate the actual experience (positive or negative) students have with IUPS.

1.2. Research gaps

To date, there has been a paucity of literature examining sub-group (e.g., racial/ethnic and gender) differences in characteristics of the IUPS behavior (e.g., administration routes, monetary costs, motivations). Although, the motives to engage in IUPS (e.g., academic and non-academic) can apply to college students of all racial/ethnic backgrounds, research has focused predominately on whether overall use (e.g., Pastor and Reuben, 2005), not characteristics of use, differ by race/ethnicity The growing population of young minority groups, along with the increased availability of prescription stimulants in the college environment, warrant research to characterize IUPS patterns by race/ethnicity. Doing so will allow researchers to determine if specific racial/ethnic groups have use characteristics that warrant greater unique prevention messages.

With respect to gender-specific differences, past research indicates that males are more likely to misuse prescription stimulants than females (Poulin, 2007; Teter et al., 2005); however, one study found that female stimulant misusers were significantly more likely than male misusers to meet the criteria for stimulant dependence (Rabiner et al., 2009). Moreover, one study found that increased stimulant misuse was present within a specific group of college-age women at risk for or with a clinical or subclinical eating disorder (Gibbs et al., 2016). These findings highlight possible gender differences in patterns of stimulant misuse that require further investigation (Wu & Schlenger, 2003); to date, however, these possible differences in use characteristics have not been examined.

Exploration of IUPS-specific characteristics by race/ethnicity and gender is merited. The purpose of our study, therefore, was to examine racial/ethnic and gender differences in characteristics of prescription stimulant misuse (i.e., routes of administration, prescription stimulant sources, monetary costs, IUPS motives, and experiences with illicit use) in a sample of college students from two geographically and ethnically diverse universities in California who report engaging in IUPS.

2. Methods

2.1. Study design

The data are from two ethnically diverse California universities. Campus 1 data were collected from a northern California university during Spring Semester 2013. Campus 2 data were collected from a southern California university during Spring Semester 2016. At both campuses, one-stage cluster sampling was used to obtain the study sample. A random sample of instructors who taught eligible undergraduate classes (i.e., lecture-based academic courses) were asked, via e-mail, to have their students participate in a paper-based survey during the last 20 min of class time. Students who were eligible to participate (e.g., students who were 18 years or older and classified as undergraduate standing) were asked to complete a paper-based version of the updated Behavior, Expectancies, Attitudes, and College Health Questionnaire (BEACH-Q; Bavarian, Flay, Ketcham, & Smit, 2013; Bavarian, Flay, & Smit, 2013), a survey instrument created using the Theory of Triadic Influence (Flay & Petraitis, 1994; Flay et al., 2009). The BEACH-Q survey was anonymous and confidential. Participants received a small monetary gift card upon completion of the survey. Trained research staff (i.e., the principal investigator and student research assistants) conducted all data collections. This study was approved by the Institutional Review Boards (IRB) at both participating campuses.

2.2. Participants

A total of 1053 undergraduate students (n = 554 from Campus 1 and n = 499 from Campus 2) participated in this study. The average age for Campus 1 was 22.84 years and included: 57.56% Female, 21.44% White, 25.98% Asian, 35.26% Latino, and 9.07% All Other. The average age for Campus 2 was 21.6 years and included: 58.00% Female, 34.00% White, 36.00% Asian, 18.00% Latino, and 20.03% All Other. The combined response rate for both universities was 92.6% (Campus 1 was 90.5% and Campus 2 was 94.7%). The total sample included: 58.69% Female, 28.13% White, 31.05% Asian, 26.27% Latino, and 14.55% All Other. Age ranged from 18 to 67 years old, and the average age of the combined sample was 22.8 years old. Both Campus 1 and Campus 2 had survey samples that were representative of the corresponding campus.