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#### Short communication

# A survey of nonmedical use of tranquilizers, stimulants, and pain relievers among college students: Patterns of use among users and factors related to abstinence in non-users



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#### ABSTRACT

*Background:* This study examined lifetime non-medical prescription drug use among college students at a small liberal arts college in the Northeast. We assessed the motives, frequency of use, sources, and perceived emotional/physical risks of nonmedical prescription drugs. Specifically, we examined the non-medical use of prescription pain relievers, stimulants, and anti-anxiety medication.

Methods: We sent an internet-based survey to 1/3 of the student body and 303 students completed the survey.

Results: We found that 36.8% of the sample reported using prescription drugs for non-medical purposes. First-year students were less likely to have used the drugs than those in other class years. Of those reporting use, 48% reported non-medical use of pain relievers, 72.8% reported using stimulants, and 39.8% reported using anti-anxiety medication. The most commonly used pain relievers were Vicodin (hydrocodone/acetaminophen), OxyContin (oxycodone), and codeine (acetaminophen/codeine). The most commonly used stimulants were Adderall (amphetamine/dextroamphetamine) and Ritalin (methylphenidate), while the most commonly used anti-anxiety medication was Xanax (alprazolam). When non-users were asked what factors influenced their choice not to abuse prescription drugs, 82% cited a lack of interest, 61% responded it was due to a fear of damaging their physical health, and 60.1% responded fear of damaging their mental health.

Conclusion: This study supports recent findings that show widespread non-medical use of prescription drugs among college students. Our report brings a more detailed understanding of the patterns of drug usage, and the factors influencing both drug use in those who use them and abstinence in those who choose not to use them.

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#### 1. Introduction

Many studies have looked at usage, motives, and risks of non-medical prescription drug use among young adults, specifically undergraduates. The 2012 National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2013) examined the use of psychotherapeutic drugs among 18–25 year olds, and past month usage was 5.1%. Studies show the rate of non-medical prescription drug use varies among college students (Garnier-Dykstra et al., 2012; McCabe, 2008; McCabe et al., 2005a,c; McCabe and Teter, 2007; Teter et al., 2006; White et al.,

2006). More research that quantifies non-medical use of prescription drugs on the college campus is necessary, especially given the reported epidemic rates of use/abuse.

College students report using pain relievers, stimulants, and tranquilizers for various non-medical purposes. College students frequently use pain relievers (including hydrocodone products like Vicodin and codeine, and oxycodone products such as OxyContin and Percodan; Wu et al., 2008). Furthermore, stimulants are commonly used as study aids and to increase concentration (Burgard et al., 2013; Garnier-Dykstra et al., 2012; Hanson et al., 2013; Rozenbroeck and Rothstein, 2011; Teter et al., 2006). Lastly, tranquilizers are often used to amplify the high of another drug or offset its unfavorable effects (O'Brien, 2005).

The current study examines use of non-medical prescription drugs among college students at Skidmore College, a small private liberal arts college in the Capital District of New York (190

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**Table 1**Sources of pain relievers, stimulants, and tranquilizers, and when they were used.

		_	
	Pain relievers (%)	Stimulants (%)	Tranquilizers (%)
Source of drugs			
A friend gives them the drugs	59.6	78.6	60.5
Own prescription	32.7	21.4	13.2
Family member provides them	26.9	11.4	28.9
Purchases them from a friend	17.3	41.4	18.4
Purchases them from an acquaintance	9.6	14.3	7.9
Reason for use			
Studying for final exams	8.2	65.7	9.1
Studying for midterm exams	6.1	54.3	9.1
Studying for regular exams	6.1	48.6	9.1
Before attending class	2.0	31.4	12.1
Socializing and partying	69.4	47.1	48.5
Self-medication*	24	N/A	97

\* Includes pain relievers used for self-medication of pain/sleep, and tranquilizers used for self-medication of anxiety and to aid in relaxation. Participants did not list any uses for stimulants that were for self-medication, rather, the principle reason for using stimulants was for studying purposes, as indicated above.

miles north of New York City). We sent nearly 900 undergraduates an online survey that assessed non-medical use of stimulants, pain relievers, and anti-anxiety medication (tranquilizers), including the frequency of and motivations for use, routes of administration, and perceived emotional/physical risks of use. We also assessed non-users' perceptions of these drugs, why they abstain from use, and whether or not they perceive these drugs to be harmful to one's physical and mental health. We also asked user and non-user groups about polydrug use.

#### 2. Method

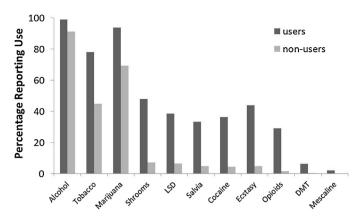
#### 2.1. Participants

Participants were students at Skidmore College ( $\sim$ 2600 undergraduates). A random sample of one third of students from each class year was contacted through email, and the survey was emailed a week before classes ended for the semester. A total of 303 students gave consent; 93 were male, 200 female, 2 other, and 8 did not indicate their gender. There were 74 first-years, 68 sophomores, 85 juniors, 67 seniors, and 9 who did not indicate their class year.

#### 2.2. Survey

The survey was created using Surveymonkey, an online survey manager, A link to the survey was emailed to randomly selected students. There was a statement of consent, and then participants were asked whether they had ever used prescription drugs non-medically. Participants who had used prescription drugs non-medically were directed to three sets of questions addressing prescription pain relievers, stimulants, and anti-anxiety medication. Users were asked which prescription drugs they had used non-medically. Prescription medications were identified by both their brand name and generic name in the survey. For example, Diazepam was presented as, 'Valium (Diazepam)'. An exception was diet pills, which were defined as 'Diet pills (Phentermine)'. They were also asked where they obtained these drugs. For example, "If you have used prescription anti-anxiety medication/tranquilizers without a current prescription and/or other than as directed by a doctor, how do you usually obtain them?" Selections included those presented in Table 1, plus 'other', where they could specify an alternate answer. One of the selections was 'Had a prescription', which was used to assess whether they had a prescription but were not using it as directed by a doctor. These data were used to calculate the percentage of users who had a prescription for each of the three categories of drugs.

Reasons for using the drugs were assessed with the following statement: "I have used prescription stimulants without a current prescription, or other than directed by a doctor, for the following reasons". Participants could then select responses that are included in Table 1, plus 'other', where they could specify an alternate answer. They were also asked about the route of administration. For example, they were asked "If you have used prescription anti-anxiety medication/tranquilizers without a current prescription and/or other than as directed by a doctor, how do you usually



**Fig. 1.** Recreational drug use between users and non-users of nonmedical prescription medications. Users were more likely to use all drugs except alcohol, which reached a ceiling in both groups.

ingest them?" Possible responses included: 'inhale', 'inject', 'snort', 'swallow', or 'other (please specify).

There were two questions that assessed user's perceptions of the drugs. First, "Do you consider using prescription stimulants without a current prescription or other than as directed by a doctor to be rewarding?" Second, "Do you consider prescription stimulants to be addictive?" These questions had yes/no answers and were asked for each of the three groups of prescription drugs. Users were also asked about polydrug use. Here, they were presented with the list of drugs in Fig. 1, along with a choice of 'other (please specify)', where they could enter in one or more additional drugs that they have used.

Participants who had not used prescription drugs for non-medical reasons were asked about their reasons for abstaining as follows: "What factors have influenced your decision to avoid using prescription drugs (i.e., pain relievers, anti-anxiety medication, stimulants etc.) without a prescription?" Participants could select more than one response, and responses included 'fear of damaging mental health', 'fear of damaging physical health', 'generally don't do drugs', 'lack of interest', 'unable to acquire', and 'other' where they could specify an additional answer. They were also asked if they considered each of the three categories of drugs to be addictive, as well as rewarding and damaging to physical/mental health. Further, they were further asked: "Do you believe that students who take ADHD/ADD drugs while studying for or taking exams have an unfair advantage over students who don't?" Finally, they were asked about polydrug use with the same question and selections as the users, as described above.

All participants were asked their gender, age, and class year. Some questions allowed participants to select more than one answer while some required only one answer, as described below. The survey concluded with instructions on clearing browser history and cache. This project was approved by the Skidmore College Institutional Review Board.

#### 3. Results

#### 3.1. Demographics

A total of 303 students consented to participate in this survey. One hundred and ten students (36.8%) indicated that they had used prescription drugs non-medically. Of these, 58.6% were female and 41.4% were male. Ages ranged from 18 to 22; 11.7% were first-years, 24.3% sophomores, 34.2% juniors, and 29.7% seniors. There were 189 students (25.4% male, 73.4% female, and 1.2% other) who reported never using prescription drugs non-medically. Ages ranged from 18 to 23; 33.3% were first-years, 22.4% sophomores, 25.7% juniors, and 18.6% seniors.

#### 3.2. Students who reported non-medical pain reliever use

Of students who reported lifetime non-medical prescription drug use, 48.0% reported using prescription pain relievers, and 32.7% had a prescription. Also, 3.9% reported using in the past week, 11.8% in the past month, 28.9% in the past year, and 55.3% over a year ago.

Vicodin (hydrocodone/acetaminophen) was the most commonly used drug (64.1%), followed by OxyContin

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