SIMULTANEOUS POLYDRUG USE AMONG FIRST AND SECOND YEAR UNDERGRADUATES IN THE HEALTH AND MEDICAL SCIENCE FACULTIES IN SEVEN UNIVERSITIES IN FIVE COUNTRIES OF LATIN AMERICA AND ONE CARIBBEAN COUNTRY: GENDER, LEGAL AND SOCIAL IMPLICATIONS

Final report of the multicenter study of the International Research Capacity-Building Program for Health-Related Professionals to Study the Drug Phenomenon in Latin America and the

1 The opinions expressed in this report are the authors’ own, and do not represent the views of the organizations or administrations where they are employed.
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Principal Investigators

Andrés Herrera Rodríguez, PhD  UNAN, León  Nicaragua
Mª. Perpétuo S.S Nóbrega, PhD  ABC University Foundation  Brazil
Rosibel Prieto Silva, MSc.PhD  National University of Colombia  Colombia
Carole Mitchell, PhD  University of the West Indies  Jamaica
Giselle Riquelme H., MSc  Catholic University of Chile  Chile
Mónica Veloza Gómez, MSc  University of La Sabana  Colombia
Joy Harrison, MSW  University of The West Indies  Jamaica
Patrice Whitehorne-Smith, MSc  University of The West Indies  Jamaica
Fabio Bautista Pérez, MSc  Evangelical University of El Salvador  El Salvador

Supervisors

Inter-American Drug Abuse Control Commission (CICAD)

Maria da Gloria M. Wright, PhD
Francisco Cumsille, Dr.P.H

Center for Addiction and Mental Health (CAMH)

Laura Simich, PhD
Carol Strike, PhD
Robert Mann, PhD
Bruna Brands, PhD

Statistical Support

Marlon Osman Meléndez Rodríguez, MSc.
Biostatistician and Epidemiologist
CIDS-UNAN León, Nicaragua
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Executive Summary

The goal of this study was to explore simultaneous psychoactive substance use among undergraduate health sciences students attending universities in Latin American and Caribbean countries.

Purpose
To improve our understanding of the patterns and social implications of simultaneous polydrug use among first and second year health and medical science students across seven universities in five Latin American countries and one Caribbean country. Further to provide information that will help universities and governments develop programs to reinforce healthy lifestyles in an effort to prevent polydrug use by university students.

Overall objective
To study patterns of simultaneous polydrug use and its social implications for the selected student population.

Specific objectives
- To observe patterns of simultaneous polydrug use in the selected population;
- To explore potential gender differences in simultaneous polydrug use;
- To explore the gender, social and legal implications of simultaneous polydrug use.

Design and method

Description
A multicentre study of first and second year health and medical sciences year students in universities across five Latin American countries (Brazil, Chile, Colombia, El Salvador and Nicaragua) and one Caribbean country (Jamaica).

Design of the study
The design was descriptive and cross-sectional, and used a survey methodology.

Population and selection of the sample
The target population consisted of first and second year undergraduate students in the health and medical sciences schools. Seven universities across five Latin American
countries and one Caribbean country were involved. In order to make the study more representative, convenience sampling was used in each university to randomly select from mandatory courses within the selected programs.

**Findings**

**Sociodemographic characteristics**

The participants were predominantly comprised of female students, with a range of 67.4% to 80.9%. The average age ranged from 19 to 21 years, with the students from the university in Kingston, Jamaica being the oldest, on average, at 29.8 years. More than 89% of the students said that they were unmarried. The highest figures for students who were married or living together was 8.0% at the university in Santo Andre, Brazil, and 7.8% at the university in Kingston, Jamaica. With regard to employment status, between 71% and 94% of the students said they were full-time students. In the case of the university in Santo Andre, Brazil, 9.8% reported having a full-time job, while 18.9% worked part time.

**Characteristics of psychoactive substance use**

The percentage distribution of those who said that they had used any psychoactive substance at least once in their lives was, in descending order, included: 74.4% (1,080) at the two universities in Cundinamarca, Colombia; 72.7% (200) at the university in Santo Andre, Brazil; 58.5% (110) at the university in Santiago, Chile; 52.1% (186) at the university in Leon, Nicaragua; 34.2% (101) at the university in Kingston, Jamaica; 101 (34.2%), and 25.2% (78) at the university in San Salvador, El Salvador. The distribution of psychoactive substance use in the past year was, in descending order, included: 66.5% (965) at the two universities in Cundinamarca, Colombia; 65.1% (179) at the university in Santo Andre, Brazil; 51.1% (96) at the university in Santiago, Chile; 42.6% (152) at the university in Leon, Nicaragua; 29.2% (86) at the university in Kingston, Jamaica; and 18.8% (58) at the university in San Salvador, El Salvador.

The percentage distribution of tobacco use in the past year was, in descending order, included: 46.6% (27) at the university in San Salvador, El Salvador; 43.8% (42) at the university in Santiago, Chile; 34.2% (52) at the university in Leon, Nicaragua; 28.3% (273) at the two universities in Cundinamarca, Colombia; 27.4% (49) at the university in Santo Andre, Brazil; and 14% (12) at the university in Kingston, Jamaica. The percentage distribution of past-month tobacco use, in descending order, included 41: 41.4% (24) at
the university in San Salvador, El Salvador; 38.5% (37) at the university in Santiago, Chile; 29.6% (45) at the university in Leon, Nicaragua; 27.5% (265) at the two universities in Cundinamarca, Colombia; 15.1% (27) at the university in Santo Andro, Brazil; and 7.0% (6) at the university in Kingston, Jamaica.

Past-year use of alcohol was as follows: 93.9% (168) at the university in Santo Andre, Brazil; 92.7% (89) at the university in Santiago, Chile; 89.5% (77) at the university in Kingston, Jamaica; 80.3% (122) at the university in Leon, Nicaragua; 70.7% (41) at the university in San Salvador, El Salvador; and 61.1% (590) at the two universities in Cundinamarca, Colombia. Past-month use of alcohol was distributed as follows: 77.1% (138) at the university in Santo Andre, Brazil; 75% (72) at the university in Santiago, Chile; 65.5% (632) at the university in Cundinamarca, Colombia; 55.2% (32) at the university in San Salvador, El Salvador; 53.9% (82) at the university in Leon, Nicaragua; and 53.5% (46) at the university in Kingston, Jamaica.

Past-year use of marijuana was as follows: 24% (23) at the university in Santiago, Chile; 18.6% (16) at the university in Kingston, Jamaica; 13.4% (24) at the university in Santo Andre, Brazil; 9.6% (93) at the two universities in Cundinamarca, Colombia; 6.9% (4) at the university in San Salvador, El Salvador; and 4.6% (7) at the university in Leon, Nicaragua. The percentage distribution of past month marijuana use was as follows: 10.3% (6) at the university in San Salvador, El Salvador; 8.1% (7) at the university in Kingston, Jamaica; 5.2% (5) at the university in Santiago, Chile; 4.5% (8) at the university in Santo Andre, Brazil; 4.2% (41) at the two universities in Cundinamarca, Colombia; and 2.6% (4) at the university in Leon, Nicaragua.

Past-year cocaine use was reported as follows: 3.9% (6) at the university in Leon, Nicaragua; 2.1% (20) at the two universities in Cundinamarca, Colombia; and 1.7% (3) at the university in Santo Andre, Brazil. Reported cocaine use in the last 30 days was as follows: 2% (3) at the university in Leon, Nicaragua; 0.7% (7) at the two universities in Cundinamarca, Colombia; and 0.6% (1) at the university in Santo Andre.

Past-year Ecstasy use was reported as follows: 1.7% (3) at the university in Santo Andre, Brazil; 1.1% (11) at the two universities in Cundinamarca, Colombia; 1% (1) at the university in Santiago, Chile; and 0.7% (1) at the university in Leon, Nicaragua. The reported use of Ecstasy in the last 30 days was as follows: 0.7% (1) at the university in...
Leon, Nicaragua; and 0.7% (7) at the two universities in Cundinamarca, Colombia. In the case of heroin use, the percentage distribution was: 0.7% (1) at the university in Leon, Nicaragua; and 0.2% (2) at the two universities in Cundinamarca, Colombia. The reported use of heroin in the past 30 days was: 0.7% (1) in the university in Leon, Nicaragua; and 0.7% (7) at the two universities in Cundinamarca, Colombia.

Past-year use of inhalants was distributed as follows: 7.8% (14) at the university in Santo Andre, Brazil; 3.4% (2) at the university in San Salvador, El Salvador; 1.7% (16) at the two universities in Cundinamarca, Colombia; and 1.3% (2) at the university in Leon, Nicaragua. Reported use of inhalants in the last 30 days was: 2.8% (5) at the university in Santo Andre, Brazil; 1.7% (1) at the university in San Salvador, El Salvador; 1.6% (15) at the two universities in Cundinamarca, Colombia; and 0.7% (1) at the university in Leon, Nicaragua.

Students self-reports of prescription drug use in the past 12 months were: 16.8% (30) at the university in Santo Andre, Brazil; 15.1% (13) at the university in Kingston, Jamaica; 11.5% (11) at the university in Santiago, Chile; 8.6% (5) at the university in San Salvador, El Salvador; 5.9% (9) at the university in Leon, Nicaragua; and 1.8% (17) at the two universities in Cundinamarca, Colombia. The percentage distribution of reported prescription drug use in the last 30 days was: 14.5% (26) at the university in Santo Andre, Brazil; 12.8% (11) at the university in Kingston, Jamaica; 11.5% (11) at the university in Santiago, Chile; 5.3% (8) at the university in Leon, Nicaragua; 5.2% (3) at the university in San Salvador, El Salvador; and 1.9% (18) at the two universities in Cundinamarca, Colombia.

**Characteristics of simultaneous polydrug use**

The distribution of simultaneous polydrug use in the past year as reported by the students was as follows: 42.7% (41) at the university in Santiago, Chile; 39.7% (23) at the university in San Salvador, El Salvador; 33.8% (326) at the two universities in Cundinamarca, Colombia; 31.6% (48) at the university in Leon, Nicaragua; 27.9% (50) at the university in Santo Andre, Brazil; and 18.6% (16) at the university in Kingston, Jamaica cases.

Reported polydrug use in the past 30 days was as follows: 36.2% (21) at the university in San Salvador, El Salvador; 31.3% (30) at the university in Santiago, Chile; 23.1% (223)
at the two universities en Cundinamarca, Colombia; 22.3% (34) at the university in Leon, Nicaragua; 16.8% (30) at the university in Santo Andre, Brazil; and 9.3% (8) at the university in Kingston, Jamaica.

The distribution of the simultaneous use of alcohol and tobacco in the last 12 months was reported as follows: 59.2% (193) at the two universities in Cundinamarca, Colombia; 52.1% (25) at the university in Leon, Nicaragua; 48.8% (20) at the university in Santiago, Chile; 34% (17) at the university in Santo Andre, Brazil; and 30.4% (7) at the university in San Salvador, El Salvador. No information was reported from Jamaica.

The simultaneous use of alcohol and tobacco in the last 30 days was reported as follows: 86.1% (192) at the two universities in Cundinamarca, Colombia; 66.7% (20) at the university in Santiago, Chile; 52.9% (18) at the university in Leon, Nicaragua; 43.3% (13) at the university in Santo Andre, Brazil; and 33.3% (7) at the university in San Salvador, El Salvador. No information was reported from Jamaica.

The simultaneous use of alcohol and marijuana in the last 12 months was reported as follows: 50% (8) at the university in Kingston, Jamaica; 30% (15) at the university in Santo Andre, Brazil; 22% (9) at the university in Santiago, Chile; 10.1% (33) at the two universities in Cundinamarca, Colombia; 6.3% (3) at the university in Leon, Nicaragua; and 4.3% (1) at the university in San Salvador, El Salvador.

The simultaneous use of alcohol and marijuana in the past 30 days was reported as follows: 50% (4) at the university in Kingston, Jamaica; 20% (6) at the university in Santo Andre, Brazil; 16.7% (1) at the university in San Salvador, El Salvador; 12.1% (27) at the two universities in Cundinamarca, Colombia; 10% (3) at the university in Santiago, Chile; and 2.9% (1) at the university in Leon, Nicaragua.

The simultaneous use of alcohol, tobacco and marijuana in the past year was reported as follows: 24.4% (10) at the university in Santiago, Chile; 18.8% (3) at the university in Kingston, Jamaica; 16% (8) at the university in Santo Andre, Brazil; 10.4% (5) at the university in Leon, Nicaragua; 8% (26) at the two universities in Cundinamarca, Colombia; and 4.3% (1) at the university in San Salvador, El Salvador.
Simultaneous past-month use of alcohol, tobacco and marijuana was reported as follows: 37.5% (3) at the university in Kingston, Jamaica; 33.3% (2) at the university in San Salvador, El Salvador; 16.7% (5) at the university in Santo Andre, Brazil; 9.4% (21) at the two universities in Cundinamarca, Colombia; 6.7% (2) at the university in Santiago, Chile; and 2.9% (1) at the university in Leon, Nicaragua.

Simultaneous past-year use of alcohol and prescription drugs was as follows: 22% (11) at the university in Santo Andre, Brazil; 12.5% (2) at the university in Kingston, Jamaica; 9.8% (4) at the university in Santiago, Chile; 8.7% (2) at the university in San Salvador, El Salvador; 6.3% (3) at the university in Leon, Nicaragua; and 1.5% (5) at the two universities in Cundinamarca, Colombia.

Past-month simultaneous use of alcohol and prescription drugs was as follows: 26.7% (8) at the university in Santo Andre, Brazil; 13.3% (4) at the university in Santiago, Chile; 12.5% (1) at the university in Kingston, Jamaica; 5.9% (2) at the university in Leon, Nicaragua; 4.8% (1) at the university in San Salvador, El Salvador; and 2.7% (6) at the two universities in Cundinamarca, Colombia.

Specific characteristics of psychoactive substance use
The following percentages of students reported that they obtained psychoactive substances on campus: 28% (15) at the university in Santo Andre, Brazil; 22.4% (73) at the two universities in Cundinamarca, Colombia; 17.1% (7) at the university in Santiago, Chile; and 12.5% (6) at the university in Leon, Nicaragua. In the universities in Kingston, Jamaica and San Salvador, El Salvador, substances were not obtained on campus. Instances were psychoactive substance were reported off campus were reported as follows: 92% (46) at the university in Santo Andre, Brazil; 83.1% (271) at the two universities in Cundinamarca, Colombia; 81.3% (39) at the university in Leon, Nicaragua; 68.3% (28) at the university in Santiago, Chile; and 65.25 (15) at the university in San Salvador, El Salvador. There were no reported cases at the university in Kingston, Jamaica was.

Gender implications of polydrug use
With regard to the influence men and women have on one another in terms of polydrug use, participants reported male influence on women as follows: 60.4% (29) at the university in Leon, Nicaragua; 37.5% (6) at the university in Kingston, Jamaica; 28% (14)
at the university in Santo Andre, Brazil; 23.6% (77) at the two universities in Cundinamarca, Colombia; 21.7% (5) at the university in San Salvador, El Salvador; and 17.1% (7) at the university in Santiago, Chile. In terms on female influences on men, the distribution was as follows: 78.3% (18) at the university in San Salvador, El Salvador; 39.6% (19) at the university in Leon, Nicaragua; 24% (12) at the university de Santo Andre, Brazil; 13.2% (43) at the two universities in Cundinamarca, Colombia; 12.5% (2) at the university in Kingston, Jamaica; and 12.2% (5) for the university in Santiago, Chile.

Social implications of polydrug use
In terms of the social implications of polydrug use, rates reported for the reasoning, “to help you to enjoy the company of your friends”, were as follows: 56.5% (13) at the university in San Salvador, El Salvador; 52% (26) at the university in Santo Andre, Brazil; 43.9% (18) at the university in Santiago, Chile; 37.5% (18) at the university in Leon, Nicaragua; 36.2% (118) at the two universities in Cundinamarca, Colombia; and 31.3% (5) at the university in Kingston, Jamaica. The main reason students gave for using more than one psychoactive substance at the same time was, “they help to make something I was doing less boring”, and was distributed as follows: 43.5% (10) at the university in San Salvador, El Salvador; 31.3% (5) at the university in Kingston, Jamaica; 29.2% (14) at the university in Leon, Nicaragua; 26.1% (85) at the two universities in Cundinamarca, Colombia; 14.6% (6) at the university in Santiago, Chile; and 12% (6) at the university in Santo Andre, Brazil.

Legal implications of polydrug use
The legal problems faced by students who had used more than one substance at a time were distributed as follows: “having been a victim of acts of violence” was reported by 25% (4) of the participants at the university in Kingston, Jamaica; 22.9% (11) at the university in Leon, Nicaragua; and 16% (8) at the university in Santo Andre, Brazil. Rates reported for the legal implication “having had automobile accidents” were as follows: 26.1% (6) at the university in El Salvador, San Salvador; 25% (4) at the university in Kingston, Jamaica; 14.6% (6) at the university in Santiago, Chile; and 12.5% (6) at the university in Leon, Nicaragua. “Having been hurt or injured by another person” was reported as follows: 37.5% (6) at the university in Kingston, Jamaica; 12.5% (6) at the university in Leon, Nicaragua; 8.7% (2) at the university in El Salvador, San Salvador; 6.4% (21) at the universities in Cundinamarca, Colombia; 6% (3) at the university in Santo Andre, Brazil; and 4.9% (2) at the university in Santiago, Chile. The consequence
Reported incidents of “trouble with the university administration” was distributed as follows: 47.9% (23) at the university in Leon, Nicaragua; 21.7% (5) at the university in San Salvador; El Salvador; 10% (5) at the university in Santo Andre, Brazil; 7.3% (3) at the university in Santiago, Chile; and 6.7% (22) at the two universities in Cundinamarca, Colombia. There were no students who reported trouble with the university administration at university in Kingston, Jamaica. Those who said that they had had problems with the police were distributed as follows: 22.9% (11) at the university in Leon, Nicaragua; 5.2% (17) at the two universities in Cundinamarca, Colombia; 4% (2) at the university in Santo Andre, Brazil; 4.3% (1) at the university in San Salvador, El Salvador; and 2.4% (1) at the university in Santiago, Chile. No students from the university in Kingston, Jamaica reported problems with the police.

Conclusions

- First and second year undergraduate students in the health and medical science faculties reported significant rates of polydrug use;

- Past-year simultaneous polydrug use reported by participants was highest at the university in Santiago, Chile (42.7%), and lowest at the university in Kingston, Jamaica (18.6 %);

- Reported rates of past-month simultaneous polydrug use was highest at the university in San Salvador, El Salvador (36.2%), and lowest at the university in Kingston, Jamaica (9.3%);

- Alcohol and tobacco were the most frequently reported combination of substances in cases of simultaneous polydrug use, both for past year and past 30 day use;

- Other frequently reported polydrug combinations included alcohol and marijuana, alcohol, tobacco and marijuana, and alcohol and prescription drugs;

- The main reasons for simultaneous polydrug were defined as “facilitators”, including: “to help me to relax”; “to help me to stay awake”; “to enhance feelings during sex”; “to help me enjoy the company of my friends”; “to help me lose my inhibitions”; “to help me keep going on a night out with friends”; “to help make
something I was doing less boring”; “to improve the effects of other substances”; and “to help ease the after-effects of other substances”;

- With regard to gender implications, overall reports indicated that men more frequently influenced women to engage in polydrug use;

- The reported legal and university administration implications included: having been a victim of violence, having been injured by another person, trouble with the university administration, and having had problems with the police.

Limitations of the study

- The low response rate to certain questions leads us to presume that the problem is under-estimated or that drug use is under-reported;

- Since the study was limited to first and second year students in the schools of health and medical science, the findings of this research may not be generalized to the entire student bodies of the participating universities, or to the countries in which they are located;

- The small sample size obtained from some of the participating universities may have introduced biases, particularly in light of the small number of cases of polydrug use;

- We understand that some of what was observed may be indicating that reporting poly-substance use is taboo.
Recommendations

To the universities

- Provide campaigns to inform students of the risk factors associated with simultaneous polydrug use. On the basis of our study, we may hypothesize that stress, economic problems, and thinking that parties are important are potential risk factors for simultaneous polydrug use;

- Encourage the formation of groups of students, families and peers to engage in discussion regarding psychoactive substance use;

- Organize activities for first-year students to help familiarize them with university life, and ease the transition;

- Provide counseling services for vulnerable students via student associations, and develop university policies and programs to promote healthy lifestyles.

To the National Drug Commissions

- Work with university leaders to include drug education in the undergraduate curriculum;

- Together with the universities and other government agencies, allocate funding to promote academic events pertaining to drug education.

To CICAD/OAS

- Continue to provide training to academics and faculty members in the field of drugs and the addictions.
Presentation

The use of psychoactive substances among university students has been discussed with increasing frequency in scientific and non-scientific literature. Quantitative and qualitative studies related to this issue are still lacking in a number of countries - particularly in Latin America and the Caribbean.

Within five countries across Latin America and one in the Caribbean, a group of upper-education professors addressed some of the existing gaps in research. Technical support was provided by the Inter-American Drug Abuse Control Commission (CICAD/OAS), and the Centre for Addiction and Mental Health (CAMH) of Toronto, Canada, while financial support came from the Government of Canada-DFAIT. All are former participants of the 2008-2009 International Research Capacity-Building Program for Health-Related Professionals to Study the Drug Phenomenon in Latin America and the Caribbean, and contributed to the development of the objectives of the current research study.

This study is an effort to shed light on drug use and addiction. In particular, it is focused on simultaneous polydrug use among first and second year undergraduate students in the health and medical sciences, and the subsequent gender, legal and social implications of such use. The participants were selected from seven universities located in five countries across Latin America, and one country within the Caribbean.

According to scientific literature, simultaneous polydrug use is rarely explored in Latin America and the Caribbean. The current report represents an initial, and creates a window of opportunity for health-related faculties to focus on efforts to prevent psychoactive substance use, as well as promote healthy campus lifestyles.

The timeframe of polydrug use in the current report is limited to the past year and past thirty days. It attempts identify the patterns of, common reasons for, and gender and legal implications associated with simultaneous polydrug use.

The findings of this study are intended to produce in-depth information and ideas, encourage the development of strategies to address drug use and abuse, and provide indicators to give impetus to public policies and interdisciplinary and multidisciplinary interventions.
Ambassador Paul Simons

Executive Secretary

Inter-American Drug Abuse Control Commission (CICAD)

Secretariat for Multidimensional Security (SMS)

Organization of American States (OAS)
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The group of professionals representing the universities participating in this multisite study wish to thank the Government of Canada/DFAIT, The Inter-American Drug Abuse Control Commission CICAD/SMS/OAS, and the Centre for Addiction and Mental Health (CAMH). In particular, its Office of Transformative Global Health, and all of the CAMH professors who shared their experience with those who participated in this important drug research training program for Latin American and Caribbean faculty members.

Thanks are due to all of the colleagues who took part in the 2008-2009 program (Group III) - for their cooperation, hard work and dedication in the preparation and development of the study. We also thank the university students who participated in the study.

We also thank all the professionals, administrative and support personnel of CICAD and CAMH for their cooperation, friendship and unending support. Also, thank you to the academic authorities of the seven participating universities for their technical and financial support in carrying out this study in each university.

Our thanks also to everyone who was directly or indirectly involved in carrying out the training program and conducting the study in each country.
Introduction

There is growing concern around the region that increasing drug use and risky behavior among university students in Latin America and the Caribbean is endangering their wellbeing and increasing health care costs across every country. Simultaneous polydrug use is a complex part of this concern, and is believed to have legal and social implications for users, as well as their friends and families. Multidimensional intervention approaches are needed to address these implications.

Increasing substance abuse among university students is a significant public health crisis in some countries. According to a 2007 CASA study, *Wasting the Best and the Brightest: Substance Abuse at America’s Colleges and Universities*, the main drug of abuse among students is alcohol, with rates ranging from 65%-70%. This trend has intensified in recent decades and, as a result, students are now immersed in a drug abuse culture that is detrimental to the academic environment, and has various social and health implications that extend to surrounding communities. Although alcohol remains as the substance of choice among students on campus, the use of marijuana and other illicit substances has doubled from 1.9% to 4.0%, while cocaine use has increased by 52% (CASA, 2007).

University students are at risk for simultaneous polydrug use and subsequent drug-related problems. Various risk factors contribute to the vulnerability of this population, including the transition from high school to university, environmental availability of psychoactive substances, their stage in life, the degree of social acceptance, peer pressure, and their complex family dynamics. Both the adaptation process and response to pressures associated with these demands contribute to the risk of engaging in polydrug use. This is a problem that must be addressed, as it places students’ overall wellbeing at risk.

A review of scientific literature garnered little information pertaining to psychoactive substance use among university students; that which does exist is limited to alcohol use and related problems university settings. Most available research studies concentrate on the combined use of particular substances, such as alcohol and marijuana, and pay little attention to the simultaneous use of several psychoactive substances. This is particularly true for developing countries and regions such as Latin America and the Caribbean.
In addition, licit or illicit psychoactive substance use among health and medical science professionals may be harmful to patients under their care, as it influences their capacity and accountability as health service providers.

The findings of the current study will provide important information regarding simultaneous polydrug use among first and second year health and medical sciences students in seven universities across five Latin American countries, and one in a single Caribbean country. In particular, an evidence-based understanding of gender, legal, and social implications will be useful in the development of preventative and intervention strategies targeting polydrug use on university campuses.

**Justification**

Worldwide trends have demonstrated troublesome increases in drug use (United Nations, 2008) which have been reflected among the university student population (Laranjo & Soares, 2006; Simons, Gaher, Correia, Hansen & Christopher, 2005). The transition from high school to university may be a very stressful experience, and the university culture often promotes the use of alcohol or other substances to help manage stress and relaxation (Pillon, O'Brien & Chávez, 2005). Further, university campuses may offer a new culture in which students are presented with opportunity to experiment with various substances. Thus, for some students, living independently with little parental interaction or control may facilitate substance use or abuse (Pillon, O’Brien & Chávez, 2005; Read, Wood, Davidoff, McLacken & Campbell, 2002).

Support for new prevention and intervention measures requires an understanding of the patterns of drug use among university students in our countries. According to Brazilian researchers Andrade, Queiroz, Villaboim, Cesar, Alves and Bassit (1997), the recreational use of drugs by undergraduate students is a matter for concern, particularly given their importance to the future of society in a very complex world.

According to Maddux, Hoppe & Costello (1986), health and medical sciences students are substance users or abusers. In a sample of 133 medical students in the United States, almost all used alcohol, 57% had used marijuana, approximately 20% cocaine and 40% opioids. Welsh (2008) noted that many medical students initiated substance use before entering medical school, with alcohol as the most frequently used substance. Reasons for the recreational use of these substances included performance enhancement, as well as the
self-medicating of stress, anxiety and pain. Upegui (1995), cited in Urrego (2002), found that, among medical students in Bogotá, Colombia, stress of final year medical internships resulted in significant increases in symptoms of anxiety, depression, and somatic disorders, as well as psychoactive substance use and deterioration in the quality of life of some of the students.

Health and medical science students are of particular interest to researchers because they are expected to become health care professionals who deliver care to the community - a role that may be more demanding than other professions. These individuals tend to be underrepresented in studies of this nature, as they are not often thought of as substance users (Maddux, Hoppe & Costello, 1986). These students require special attention in terms of the use of alcohol and other types of psychoactive substances, inasmuch as they are the people who will provide health care information to the community in the future (Mesquita, Henriette, Castel & Andrade, 1995).

A review of the scientific literature pertaining to simultaneous drug use shows limited international studies with focus on university students. In regions such as Latin America and the Caribbean, such studies appear to be non-existent. Thus, research is needed on the subject: university students can take action on this world-wide problem rather than passively accept its influence on their life plans and potential role as stakeholders in society.

The present study set out to identify the combinations of psychoactive substances (licit and illicit) most frequently used among health and medical science university students within the region, as well as patterns of simultaneous polydrug use. Results of the study provide an understanding of the extent of the problem, as well as any related gender, legal and social implications. When substances are used simultaneously, certain desirable effects can be enhanced, undesirable effects reduced, or effects can be more manageable (Barrett, et.al, 2006).

**Background on the participating countries**
Sociodemographic data related to licit and illicit drug use in each of the participating countries are provided below.
**Brazil**

Brazil is the largest country in South America. It is located in the north-east of the region, with an approximate area of 8,511,965 sq. km. It has a population of 180,655,000. The mean age is 28.2 years, with 28% of the population under the age of 15, and 8% over the age of 60. There are 6,142,935 inhabitants within the 20-24 age range, 1,690,872 of which are university students (Brazilian Institute of Geography and Statistics [IBGE], 2005).

The most recent national household survey on drug use and drug-related information covered those aged 12-65 (Carlini, Galduróz, Noto & Nappo, 2005), and reported that 22.8% of the population had used an illicit drug at least once in their lives. Alcohol dependence was estimated at 12.3%, and 10.1% for tobacco. In addition, there was a high prevalence of cannabis use at 8.8%, followed by solvents at 6.1%. Rates of use for cocaine, crack and *merla* (cocaine paste) were 2.9%, 0.7% and 0.2%, respectively. Of medication used without a prescription, lifetime use of anxiolytics was 5.6%, followed by a 3.2% use of stimulants (amphetamines).

The 18-24 age group, which included university students, reported the highest prevalence of licit and illicit drug use. Among university students specifically, alcohol was consumed most often, with rates of 83.2% among males, and 72.6% among females. Tobacco use came in second place, with a prevalence of 42.4% among males, and 33.9% among females. The illicit drug most frequently used was marijuana, with a prevalence of 21.8% among males, and 12.6% among females (Carlini, Galduróz, Noto & Nappo, 2005).

**Chile**

Chile is located in South America, and its capital is Santiago. It has an area of 756,950 km², and an estimated population of 15,116,435. Of this, 50.7% are female, and 49.3% male, with 25.7% of the population under the age of 15, and 11.4% over the age of 60 (National Statistics Institute [INE], 2002).

Among the general population, alcohol is most commonly consumed at 83.5%. This is followed by tobacco at 67.4%, marijuana at 16.7%, benzodiazepines at 7.8%, and cocaine at 3.0% (OAS/CICAD, 2006). Broken down by sex, the prevalence of illicit and licit substance use was 75% among males, and 55.7% among females. The prevalence of marijuana use among males was 20.4%, and 8.6% among females (CONACE, 2004). The highest prevalence of drug use is found among the 19-25 age group (National Drug Control Council [CONACE], 2004).
Colombia

Colombia is a republic in the north-west of South America, with an area of 1,141,748 sq. km. It is divided administratively into 32 departments, with Bogotá as its capital district. (Agustín Codazzi Geographical Institute, 2002). The official language is Spanish. According to the most recent census conducted in 2005, Colombia has 41,468,384 inhabitants, with approximately 16.35% living in the capital city, and 76.8% in other urban areas. Fifty-one per cent of the population is female (National Statistics Administration Department [DANE], 2005). Life expectancy at birth (DANE projections for the five years 2000-2005) was 72.2 years (69.2 for men and 75.3 for women). Of the population, 28.6% is aged 25-44 years; 20.8% is 5-14 years; 18.3% is 15-24 years; 16.1% is 45-64 years; 6.3% are over 65 years, and 9% are aged 0-4 years (National Statistics Administration Department [DANE], 2005).

The most frequently consumed substances among 10-24 year olds are alcohol and tobacco. Alcohol is also most frequently consumed across the country, with reported rates of lifetime use at 80.08%, past year use at 61.18%, and past month use at 34.77% (Giraldo, Dennis, Solarte, Jurado, Molina & Vera, 2006). Reported rates of tobacco use include 44.49% lifetime use, 21.46% past year use, and 17.06% past month (Ministry of the Interior and Justice, Colombia, 2009). Further, a recent study indicated that 6 out of every 10 students begin to use tobacco in high school, and 1 in 2 students consider themselves current smokers (Giraldo, Dennis, Solarte, Jurado, Molina & Vera, 2006).

El Salvador

El Salvador is situated on the Central American Isthmus, and its capital is San Salvador. With an area of 20,000 sq km, the country has 6 million inhabitants. Its official language is Spanish (CICAD/OAS, 2006). A study conducted by Rivas de Río and Jenner (2004) identified the most frequently consumed drugs among university students to be alcohol (24.8%) and tobacco (19.20%). According to the CICAD/OAS report (2006), the prevalence of alcohol use was 64.10% among males, and 30.33% among females. Further, tobacco use among males was 59.39%, and 19.22% among females. A portion of the population used solvents or inhalants (3.11% of males, 0.08% of females), marijuana (13.02% of males, 0.22% of females), cocaine hydrochloride (3.89% of males, 0.20% of females), crack (1.87% of males, 0.02% of females), tranquilizers/sedatives/anxiolytics (16.74% of males, 18.57% of females), and stimulants (6.93% of males, 7.87% of females).
**Jamaica**

Jamaica is an independent island nation in the West Indies, with an area of 10,991 sq km, and an estimated population of 2,804,332 inhabitants. Thirty-two per cent of the Jamaican population is below the age of 14 (455,871 male and 440,928 female); 60.6% are between the ages of 15 and 64 (837,241 male and 861,906 female); and 7.4% are 65 years and older (93,415 men and 114,971 women). The mean age of the population is 23.4 years (22.0 years for men and 24 years for women) (*Jamaica*, 2008; Central Intelligence Agency [CIA], 2008).

Lifetime prevalence of drug use among secondary and university students in 2006 was 71.1% for alcohol, and 1.4% for hallucinogenics and opium. Within this population, the average age of first use of alcohol 11 years for males, and 12 years for females. The age of first use of tobacco was 13 for both males and females (Organization of American States, 2006).

**Nicaragua**

Nicaragua is situated in the Central American Isthmus, with an area of 130,682 sq km, and a population of 5,596,000. Its capital is Managua. While the national language is Spanish, residents of the Caribbean coast may also speak English, Creole and Miskito (Nicaraguan Institute for Statistics and the Census [INEC], 2005). Thirty-four per cent of the population (1.9 million) is between the ages of 10 and 24 years. Forty-one per cent of the population is under the age of 15 years, with 5% over 60. The literacy rate is 76.8% among males, and 76.6% among females (INEC, 2005).

Lifetime prevalence of cocaine use among those aged 12-65 is 2.5%, while the lifetime prevalence of Ecstasy is 0.2%, marijuana is 7.91%, crack is 1.29%, and other illicit drugs is 8.8%. A study on past year alcohol use reported a rate of 30% among 18-24 year olds, while regular tobacco use was reported by 93.5% of those aged 12-65 (OAS/CICAD, 2006; Pan American Health Organization [PAHO] & WHO, 2006).
Polydrug use refers to the consumption of two or more psychoactive substances. The use can be simultaneous (use of several drugs at the same time), or take place on different occasions (McCabe, Cranford, Morales & Morales, 2006). This study employs a biopsychosocial perspective as a conceptual framework for examining simultaneous polydrug use (Krieger, 2002; Stiefel, Huyse, Söllner et al. 2006; Huyse, Lyon, Stiefel et al. 2001; Adult Addictions Services Branch, Alcohol and Drug Services, British Columbia Ministry for Children and Families, 1996). Based on this theory, as well as existing work on spiritual and cultural dimensions of mental health and drug use, we posit that polydrug use is the result of complex interactions among biological, psychological and social (cultural, economic and spiritual) factors (Adult Addictions Services Branch, Alcohol and Drug Services. British Columbia Ministry for Children and Families, 1996, and González-Menéndez, 2004). Thus, the current study employs a holistic approach to establish the relationship between said factors and simultaneous polydrug use among students in the participating universities (see Figure 1).
Figure 1. Understanding simultaneous polydrug use

Review of the scientific literature
Scientific literature related to the development of this study is discussed below. Further, the gender, social and legal implications of psychoactive substance use, polydrug use, and simultaneous polydrug use are explored.

Psychoactive substance use
Psychoactive substance use among university students is increasing significantly. A longitudinal study conducted by CASA between 1993 and 2005 showed that 49.45% of full-time university students in the United States drink until they are drunk, misuse prescription drugs, or abuse illegal drugs. Further, it indicated that, in 2005, 22.9% (almost one in four students) met the medical criteria for substance abuse and dependence. This prevalence rate was almost three times higher than 8.5% of the general population (CASA, 2007).

Figure 2 provides estimates of alcohol use derived from five data sources: Monitoring the Future (MTF) of the University of Michigan, the Core Survey of the Southern Illinois University, Center of Alcohol Studies (CAS) at Rutgers University, Harvard School of Public Health, and the National College Health Risk Behavior Survey (NCHRBS). The most recent data from CAS and MTF indicate that the prevalence of past 30-day alcohol use among full-
time university students, aged 19-22, was 69.6% (MTF, 1999). In other words, two out of three university students had consumed alcohol in the 30 days prior to the survey. Figure 2 further demonstrates that, of these university students, 40% engaged in binge drinking at least once in the past two weeks (MIT, 1999). In other words, more than half of those who drank in the past 30 days (approximately 70%) did so excessively on at least one occasion in the previous two weeks.

Four of the five sources in Figure 2 confirm a high prevalence of alcohol use. The MTF, CAS, NCHRBS and Core studies enable us to say that “approximately 2 out of 5 American university students may be considered problem drinkers”.

The CAS study found a 44% alcohol prevalence rate in 1993, and 43% in 1997. This study defined heavy alcohol use as a minimum of five drinks for men and four for women over a two week duration. The NCHRBS study reported that in 1995, 42% of university students between the ages of 18 and 24 had consumed five or more alcoholic beverages at least once in the 30 days prior to the survey.

Figure 2. Past year and past thirty day prevalence and heavy alcohol use among university students (Source: MTF, CAS, NCHRBS, CORE, NHSDA)
**Polydrug use**

A study by McCabe et al. (2006) found that the prevalence of polydrug use of alcohol and prescription drugs was 12.1% (6.9% simultaneous polydrug use). The most frequent polydrug use by those surveyed was of alcohol and prescription drugs, with the exception of sleeping pills. The study found that simultaneous polydrug use was more prevalent among male students, and that they began to drink alcohol at an early age.

In two studies financed by the National Institute on Drug Abuse (NIDA), researchers at the University of Michigan found that the significant proportion of young adults are at risk for concurrent or simultaneous abuse of alcohol and prescription drugs. They concluded that most of those abusing alcohol and prescription drugs fell into the 18-24 age group. A Midwest University study focusing on a population of 4,580 young adults found that 7.0% of those surveyed had consumed non-prescribed medication simultaneously with alcohol (Ashton, 2008).

O’Reily & Jessen’s 2005 study on the use of cannabis among university students in Australia demonstrated that polydrug use was common, with 25% of students having used alcohol and tobacco simultaneously within the last six months of the study. Over the same period, 5% of students used cannabis and amphetamines or Ecstasy, and 1% used opioids and cannabis simultaneously.

The factors identified in this study as having played an important role in the patterns of use in two studies financed by NIDA included the students’ academic performance, place of residence, and the university program in which they were enrolled. For example, as the academic performance of students declined, rates of polydrug use increased. Further, those students living in residence or campus dorms were two to three times more likely to use substances. Similarly, those who lived independently off campus were twice as likely to use substances compared to students who lived at home with family.

A study by Webb, Ashton, Kelly & Kamali (1996) examined rates of substance use among 1,610 male and 1,447 female second year students in ten universities across the United Kingdom. Results demonstrated that, 11% of the participants did not drink alcohol. Of those who did, females reported rates of more than 14 drinks per week, and males 21 drinks per week. Sixty per cent of the males sampled used marijuana, compared to 55% of females. Twenty per cent of the students were regular substance users - defined as consuming substances every week or even more often. Thirty-three per cent of those surveyed reported
having used drugs such as LSD, amphetamines, Ecstasy and amilo/butilo nitrate. Overall, 34% of the participants reported that they were simultaneous polydrug users. The study noted that the principal reasons for using drugs were “feelings of pleasure” (89% males, 92% females); “anxiety” (17% males, 22% females); “increased confidence” (22% males, 33% females), and “habit” (31% males, 22% females). Forty-six per cent of those surveyed began their substance use before they entered university, while 13% initiated use after their first year at university.

According to Barrett, Darredeau and Pihl (2006), tobacco is the psychoactive substance university students most commonly combine with all other substances, with the exception of cocaine and mescaline. In general, they found that tobacco, alcohol and cannabis are the substances most often used simultaneously, and that most of the users of these substances have used them simultaneously.

**Gender implications of polydrug use**

According to Gore, Harris and Firestone (2000), there are biological reasons why there is a difference in rates of drug use in men and women. Citing other sources, they indicate that because of lower body weight, women absorb alcohol more rapidly and have higher blood alcohol levels than men. Women tend to notice more quickly that they have become intoxicated and therefore tend to drink less in order to reduce their blood alcohol content. Other factors that contribute to the differences in men’s and women’s patterns of alcohol use are age, and family and gender roles.

This explanation is supported by De Boni & Pechansky (2002), two Brazilian researchers, whose study found that women drug users are at greater risk of unprotected sex than men, and as a result, are at greater risk of contracting HIV. They explain that the risk is linked not only to the fact that when drunk, women are more easily drawn into this kind of behavior, but also because of sociocultural questions that make it more difficult for women to negotiate condom use with their partners than vice versa.

Andersen (2003), quoted by Gore et al., (2004), indicates that gender is a social construct of the functions (roles) that are perpetuated by the agents of socialization (family, school, church, and so on), and a significant factor in the patterns of drug use (particularly alcohol), by men and women.
A study conducted in a university in Brazil by Wagner, Stempliuk, Zilberman, Barroso and Andrade (2007) showed that although males use more psychoactive substances than women, female drug use has increased significantly. They also found that the use of licit and illicit drugs was much higher among men, except for analgesics and amphetamines, use of which by women was greater. The reasons for this difference are related to society’s perception of women who use drugs, and that the use of prescription medicines is more socially acceptable. They also cite other sources that indicate that the difference might be the result of how women manage and express anxiety and stress.

Social implications of polydrug use

A multisite study, where countries such as Canada, the United States (Office of National Drug Control Policy [ONDCP], 2004), and Australia participated showed the possible social burden of drugs to society. The study estimated that the economic costs of substance abuse in Canada in 1992 were 2.7% of GDP or US$40 per capita. Twenty-nine per cent of this amount went for law enforcement and 6% for health services. Sixty per cent of the total cost was largely related to loss of productivity as the result of illness, premature death or crimes related to drug use (Xie. X. 1998); (UNODC, 2011).

In Australia, the social cost of licit and illicit drug use was 4.8% of GDP, or the equivalent of $1.2 million or $70 per inhabitant (Collins DJ. & Lapsley. H.M., 1996); (UNODC, 2011). Thirty-two per cent of this cost was due to a drop in productivity, 26% was related to deaths, 18% to the funding of prisons and the courts, and 13% was related to the treatment of drug dependency. Other social consequences noted in this study were related to the family and/or the breakdown of the community, and the social cost of high levels of drug use associated with emergency room visits and the impaired cognitive capacity of drug users, which led to poor academic performance.

Klingemann (2003) indicated that alcohol use by adolescents and young adults may be the result of problems at school, and that alcohol use might affect the users’ capacity to prepare for tests and exams and/or attend class. He cited other related findings such as truancy, dropping out of school, being suspended or held back, participation in school activities, and attitudes towards school and teachers—findings related to different levels of alcohol use.

According to the Core survey on alcohol and drugs, 22% of the students who took part in the survey failed their coursework; 28% had missed class in the past year because of alcohol use; 26% reported memory blackout because of the use of alcohol and other drugs;
13% reported having suffered injuries; 47% reported symptoms such as nausea and vomiting, and 40% had had a hangover.

In another study, 5.1% of users of psychoactive substances reported suicidal ideation, and 1.6% reported a suicide attempt during the past year (Perkins, 2002).

A study conducted in a school in New York showed that 25% of those surveyed admitted to engaging in risky sexual behaviors, which were sometimes unwanted (Douglas Kirby, D., al. el 1994). Fourteen per cent (14%) of participants in the Core study had been subjected to forcible sex or rape while they were under the influence of a substance (Perkins, 2002). Fifty-five per cent of female undergraduates were victims of sexual aggression, attempted sexual aggression, sexual abuse, intimidation, unlawful detention, and at least one attempt at assault and battery. These incidents occurred when the women had been drinking; 60% of the women reported have suffered harm, whether moderate or serious, at the time of the incidents (Frintner and Rubinson, 1993 cited in Perkins, 2002).

**Legal implications of psychoactive substance use**

Much of what is found in the scientific literature about legal issues related to the use of psychoactive substances by university students related more to drug use involvement rather than to the true consequences of use.

This might be because crimes committed on campus are not reported to local authorities, but are considered as internal matters within the universities (Engs & Hanson, 1994). As a result, it is difficult to determine whether or not there has been an increase or a decline in legal issues resulting from the use of psychoactive substances on campus. Engs & Hanson (1994) were able to obtain the following statistics from the University Student Affairs Office:

- Between 11.6% and 17.2% of violent acts on university campuses were associated with the use of alcohol and other drugs.
- Between 9.3% and 10.5% of acts of vandalism on campus were associated with drug and alcohol use.
- Between 1.9% and 2.5% of substance abusers have problems with the school administration.

Citing other sources, Engs & Hanson (1994) noted that 81% of violent acts committed against persons and property on campus were alcohol-related, and that alcohol was
associated with 75% of the vandalism that occurs on university campuses in the United States.

The CORE study suggested that 33% of university students who have driven a car under the influence of a psychoactive substance had at least one adverse outcome. In their study, Engs & Hanson (1994) state that 17% of males and 10% of females who were moderate to heavy weekly drinkers of alcohol reported having driven a vehicle under the influence of alcohol. Among heavy alcohol users, 56% of the men and 43% of the women reported having driven a car under the influence of alcohol.

**Terminology used**

**Psychoactive substance use**
Used interchangeably with “drug use”. It refers to the use of psychoactive substances that act on the central nervous system and produce addiction or potential abuse in users because of their effects on the brain. In the present study, these substances refer to alcohol, tobacco, marijuana, cocaine/crack, heroin, inhalants, Ecstasy and medically prescribed psychoactive drugs, as well as any other psychotropic substance indicated by respondents.

**Simultaneous polydrug use**
Refers to the use by the same person of more than one psychoactive substance at the same time.

**Psychoactive prescription drugs**
Used interchangeably with “prescribed psychotropic medication”, and refers to pharmaceutical products generally prescribed by a doctor that act on the central nervous system in such a way that the individual may be at risk of abuse and/or dependence because of their effect on the brain. For the purposes of the present study, prescribed psychoactive drugs refer to opioid analgesics (such as codeine), stimulants (such as Ritalin) or sedatives and tranquillizers (such as benzodiazepines).

**Abstainer**
A person who states that he or she has never used any of the psychoactive substances considered in this study.
**Undergraduate student**
Undergraduate student in the first or second year of study in the schools of health and medical sciences in the seven universities included in the study.

**Gender**
Gender is a cultural construct. It refers to the socially-determined roles and responsibilities of women and men, and is related to the way in which men and women are perceived as thinking and acting, or are expected to think and act as a function of the way in which society is organized, and not because of biological differences. (Butler, 1990)

**Social implications**
Refers to the possible cause and effect relationships between simultaneous polydrug use and the student’s interaction, as a social being, with others or in a group.

**Legal implications**
Refers to the possible cause and effect relationships between simultaneous polydrug use and the rules or normative systems that form part of the student’s social context and that are the principal social mediators of interpersonal relations.

**Pattern of simultaneous polydrug use**
Refers to the different combinations of psychoactive substances that a university student may use at the same time.

**Research question**
What are the patterns of simultaneous polydrug use by first and second year undergraduate students in the schools of health and medical sciences in seven universities in five Latin American countries and one Caribbean country, and the gender, social and legal implications of such use?
Objectives

**Overall objective**
To examine the patterns of simultaneous polydrug use by first and second year undergraduates in the schools of health and medical sciences in seven universities in five Latin American and one Caribbean country, and the social implications of such use.

**Specific objectives**
- To observe the patterns of simultaneous polydrug use by students in the selected population.
- To explore potential gender differences in simultaneous polydrug use.
- To explore the gender, social and legal implications of simultaneous polydrug use.

Methodology

**Description**
A multisite study of first and second year undergraduates in the schools of health and medical sciences in seven universities in five Latin American and one Caribbean country.

**Study design**
The design was descriptive and cross-sectional, and used a survey methodology, as described by Hernández, R., Fernández, C., Sampieri, P. (2008).

**Population and selection of the sample**
The target population consisted of first and second year undergraduate students in the health and medical sciences schools of seven universities in five Latin American countries and one Caribbean country. Convenience sampling was used. In order to make the study more representative (Creative Research System. 2008), in each university the courses selected for the study were chosen at random from among the mandatory courses in the selected programs (Polit, D., & Hungler, B., 1994).
Table 1. Population and sample

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>No. of participating universities</th>
<th>Population 1st &amp; 2nd year (N)</th>
<th>Sample (n)</th>
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<tbody>
<tr>
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<td>1</td>
<td>513</td>
<td>275</td>
</tr>
<tr>
<td>Chile/Santiago</td>
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<td>Colombia/Cundinamarca</td>
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<td>1,452</td>
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<td>El Salvador/San Salvador</td>
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<td>1,800</td>
<td>309</td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>1</td>
<td>1,800</td>
<td>295</td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>1</td>
<td>1,750</td>
<td>357</td>
</tr>
<tr>
<td><strong>Total population/sample</strong></td>
<td><strong>7</strong></td>
<td><strong>10,847</strong></td>
<td><strong>2,876</strong></td>
</tr>
</tbody>
</table>

*Source: (Faculdade de Medicina do ABC (2008)).

**Instrument**

Data were collected via application of a questionnaire developed by the investigators. This instrument was constructed using some questions from existing questionnaires: Boys, Marsden & Strang (2001); CASA (2007); Ewing (1984), and the Canadian Survey (2004).

The final questionnaire, which was semi-structured, consisted of 58 questions, organized into four sections: (1) sociodemographic information; (2) information on psychoactive substance use; (3) social experiences, and (4) other. Some questions were open-ended. The questionnaire was originally developed in English, and was then translated into Spanish and Portuguese, and then retranslated back into English.

In order to validate the questionnaire, each researcher administered the instrument to ten students who met the requirements for inclusion and who gave their informed consent. The data from the seventy instruments were sent to the Centre for Addiction and Mental Health (CAMH) in Ontario, Canada for analysis of their validity and internal consistency (Cronbach’s alpha). As a result of the analysis, adjustments were made to the terms or language used in each country so as to make the questions easily understood in each language (face validity) but preserving the meaning of the question.

The questionnaire included questions about sociodemographic variables, psychoactive substance use and polydrug use, as well as items on the social and legal consequences associated with use.
**Recruitment method and data collection procedures**

After the study had been presented to the authorities of the participating universities, the principal investigator in each university recruited the subjects and administered the questionnaire, along with trained assistants.

The survey was administered in the different universities between November 2008 and April 2009. The principal investigator told the students about the nature of the study (objectives, methodology and ethical considerations) and answered questions. Participation was voluntary, and an informed consent form was signed by all. The questionnaire was self-administered. The participants had the opportunity to withdraw voluntarily from the study. When they had completed the survey, the students deposited their informed consent forms and the questionnaire in separate boxes.

**Data analysis**

The statistical analysis was primarily descriptive. The chi-squared test was used to correlate simultaneous polydrug use with some gender, legal and social variables. A 95% confidence level was used (Draper & Smiths, 1981). The data analysis was done using the SPSS statistical program, version 15.0.

**Ethics approval**

Approval for conducting this study was sought from the Research Ethics Board of the Center for Addiction and Mental Health (CAMH) of Canada and the Ethics Committees of each participating university.
### Results

#### Sociodemographic Characteristics

#### Sex and Age

Table 2 provides the distribution of age and sex among the study participants. It indicates a predominance of females in the samples from all participating countries, and a median age range of 19 to 21 years.

#### Table 2. Age and Sex of Participants, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Age</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>20.1</td>
<td>20</td>
<td>49</td>
<td>139</td>
<td>73.9</td>
<td></td>
</tr>
<tr>
<td>N=188</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>20.5</td>
<td>20</td>
<td>421</td>
<td>1,028</td>
<td>70.9</td>
<td></td>
</tr>
<tr>
<td>N=1449</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>19.5</td>
<td>19</td>
<td>59</td>
<td>250</td>
<td>80.9</td>
<td></td>
</tr>
<tr>
<td>n=309</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>29.8</td>
<td>21</td>
<td>58</td>
<td>237</td>
<td>80.3</td>
<td></td>
</tr>
<tr>
<td>n=295</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>19.5</td>
<td>19</td>
<td>116</td>
<td>240</td>
<td>67.4</td>
<td></td>
</tr>
<tr>
<td>n=356</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database
**Marital Status**

Table 3 provides the marital status of the study participants; more than 90% were unmarried.

**Table 3. Participant Marital Status, by Country/Place**

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Married</th>
<th>Living Together/Common Law</th>
<th>Separated/Divorced</th>
<th>Unmarried</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  %</td>
<td>N  %</td>
<td>N  %</td>
<td>N  %</td>
</tr>
<tr>
<td>Brazil/Santo Andre N=273</td>
<td>18 6.5</td>
<td>4 1.5</td>
<td>5 1.8</td>
<td>246 90.1</td>
</tr>
<tr>
<td>Chile/Santiago N=183</td>
<td>1 0.5</td>
<td>5 2.7</td>
<td>1 0.5</td>
<td>181 98.9</td>
</tr>
<tr>
<td>Colombia/Cundinamarca N=1448</td>
<td>21 1.4</td>
<td>42 2.9</td>
<td>10 0.7</td>
<td>1,375 94.9</td>
</tr>
<tr>
<td>El Salvador/San Salvador N=309</td>
<td>2 0.6</td>
<td>5 1.6</td>
<td>-</td>
<td>302 98.7</td>
</tr>
<tr>
<td>Jamaica/Kingston N=295</td>
<td>15 5.1</td>
<td>8 2.7</td>
<td>3 1.0</td>
<td>269 91.2</td>
</tr>
<tr>
<td>Nicaragua/Leon N=355</td>
<td>6 1.7</td>
<td>9 2.5</td>
<td>3 0.8</td>
<td>337 94.9</td>
</tr>
</tbody>
</table>

Source: Multicenter database

**Weekly Attendance on University Campus**

Table 4 illustrates weekly campus attendance among participants. There was a predominance of full-time students in all universities, with the exception of the university in Santo Andre, Brazil, where 57.8% of those surveyed were part-time students.

**Table 4. Weekly Campus Attendance, by Country/Place**

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  %</td>
<td>N  %</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=275</td>
<td>116 42.2</td>
<td>159 57.8</td>
</tr>
<tr>
<td>Chile/Santiago n=188</td>
<td>186 98.9</td>
<td>2 1.1</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=1415</td>
<td>1,146 80.9</td>
<td>269 19.0</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=309</td>
<td>280 90.6</td>
<td>29 9.4</td>
</tr>
<tr>
<td>Jamaica/Kingston n=294</td>
<td>281 95.5</td>
<td>13 4.4</td>
</tr>
<tr>
<td>Nicaragua/Leon n=357</td>
<td>352 98.6</td>
<td>5 1.4</td>
</tr>
</tbody>
</table>

Source: Multicenter database
**Current Employment Status**

Table 5 details employment status among participants, the majority of whom reported that they did not work.

**Table 5.  Current Employment Status of Participants, by Country/Place**

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Employed</th>
<th>Not Employed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Studying Full-Time</td>
<td>Studying Part-Time</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=275</td>
<td>27</td>
<td>9.8</td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>3</td>
<td>1.6</td>
</tr>
<tr>
<td>n=188</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>49</td>
<td>3.4</td>
</tr>
<tr>
<td>n=1444</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>n=309</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>18</td>
<td>6.1</td>
</tr>
<tr>
<td>n=293</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>n=357</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

**Importance of Religion/Beliefs**

Table 6 indicates the importance of religion/beliefs among participants. The two most popular responses included: “very important”, among students from the universities in San Salvador, El Salvador, Kingston, Jamaica, Leon, Nicaragua and Santiago, Chile; and “important”, among students in the two universities in Cundinamarca, Colombia and one in Santo Andre, Brazil.
Table 6. Importance of Religion/Beliefs among Participants, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Very Important</th>
<th>Important</th>
<th>Somewhat Important</th>
<th>Not Important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=275</td>
<td>103</td>
<td>37.5</td>
<td>109</td>
<td>39.6</td>
</tr>
<tr>
<td>Chile/Santiago n=188</td>
<td>91</td>
<td>48.4</td>
<td>63</td>
<td>33.5</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=1443</td>
<td>506</td>
<td>35.1</td>
<td>626</td>
<td>43.4</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=309</td>
<td>230</td>
<td>74.4</td>
<td>71</td>
<td>23.0</td>
</tr>
<tr>
<td>Jamaica/Kingston n=295</td>
<td>197</td>
<td>66.8</td>
<td>67</td>
<td>22.7</td>
</tr>
<tr>
<td>Nicaragua/Leon n=365</td>
<td>223</td>
<td>61.1</td>
<td>98</td>
<td>26.8</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Student Place of Residence

Table 7 indicates where and with whom participants resided during the time of the study. Most reported that they were living at home with parents and/or siblings.

Table 7. Place of Residence among Participants, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>University Hall of Residence</th>
<th>At Home (with Parents and/or siblings)</th>
<th>With other Family Members</th>
<th>Outside of University Residence With Classmates</th>
<th>Alone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=273</td>
<td>-</td>
<td>-</td>
<td>234</td>
<td>85.7</td>
<td>19</td>
</tr>
<tr>
<td>Chile/Santiago n=186</td>
<td>10</td>
<td>5.3</td>
<td>145</td>
<td>77.9</td>
<td>13</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=1378</td>
<td>91</td>
<td>6.6</td>
<td>1,003</td>
<td>72.8</td>
<td>163</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=303</td>
<td>2</td>
<td>0.6</td>
<td>246</td>
<td>81.2</td>
<td>32</td>
</tr>
<tr>
<td>Jamaica/Kingston n=292</td>
<td>64</td>
<td>21.9</td>
<td>148</td>
<td>50.7</td>
<td>27</td>
</tr>
<tr>
<td>Nicaragua/Leon n=330</td>
<td>72</td>
<td>21.8</td>
<td>170</td>
<td>51.5</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: Multicenter database
Education Levels among the Parents of Participants

Table 8 provides information pertaining to the education levels of the participants’ mothers. The two most popular responses, as reported by participants, included: “completed tertiary level education”, among those from universities in Santo Andre, Brazil, San Salvador, El Salvador, and Leon, Nicaragua; and, “completed secondary level education”, among those from universities in Santiago, Chile; Kingston, Jamaica and Cundinamarca, Colombia.

Table 8. Education Levels of Participants’ Mothers, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>No formal education</th>
<th>Completed Primary School</th>
<th>Completed Secondary School</th>
<th>Completed University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre</td>
<td>N=270</td>
<td>9 (3.3%)</td>
<td>27 (10.0%)</td>
<td>95 (35.2%)</td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>N=166</td>
<td>1 (0.6%)</td>
<td>8 (4.8%)</td>
<td>86 (51.8%)</td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>N=1387</td>
<td>61 (4.4%)</td>
<td>269 (19.4%)</td>
<td>545 (39.3%)</td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>N=306</td>
<td>15 (4.9%)</td>
<td>27 (8.8%)</td>
<td>108 (35.3%)</td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>N=274</td>
<td>9 (3.3%)</td>
<td>51 (18.6%)</td>
<td>123 (44.8%)</td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>N=329</td>
<td>39 (11.8%)</td>
<td>80 (24.3%)</td>
<td>75 (22.8%)</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Table 9 provides the education levels of the participants’ fathers. With the exception of those at the university in Kingston, Jamaica (where most answered that their fathers had completed secondary school), the majority of participants indicated that their fathers had completed university.
Table 9. Education Levels of the Participants’ Fathers, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>No formal education</th>
<th>Completed Primary School</th>
<th>Completed Secondary School</th>
<th>Completed University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre</td>
<td>N=274</td>
<td>12 4.4</td>
<td>34 12.4</td>
<td>88 32.1</td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>n=167</td>
<td>1 0.6</td>
<td>15 8.9</td>
<td>66 39.5</td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>n=1347</td>
<td>77 5.7</td>
<td>275 20.4</td>
<td>482 35.7</td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>n=300</td>
<td>13 4.3</td>
<td>28 9.3</td>
<td>87 29.0</td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>n=286</td>
<td>3 1.0</td>
<td>45 15.7</td>
<td>122 42.7</td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>n=351</td>
<td>39 11.1</td>
<td>62 17.7</td>
<td>105 29.9</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Characteristics of Psychoactive Substance Use

This section examines general use of psychoactive drugs within the past-year, as well as specific use within the past-year/30-days, among study participants.

Use Psychoactive Substances at least once, and Age of First Use

Table 10 illustrates the distribution of lifetime psychoactive substance use among participants, along with the reported age of first use. Affirmative responses to the question of at least one instance of psychoactive drug use were distributed as follows: 74.4% (1,080) from the two universities in Cundinamarca, Colombia; 72.7% (200) from the university in Santo Andre, Brazil; 58.5% (110) from the university in Santiago, Chile; 52.1% (186) from the university in Leon, Nicaragua; 34.2% (101) from the university in Kingston, Jamaica; and 25.2% (78) from the university in San Salvador, El Salvador. The median age of first use was 15-16 years, with a mean age of 14.5-16.3 years.
Table 10.  Lifetime Use of Psychoactive Substances among Participants, and Age of First Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Lifetime Substance Use</th>
<th>Age of First Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>200</td>
<td>72.7</td>
</tr>
<tr>
<td>n=275</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>110</td>
<td>58.5</td>
</tr>
<tr>
<td>N=188</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>1,080</td>
<td>74.4</td>
</tr>
<tr>
<td>N=1452</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>78</td>
<td>25.2</td>
</tr>
<tr>
<td>N=309</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>101</td>
<td>34.2</td>
</tr>
<tr>
<td>N=295</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>186</td>
<td>52.1</td>
</tr>
<tr>
<td>N=357</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

Past-Year Psychoactive Substance Use

Table 11 shows the distribution of psychoactive substance use in the past year, as reported by participants: 66.5% (965) from the two universities in Cundinamarca, Colombia; 65.1% (179) from the university in Santo Andre, Brazil; 51.1% (96) from the university in Santiago, Chile; 42.6% (152) from the university in Leon, Nicaragua; 29.2% (86) from the university in Kingston, Jamaica; and 18.8% (58) inform the university in San Salvador, El Salvador.

Table 11.  Past-Year Psychoactive Substance Use among Participants, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>179</td>
</tr>
<tr>
<td>n=275</td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>96</td>
</tr>
<tr>
<td>n=188</td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>965</td>
</tr>
<tr>
<td>n=1452</td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>58</td>
</tr>
<tr>
<td>n=309</td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>86</td>
</tr>
<tr>
<td>n=295</td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>152</td>
</tr>
<tr>
<td>n=357</td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database
Past-Year and Past-Month use of Specific Substances

Tobacco

Table 12 provides the distribution of tobacco use, by university/country, among participants in the past year and past month (30 days). Past-year use of tobacco was reported as follows: 46.6% (27) from the university in San Salvador, El Salvador; 43.8% (42) from the university in Santiago, Chile; 34.2% (52) from the university in Leon, Nicaragua; 28.3% (273) from the two universities in Cundinamarca, Colombia; 27.4% (49) from the university in Santo Andre, Brazil; and 14% (12) from the university in Kingston, Jamaica. Past-month (30 day) use of tobacco included: 41.4% (24) from the university in San Salvador, El Salvador; 38.5% (37) from the university in Santiago, Chile; 29.5% (45) from the university in Leon, Nicaragua; 27.5% (265) from the two universities in Cundinamarca, Colombia; 15.1% (27) from the university in Santo Andre, Brazil; and 7% (6) from the university in Kingston, Jamaica.

Table 12. Past-Year and Past-Month use of Tobacco among Participants who Reported Psychoactive Substance Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>n=179</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>n=96</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>n=965</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>273</td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>n=58</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>n=86</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>n=152</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>52</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Alcohol

Table 13 provides the distribution of past-year and past-month (30-day) alcohol use, by country and place, among those who reported psychoactive substance use. Past-year use of alcohol among participants was as follows: 93.9% (168) from the university in Santo Andre, Brazil; 92.7% (89) from the university in Santiago, Chile; 89.5% (77) from the university in Kingston, Jamaica; 80.3% (122) from the university in Leon, Nicaragua; 70.7% (41) from
the university in San Salvador, El Salvador; and 61.1% (590) from the two universities in Cundinamarca, Colombia. Reports of past-month (30 day) alcohol use were as follows: 77.1% (138) from the university in Santo Andre, Brazil; 75% (72) from the university in Santiago, Chile; 65.5% (632) from the two universities in Cundinamarca, Colombia; 55.2% (32) from the university in San Salvador, El Salvador; 53.9% (82) from the university in Leon, Nicaragua; and 53.5% (46) from the university in Kingston, Jamaica.

Table 13. Past-Year and Past-Month use of Alcohol among Participants who Reported Psychoactive Substance Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=179</td>
<td>168</td>
<td>93.9</td>
</tr>
<tr>
<td>Chile/Santiago n=96</td>
<td>89</td>
<td>92.7</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=965</td>
<td>590</td>
<td>61.1</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=58</td>
<td>41</td>
<td>70.7</td>
</tr>
<tr>
<td>Jamaica/Kingston n=86</td>
<td>77</td>
<td>89.5</td>
</tr>
<tr>
<td>Nicaragua/Leon n=152</td>
<td>122</td>
<td>80.3</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Marijuana

Table 14 provides the distribution of marijuana use in the past year and past month (30 days), by country and place, among participants who reported psychoactive substance use. Past-year marijuana use was reported as follows: 23.9% (23) from the university in Santiago, Chile; 18.6% (16) from the university in Kingston, Jamaica; 13.4% (24) from the university in Santo Andre, Brazil; 9.6% (93) from the two universities in Cundinamarca, Colombia; 6.9% (4) from the university in San Salvador, El Salvador; and 4.6% (7) from the university in Leon, Nicaragua. Use of marijuana within the past month (30 days) was reported as follows: 10.3% (6) from the university in San Salvador, El Salvador; 8.1% (7) from the university in Kingston, Jamaica; 5.2% (5) from the university in Santiago, Chile; 4.5% (8) from the university in Santo Andre, Brazil; 4.2% (41) from the two universities in Cundinamarca, Colombia; and 2.6% (4) from the university in Leon, Nicaragua.
Table 14. Past-Year and Past-Month Marijuana Use among Students who Reported Psychoactive Substance Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre n=179</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Chile/Santiago n=96</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=965</td>
<td>93</td>
<td>41</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=58</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Jamaica/Leon n=152</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Cocaine

Table 15 provides the distribution of cocaine use in the past year and the past month (30 days), by country and place, among participants who reported psychoactive substance use. Past-year cocaine use included: 3.9% (6) from the university in Leon, Nicaragua; 2.1% (20) from the two universities in Cundinamarca, Colombia; and 1.7% (3) from the university in Santo Andre, Brazil. Use of cocaine within the past month (30 days) was reported as follows: 1.9% (3) from the university in Leon, Nicaragua; 0.7% (7) from the two universities in Cundinamarca, Colombia, and 0.6% (1) from the university in Santo Andre, Brazil.

Table 15. Past-Year and Past-Month Cocaine use among Students who Reported Psychoactive Substance use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre n=179</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Chile/Santiago n=96</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=965</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=58</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jamaica/Leon n=152</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nicaragua/Leon n=152</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Source Multicenter database
**Ecstasy**

Table 16 provides the distribution of Ecstasy use in the past year and the past month (30-days), by country and place, among the participants who reported psychoactive substance use. Past-year Ecstasy use was reported as follows: 1.7% (3) from the university in Santo Andre, Brazil; 1.1% (11) from the two universities in Cundinamarca, Colombia; 1% (1) from the university in Santiago, Chile; and 0.7% (1) from the university in Leon, Nicaragua. The use of Ecstasy within the past month (30 days) was reported as follows: 0.7% (1) from the university in Leon, Nicaragua; and 0.7% (7) from the two universities in Cundinamarca, Colombia.

**Table 16. Past-Year and Past-Month Ecstasy Use among Participants who Reported Psychoactive Substance Use, by Country/Place**

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>n=179</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>n=96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>11</td>
<td>1.1</td>
</tr>
<tr>
<td>n=965</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>n=58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>n=86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>n=152</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

**Heroin**

Table 17 provides the distribution of past-year and the past month (30-day) heroin use, by country and place, among participants who reported psychoactive substance use. Past-year use included: 0.7% (1) from the university in Leon, Nicaragua; and 0.2% (2) from the two universities in Cundinamarca, Colombia. Past-month (30-day) heroin use included: 0.7% (1) from the university in Leon, Nicaragua; and 0.7% (7) from the two universities in Cundinamarca, Colombia.
Table 17. Past-Year and Past-Month Heroin use among Participants who reported Psychoactive Substances Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>965</td>
<td>2</td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>152</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Multicenter database

**Inhalants**

Table 18 provides the distribution of past-year and past month (30-day) inhalant use, by country and place, among participants who reported psychoactive substance use. Past-year use was reported as follows: 7.8% (14) from the university in Santo Andre, Brazil; 3.4% (2) from the university in San Salvador, El Salvador; 1.7% (16) from the two universities in Cundinamarca, Colombia; and 1.3% (2) from the university in Leon, Nicaragua. Past-month (30 day) inhalant use included: 2.8% (5) from the university in Santo Andre, Brazil; 1.7% (1) from the university in San Salvador, El Salvador; 1.6% (15) from the two universities in Cundinamarca, Colombia; and 0.7% (1) from the university in Leon, Nicaragua.
Table 18. Past-Year and Past-Month use of Inhalants among Participants who Reported Psychoactive Substance Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>14</td>
<td>7.8</td>
</tr>
<tr>
<td>n=179</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>n=96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>16</td>
<td>1.7</td>
</tr>
<tr>
<td>n=965</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>n=58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>n=86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>n=152</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

Prescription drugs

Table 19 provides the distribution of prescription drug use in the past year and the past month (30 days), by country and place, among participants who reported psychoactive substance use. Past-year use was reported as follows: 16.8% (30) from the university in Santo Andre, Brazil; 15.1% (13) from the university in Kingston, Jamaica; 11.5% (11) from the university in Santiago, Chile; 8.6% (5) from the university in San Salvador, El Salvador; 5.9% (9) from the university in Leon, Nicaragua; and 1.8% (17) from the two universities in Cundinamarca, Colombia. Past-month (30 day) prescription drug use was reported as follows: 14.5% (26) from the university in Santo Andre, Brazil; 12.8% (11) from the university in Kingston, Jamaica; 11.5% (11) from the university in Santiago, Chile; 5.3% (8) from the university in Leon, Nicaragua; 5.2% (3) from the university in San Salvador, El Salvador; and 1.9% (18) from the two universities in Cundinamarca, Colombia.
Table 19. Past-Year and Past-Month Prescription Drug Use among Participants who Reported Psychoactive Substance Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th></th>
<th>Past-Month</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=179</td>
<td>30</td>
<td>16.8</td>
<td>26</td>
<td>14.5</td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=96</td>
<td>11</td>
<td>11.5</td>
<td>11</td>
<td>11.5</td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=965</td>
<td>17</td>
<td>1.8</td>
<td>18</td>
<td>1.9</td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=58</td>
<td>5</td>
<td>8.6</td>
<td>3</td>
<td>5.2</td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=86</td>
<td>13</td>
<td>15.1</td>
<td>11</td>
<td>12.8</td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=152</td>
<td>9</td>
<td>5.9</td>
<td>8</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Source: Multicenter database

**Characteristics of Simultaneous Polydrug Use**

Table 20 illustrates past-year and past month (30-day) simultaneous polydrug use among participants, by country and place. Past-year use was reported as follows: 42.7% (41) from the university in Santiago, Chile; 39.7% (23) from the university in San Salvador, El Salvador; 33.8% (326) from the two universities in Cundinamarca, Colombia; 31.6% (48) from the university in Leon, Nicaragua; 27.9% (50) from the university in Santo Andre, Brazil; and 18.6% (16) from the university in Kingston, Jamaica. Simultaneous polydrug use within the past month (30 days) was reported as follows: 36.2% (21) from the university in San Salvador, El Salvador; 31.3% (30) from the university in Santiago, Chile; 23.1% (223) from the two universities in Cundinamarca, Colombia; 22.3% (34) from the university in Leon, Nicaragua; 16.8% (30) from the university in Santo Andre, Brazil; and 9.3% (8) from the university in Kingston, Jamaica.
Table 20. Past-Year and Past-Month Simultaneous Polydrug Use among Students who Reported Psychoactive Substance Use, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Past-Year</th>
<th>Past-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>50</td>
<td>27.9</td>
</tr>
<tr>
<td>n=179</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>41</td>
<td>42.7</td>
</tr>
<tr>
<td>n=96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>326</td>
<td>33.8</td>
</tr>
<tr>
<td>n=965</td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>23</td>
<td>39.7</td>
</tr>
<tr>
<td>n=58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Leon</td>
<td>16</td>
<td>18.6</td>
</tr>
<tr>
<td>n=86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>48</td>
<td>31.6</td>
</tr>
<tr>
<td>n=152</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

Figure 3 below illustrates past-year and past month (30-day) simultaneous polydrug use among participants. The highest rates of past-year polydrug use were 42.7% from the university in Santiago, Chile, and 39.7% from the university in San Salvador, El Salvador. The lowest rate of simultaneous polydrug use was 18.6%, from the university in Kingston, Jamaica. Past-month (30-day) simultaneous polydrug use was highest at 36.2% from the university in San Salvador, El Salvador, and 31.2% from the university in Santiago, Chile. It was lowest at 31.3% from the university in Kingston, Jamaica 9.3%.

![Bar chart illustrating past-year and past-month polydrug use](chart.png)

Figura 3. Uso de más de una sustancia psicoactiva al mismo tiempo en los últimos 12 meses y en los últimos 30 días
Tables 21 and 22 illustrate the different patterns of past-year and past month (30-day) polydrug use, respectively. Based on these tables, specific drug combinations are also discussed.

**Alcohol + Tobacco**
Past-year simultaneous alcohol and tobacco use was reported as follows: 59.2% (193) from the two universities in Cundinamarca, Colombia; 52.1% (25) from the university in Leon, Nicaragua; 48.8% (20) from the university in Santiago, Chile; 34% (17) from the university in Santo Andre, Brazil; and 30.4% (7) from the university in San Salvador, El Salvador. Simultaneous use of alcohol and tobacco in the past month (30 days) was reported as follows: 86.1% (192) from the two universities in Cundinamarca, Colombia; 66.7% (20) from the university in Santiago, Chile; 52.9% (18) from the university in Leon, Nicaragua; 43.3% (13) from the university in Santo Andre, Brazil; and 33.3% (7) from the university in San Salvador, El Salvador.

**Alcohol + Marijuana**
Past-year simultaneous use of alcohol and marijuana was reported as follows: 50% (8) from the university in Kingston, Jamaica; 30% (15) from the university in Santo Andre, Brazil; 22% (9) from the university in Santiago, Chile; 10.1% (33) from the two universities in Cundinamarca, Colombia; 6.3% (3) from the university in Leon, Nicaragua; and 4.3% (1) from the university in San Salvador, El Salvador. Simultaneous use of alcohol and marijuana within the past month (30 days) was reported as follows: 50% (4) from the university in Kingston, Jamaica; 20% (6) from the university in Santo Andre, Brazil; 12.1% (27) from the universities in Cundinamarca, Colombia; 10% (3) from the university in Santiago, Chile; and 2.9% (1) from the university in Leon, Nicaragua.

**Alcohol + Tobacco + Marijuana**
Past-year simultaneous use of alcohol, tobacco and marijuana was reported as follows: 24.4% (10) from the university in Santiago, Chile; 18.8% (3) from the university in Kingston, Jamaica; 16% (8) from the university in Santo Andre, Brazil; 10.4% (5) from the university in Leon, Nicaragua; 8% (26) from the two universities in Cundinamarca, Colombia; and 4.3% (1) from the university in San Salvador, El Salvador. Simultaneous use of alcohol, tobacco and marijuana within the past month (30 days) was reported as follows: 37.5% (3) in the university in Kingston, Jamaica; 16.7% (5) from the university in Santo Andre, Brazil; 9.4% (21) from the two universities in Cundinamarca, Colombia; 6.7% (2) from the university in Santiago, Chile; 2.9% (1) from the university in Leon, Nicaragua; and
zero from the university in San Salvador, El Salvador.

**Alcohol + Prescription Drugs**

Past-year simultaneous use of alcohol and prescription drugs was reported as follows: 22% (11) from the university in Santo Andre, Brazil; 12.5% (2) from the university in Kingston, Jamaica; 9.8% (4) from the university in Santiago, Chile; 8.7% (2) from the university in San Salvador, El Salvador; 6.3% (3) from the university in Leon, Nicaragua; and 1.5% (5) from the two universities in Cundinamarca, Colombia. Simultaneous use of alcohol and prescription drugs within the past month (30 days) was reported as follows: 26.7% (8) from the university in Santo Andre, Brazil; 13.3% (4) from the university in Santiago, Chile; 12.5% (1) from the university in Kingston, Jamaica; 5.9% (2) from the university in Leon, Nicaragua; 4.8% (1) from the university in San Salvador, El Salvador; and 2.7% (6) from the two universities in Cundinamarca, Colombia.

**Tobacco + Marijuana**

Past-year simultaneous use of tobacco and marijuana was reported as follows: 12.5% (2) from the university in Kingston, Jamaica; 10% (5) from the university in Santo Andre, Brazil; 6.4% (21) from the two universities in Cundinamarca, Colombia; and 2.1% (1) from the university in Leon, Nicaragua. The simultaneous use of tobacco and marijuana in the past month (30 days) was reported as follows: 16.7% (5) from the university in Santo Andre, Brazil; 12.5% (1) from the university in Kingston, Jamaica; 7.6% (17) from the two universities in Cundinamarca; and 2.9% (1) from the university in Leon, Nicaragua.

**Marijuana + Cocaine**

Past-year simultaneous use of marijuana and cocaine was reported as follows: 19.5% (8) from the university in Santiago, Chile; 8.3% (4) from the university in Leon, Nicaragua; 4.3% (1) from the university in San Salvador, El Salvador; 2% (1) from the university in Santo Andre, Brazil; and 0.9% (3) from the two universities in Cundinamarca, Colombia. Past month (30-day) simultaneous use of marijuana and cocaine was reported as follows: 6.7% (two) from the university in Santiago, Chile; 5.9% (2) from the university in Leon, Nicaragua; 3.3% (1) from the university in Santo Andre, Brazil; and 0.9% (2) from the two universities in Cundinamarca.
**Tobacco + Prescription Drugs**

Simultaneous use of tobacco and prescription drugs in the past year was reported as follows: 8% (4) from the university in Santo Andre, Brazil; 2.4% (1) from the university in Santiago; 2.1% (1) from the university in Leon, Nicaragua; and 1.5% (5) from the two universities in Cundinamarca, Colombia. Simultaneous use of tobacco and prescription drugs within the past month (30 days) was reported as follows: 13.3% (4) from the university in Santo Andre, Brazil; 3.3% (1) from the university in Santiago, Chile; 2.9% (1) from the university in Leon, Nicaragua; and 1.8% (4) from the two universities in Cundinamarca, Colombia.

**Marijuana + Prescription Drugs**

Past-year simultaneous use of marijuana and prescription drugs was reported as follows: 9.8% (4) from the university in Santiago, Chile; 8.7% (2) from the university in San Salvador, El Salvador; 2.1% (1) from the university in Leon, Nicaragua; and 0.3% (1) from the two universities in Cundinamarca, Colombia. Simultaneous use of marijuana and prescription drugs within the past month (30 days) was reported as follows: 13.3% (4) from the university in Santiago, Chile; 4.8% (1) from the university in San Salvador, El Salvador; 1.8% (4) from the two universities in Cundinamarca, Colombia.

**Alcohol + Cocaine**

Past-year simultaneous use of alcohol and cocaine was reported as follows: 6.7% (22) from the two universities in Cundinamarca, Colombia; 6.3% (3) from the university in Leon, Nicaragua; and 2% (1) from the university in Santo Andre, Brazil. The simultaneous use of alcohol and cocaine within the past month (30 days) was reported as follows: 5.9% (2) from the university in Leon, Nicaragua; and 1.8% (4) from the two universities in Cundinamarca, Colombia.

**Alcohol + Cocaine + Tobacco**

Past-year simultaneous use of alcohol, cocaine and tobacco was reported as follows: 4.2% (2) from the university in Leon, Nicaragua; and 2.1% (7) from the two universities in Cundinamarca, Colombia. Simultaneous use of alcohol, cocaine and tobacco in the past month (30 days) was reported as follows: 2.9% (1) from the university in Leon, Nicaragua; and 2.2% (5) from the two universities in Cundinamarca, Colombia.
**Alcohol + Cocaine + Marijuana + Tobacco**

Past-year simultaneous use of alcohol, cocaine, marijuana and tobacco was reported as follows: 2.1% (1) from the university in Leon, Nicaragua; and 1.2% (4) from the two universities in Cundinamarca, Colombia. Simultaneous use of alcohol, cocaine, marijuana and tobacco within the past month (30 days) was reported as follows: 2.9% (1) from the university in Leon, Nicaragua; and 1.8% (4) from the two universities in Cundinamarca, Colombia.

Table 21 below is a consolidation of all of drug combinations reported by participants who engaged in simultaneous polydrug use within the past year.

**Table 21. Past-Year Simultaneous Polydrug use, by Country/Place**

<table>
<thead>
<tr>
<th>País/Lugar</th>
<th>Alcohol + Marihuana</th>
<th>Alcohol + Tabaco + Marihuana</th>
<th>Alcohol + Drogas Prescritas</th>
<th>Tabaco + Marihuana</th>
<th>Marihuana + Cocaina</th>
<th>Tabaco + Drogas Prescritas</th>
<th>Marihuana + Drogas Prescritas</th>
<th>Alcohol + Cocaina</th>
<th>Alcohol + Cocaina + Tabaco + Drogas Prescritas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brasil/Santo André n=50</td>
<td>15 30.0</td>
<td>8 16.0</td>
<td>11 22.0</td>
<td>5 10.0</td>
<td>1 2.0</td>
<td>4 8.0</td>
<td>- -</td>
<td>1 2.0</td>
<td>- -</td>
</tr>
<tr>
<td>Chile/Santiago n=41</td>
<td>9 22.0</td>
<td>10 24.4</td>
<td>4 9.8</td>
<td>- -</td>
<td>8 19.5</td>
<td>1 2.4</td>
<td>4 9.8</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=326</td>
<td>33 10.1</td>
<td>26 8.0</td>
<td>5 1.5</td>
<td>21 6.4</td>
<td>3 0.9</td>
<td>5 1.5</td>
<td>1 0.3</td>
<td>22 6.7</td>
<td>7 2.1</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=23</td>
<td>1 4.3</td>
<td>1 4.3</td>
<td>2 8.7</td>
<td>- -</td>
<td>1 4.3</td>
<td>- -</td>
<td>2 8.7</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Jamaica/Kingston n=16</td>
<td>8 50.0</td>
<td>3 18.8</td>
<td>2 12.5</td>
<td>2 12.5</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>Nicaragua/León n=48</td>
<td>3 6.3</td>
<td>5 10.4</td>
<td>3 6.3</td>
<td>1 2.1</td>
<td>4 8.3</td>
<td>1 2.1</td>
<td>1 2.1</td>
<td>3 6.3</td>
<td>2 4.2</td>
</tr>
</tbody>
</table>

Fuente: Base de datos multicéntrica

The information from Table 21 is also provided in Figure 4 below. In all locations, the most prevalent pattern of past-year polydrug use was alcohol + tobacco, with the exception of the universities in Kingston and Santo André, in which alcohol + marijuana was most frequently reported. The highest percentages of simultaneous use of alcohol + tobacco were seen in the two universities in Cundinamarca, Colombia, the university in Leon, Nicaragua, and the university in Santiago, Chile, with figures approximating 50%. Of note are the high incidents of simultaneous use of alcohol + prescription drugs, as observed at the university in Santo Andre, Brazil (22%), as well as alcohol + marijuana, and alcohol + marijuana + tobacco, as observed at the universities in Santiago, Chile, and Santo Andre, Brazil.
Table 22 is a consolidation of all of drug combinations reported by participants that engaged in simultaneous polydrug use within the past month.

**Table 22. Simultaneous Polydrug use in the Past Month, by Country/Place**

<table>
<thead>
<tr>
<th>País/Lugar</th>
<th>Alcohol + Marihuana</th>
<th>Alcohol + Tabaco + Marihuana</th>
<th>Alcohol + Drogas Prescritas</th>
<th>Tabaco + Marihuana</th>
<th>Marihuana + Cocaina</th>
<th>Tabaco + Drogas Prescritas</th>
<th>Marihuana + Drogas Prescritas</th>
<th>Alcohol + Cocaina</th>
<th>Alcohol + Tabaco + Marihuana + Drogas Prescritas</th>
<th>Alcohol + Cocaina + Tabaco</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brasil/Santo André n=30</td>
<td>6 20.0</td>
<td>5 16.7</td>
<td>8 26.7</td>
<td>5 16.7</td>
<td>1 3.3</td>
<td>4 13.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chile/Santiago n=30</td>
<td>3 10.0</td>
<td>2 6.7</td>
<td>4 13.3</td>
<td>-</td>
<td>2 6.7</td>
<td>1 3.3</td>
<td>4 13.3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Colombia/Cundinamara n=223</td>
<td>27 12.1</td>
<td>21 9.4</td>
<td>6 2.7</td>
<td>17 7.6</td>
<td>2 0.9</td>
<td>4 1.8</td>
<td>4 1.8</td>
<td>4 1.8</td>
<td>5 2.2</td>
<td>4 1.8</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=21</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jamaica/Kingston n=8</td>
<td>4 50.0</td>
<td>3 37.5</td>
<td>1 12.5</td>
<td>1 12.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nicaragua/León n=34</td>
<td>1 2.9</td>
<td>1 2.9</td>
<td>2 5.9</td>
<td>1 2.9</td>
<td>2 5.9</td>
<td>1 2.9</td>
<td>-</td>
<td>2 5.9</td>
<td>1 2.9</td>
<td>1 2.9</td>
</tr>
</tbody>
</table>

*Fuente: Base de datos multicéntrica*

The information from Table 22 is also provided in Figure 5 below. With the exception of Kingston, Jamaica, the most prevalent pattern of past-month simultaneous polydrug use in all locations was alcohol + tobacco. Rates ranged from 33.3% to 86.1%. There was a high percentage of reported simultaneous use of alcohol + prescription drugs at the university in
Santo Andre, Brazil, at 16.7%. Further, of note was the simultaneous use of alcohol + marijuana, and alcohol + marijuana + tobacco, among participants within the past month.

**Specific Characteristics of Psychoactive Substance Use**

Table 23 indicates whether participants obtained psychoactive substances on campus and/or outside the university. It should be noted that, because both locations were an option, it was possible for the overall response rate to exceed 100%. Reported rates of obtaining drugs on campus were as follows: 28% (14) from the university in Santo Andre, Brazil; 22.4% (73) from the two universities in Cundinamarca, Colombia; 17.1% (7) from the university in Santiago, Chile; and 12.5% (6) from the university in Leon, Nicaragua. Rates of obtaining drugs from off-campus locations were reported as follows: 92% (46) from the university in Santo Andre, Brazil; 83.1% (271) from the two universities in Cundinamarca, Colombia; 81.3% (39) from the university in Leon, Nicaragua; 68.3% (28) from the university in Santiago, Chile; and 65.2% (15) from the university in San Salvador, El Salvador.
Table 23. Where University Students Obtain Psychoactive Substances, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Off-Campus</th>
<th>On-Campus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=50</td>
<td>46</td>
<td>92.0</td>
</tr>
<tr>
<td>Chile/Santiago n=41</td>
<td>28</td>
<td>68.3</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=326</td>
<td>271</td>
<td>83.1</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=23</td>
<td>15</td>
<td>65.2</td>
</tr>
<tr>
<td>Jamaica/Kingston n=16</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nicaragua/Leon n=48</td>
<td>39</td>
<td>81.3</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Table 24 provides participant justification for simultaneous polydrug use, with rates provided under the “changing mood” heading. The primary reason given was, “helps me to relax”, with reported rates as follows: 74% (37) from the university in Santo Andre, Brazil; 64.6% (31) from the university in Leon, Nicaragua; 53.6% (22) from the university in Santiago, Chile; 52.8% (172) from the two universities in Cundinamarca, Colombia; 52.2% (12) from the university in San Salvador, El Salvador; and 50% (8) from the university in Kingston, Jamaica.
Table 24. Reasons for Simultaneous Polydrug Use: Changing Mood, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Feel Better</th>
<th>Stop Worrying</th>
<th>Relax</th>
<th>Feel Elated or Euphoric</th>
<th>Get Intoxicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre n=50</td>
<td>22</td>
<td>19</td>
<td>37</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Chile/Santiago n=41</td>
<td>5</td>
<td>12</td>
<td>22</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=326</td>
<td>101</td>
<td>110</td>
<td>172</td>
<td>72</td>
<td>7</td>
</tr>
<tr>
<td>Jamaica/Kingston n=16</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Nicaragua/Leon n=48</td>
<td>12</td>
<td>16</td>
<td>31</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=23</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Physical effects

Table 25 provides participant justification of simultaneous polydrug use, with a focus on “physical effects”. The primary reason given by all universities was, “to help me to stay awake”, with the exception of Kingston, Jamaica, which indicated, “to enhance feelings while having sex” as the main reasoning. The option, “to help me to stay awake”, was reported as follows: 39.1% (9) from the university in San Salvador, El Salvador; 32% (16) from the university in Santo Andre, Brazil; 29.2% (14) from the university in Leon, Nicaragua; 18.7% (61) from the two universities in Cundinamarca, Colombia; 17.1% (7) from the university from Santiago, Chile; and 12.5% (2) from the university in Kingston, Jamaica.
Table 25. Reasons for Simultaneous Polydrug Use: Physical Effects, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Physical Effects</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Enhance Feelings when having sex</td>
<td>Stay Awake</td>
<td>Lose Weight</td>
<td>Help to Sleep</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>7</td>
<td>14.0</td>
<td>16</td>
<td>32.0</td>
<td>4</td>
</tr>
<tr>
<td>n=50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>5</td>
<td>12.2</td>
<td>7</td>
<td>17.1</td>
<td>1</td>
</tr>
<tr>
<td>n=41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>52</td>
<td>16.0</td>
<td>61</td>
<td>18.7</td>
<td>17</td>
</tr>
<tr>
<td>n=326</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>6</td>
<td>37.5</td>
<td>2</td>
<td>12.5</td>
<td>1</td>
</tr>
<tr>
<td>n=16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>9</td>
<td>18.8</td>
<td>14</td>
<td>29.2</td>
<td>3</td>
</tr>
<tr>
<td>n=48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>5</td>
<td>21.7</td>
<td>9</td>
<td>39.1</td>
<td>3</td>
</tr>
<tr>
<td>n=23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database. Figures do not add up to 100% because the students could give more than one answer

Managing the Effects of Other Psychoactive Substances

Table 26 provides participant justification for simultaneous polydrug use, with focus on, “to improve the effects of other substances”. Reported rates were as follows: 16.7% (8) from university in Leon, Nicaragua; 14.1% (46) from the two universities in Cundinamarca, Colombia; 12.5 (2) from the university in Kingston, Jamaica; 10% (5) from the university in Santo Andre, Brazil; 9.8% (4) from the university in Santiago, Chile; and 8.7% (2) from the university in San Salvador, El Salvador.

Reported rates for the option of, “to help ease the after effects of other substances” were as follows: 18.8% (9) from the university in Leon, Nicaragua; 12.5% (2) from the university in Kingston, Jamaica; 7.7% (25) from the two universities in Cundinamarca, Colombia; and 8% (4) from the university in Santo Andre, Brazil.
### Table 26. Reasons for Simultaneous Polydrug Use: Managing Effects of Other Psychoactive Substances, by Country/Place

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Managing the Effects of other Substances</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improve the Effects of other Substances</td>
<td>Ease the After-Effects of Other Substances</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=50</td>
<td>5</td>
<td>10.0</td>
<td>4</td>
</tr>
<tr>
<td>Chile/Santiago n=41</td>
<td>4</td>
<td>9.8</td>
<td>-</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=326</td>
<td>46</td>
<td>14.1</td>
<td>25</td>
</tr>
<tr>
<td>Jamaica/Kingston n=16</td>
<td>2</td>
<td>12.5</td>
<td>2</td>
</tr>
<tr>
<td>Nicaragua/Leon n=48</td>
<td>8</td>
<td>16.7</td>
<td>9</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=23</td>
<td>2</td>
<td>8.7</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Multicenter database

### Psychoactive Substance Use perceived as an Important Problem for the University

Table 27 indicates whether students perceive psychoactive substance use as problematic for the university. The most popular response, “yes, it’s a very important problem” was reported as follows: 68.3% (244) from the university in Leon, Nicaragua; 45.4% (125) from the university in Santo Andre, Brazil; and 42.5% (615) from the two universities in Cundinamarca, Colombia. The response, “I don’t know whether it’s a problem or not” was provided as follows: 55.6% (164) from the university in Kingston, Jamaica; 39.5% (122) from the university in San Salvador, El Salvador; and 35.1% (66) from the university in Santiago, Chile.

### Table 27. Perception of Psychoactive Substance Use as an Important Problem for the University, by Country

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Yes, Very Important</th>
<th>Yes, Somewhat Important</th>
<th>Not a Problem</th>
<th>Don’t know whether it’s a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=275</td>
<td>125</td>
<td>45.4</td>
<td>23</td>
<td>8.4</td>
</tr>
<tr>
<td>Chile/Santiago n=188</td>
<td>42</td>
<td>22.3</td>
<td>38</td>
<td>20.2</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=1452</td>
<td>615</td>
<td>42.4</td>
<td>314</td>
<td>21.6</td>
</tr>
<tr>
<td>Jamaica/Kingston n=295</td>
<td>45</td>
<td>15.3</td>
<td>59</td>
<td>20.0</td>
</tr>
<tr>
<td>Nicaragua/Leon n=357</td>
<td>244</td>
<td>68.3</td>
<td>32</td>
<td>9.0</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=309</td>
<td>85</td>
<td>27.5</td>
<td>23</td>
<td>7.4</td>
</tr>
</tbody>
</table>

Source: Multicenter database
**Ease with which Students were able to obtain Illicit Psychoactive Substances**

Table 28 presents student perceptions in relation to how easily they were able to obtain illicit psychoactive substances. The option, “don’t know”, was the most prevalent response for the following universities, reported as follows: 56.1% (166) from the university in Kingston, Jamaica; 43.8% (135) from the university in San Salvador, El Salvador; 43.2% (154) from the university in Leon, Nicaragua; and 32.8% (476) from the two universities in Cundinamarca, Colombia. The option, “[it was] easy”, was the most prevalent response among students from the university in Santiago, Chile, at a rate of 52.7% (99 students), while, “[it was] very easy”, was highest at the university in Santo Andre, Brazil, at a rate of 38.5% (106 students).

Table 29 presents participant recommendations for students at risk of simultaneous polydrug use. The response, “provide special counseling services geared towards those in the health sciences faculties”, was most frequently selected, as follows: 72.4% (199) from the university in Santo Andre, Brazil; 68.6% (245) from the university in Leon, Nicaragua; 56% (173) from the university in San Salvador, El Salvador; and 50% (724) from the two universities in Cundinamarca, Colombia. The response, “organize university-based clubs or support groups to help those who need help to manage the situation”, was most frequently selected, as follows: 61.4% (181) from the university in Kingston, Jamaica; and 61.2% (115) from the university in Santiago, Chile.

---

**Table 28. Ease with which Illicit Psychoactive Substances were Obtained, by Country/Place**

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Very Easy</th>
<th>Easy</th>
<th>Difficult</th>
<th>Very Difficult</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>106</td>
<td>38.5</td>
<td>102</td>
<td>37.1</td>
<td>3</td>
</tr>
<tr>
<td>n=275</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>37</td>
<td>19.7</td>
<td>99</td>
<td>52.7</td>
<td>1</td>
</tr>
<tr>
<td>n=188</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>287</td>
<td>19.8</td>
<td>261</td>
<td>18.0</td>
<td>40</td>
</tr>
<tr>
<td>n=1452</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>77</td>
<td>26.1</td>
<td>45</td>
<td>15.3</td>
<td>5</td>
</tr>
<tr>
<td>n=295</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>88</td>
<td>24.6</td>
<td>110</td>
<td>30.8</td>
<td>3</td>
</tr>
<tr>
<td>n=357</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>71</td>
<td>23.0</td>
<td>95</td>
<td>30.7</td>
<td>6</td>
</tr>
<tr>
<td>n=309</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database
Table 29. Recommendations for Students at risk of Simultaneous Polydrug Use, by Country

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Educational Activities</th>
<th>Special Counseling</th>
<th>University Clubs or Support Groups</th>
<th>University Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre</td>
<td>166</td>
<td>60.4</td>
<td>199</td>
<td>72.4</td>
</tr>
<tr>
<td>n=275</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>62</td>
<td>33.0</td>
<td>97</td>
<td>51.6</td>
</tr>
<tr>
<td>n=188</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>495</td>
<td>34.1</td>
<td>724</td>
<td>50.0</td>
</tr>
<tr>
<td>n=1452</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>166</td>
<td>56.3</td>
<td>143</td>
<td>48.5</td>
</tr>
<tr>
<td>n=295</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>211</td>
<td>59.1</td>
<td>245</td>
<td>68.6</td>
</tr>
<tr>
<td>n=357</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>160</td>
<td>51.8</td>
<td>173</td>
<td>56.0</td>
</tr>
<tr>
<td>n=309</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

**Gender Implications of Simultaneous Polydrug Use**

Table 30 presents participant perceptions regarding the influence men and women have on each other in terms of simultaneous polydrug use. Reported rates of men influencing women were as follows: 60.4% (29) from the university in Leon, Nicaragua; 37.5% (6) from the university in Kingston, Jamaica; 28% (14) from the university in Santo Andre, Brazil; 23.6% (77) from the two universities in Cundinamarca, Colombia; 21.7% (5) from the university in San Salvador, El Salvador; and 17.1% (7) from the university in Santiago, Chile. The proportion of students who stated that women influenced men were as follows: 78.3% (18) from the university in San Salvador, El Salvador; 39.6% (19) from the university of Leon, Nicaragua; 24.0% (12) from the university in Santo Andre, Brazil; 13.2% (43) from the two universities in Cundinamarca, Colombia; 12.5% (2) from the university in Kingston, Jamaica; and 12.2% (5) from the university in Santiago, Chile with 5 (12.2%).
### Table 30. Distribution of Polydrug Use by Sex, and Direction of Influence between Men and Women

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Men Influencing Women</th>
<th>Women influencing Men</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=50</td>
<td>14</td>
<td>28.0</td>
</tr>
<tr>
<td>Chile/Santiago n=41</td>
<td>7</td>
<td>17.1</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=326</td>
<td>77</td>
<td>23.6</td>
</tr>
<tr>
<td>Jamaica/Kingston n=16</td>
<td>6</td>
<td>37.5</td>
</tr>
<tr>
<td>Nicaragua/Leon n=48</td>
<td>29</td>
<td>60.4</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=23</td>
<td>5</td>
<td>21.7</td>
</tr>
</tbody>
</table>

Source: Multicenter database

### Social Implications of Simultaneous Polydrug Use

Table 31 provides participant reasoning for simultaneous polydrug use in social settings. The option, “to help me enjoy the company of my friends”, was reported as follows: 56.5% (13) from the university in San Salvador, El Salvador; 52.0% (26) from the university in Santo Andre, Brazil; 43.9% (18) from the university in Santiago, Chile; 37.5% (18) from the university in Leon, Nicaragua; 35.2% (118) from the two universities in Cundinamarca, Colombia; and 31.3% (5) from the university in Kingston, Jamaica. The reason, “to help me feel more confident or more able to talk to people in a social situation”, was reported as follows: 42.0% (21) from the university in Santo Andre, Brazil; 27.1% (13) from the university in Leon, Nicaragua; 25.0% (13) from the university in Kingston, Jamaica; 21.7% (5) from the university in San Salvador, El Salvador; 20.2% (66) from the universities in Cundinamarca, Colombia; and 19.5% (8) from the university in Santiago, Chile. The reason, “to help me lose my inhibitions”, was reported as follows: 58.0% (29) from the university in Santo Andre, Brazil; 37.5% (6) from the university in Kingston, Jamaica; 27.1% (13) from the university in Leon, Nicaragua; 25.0% (13) from the university in Kingston, Jamaica; 21.7% (5) from the university in San Salvador, El Salvador; 20.2% (66) from the universities in Cundinamarca, Colombia; and 19.5% (8) from the university in Santiago, Chile. The reason, “to help me keep going on a night out with friends”, the distribution was as follows: 45.8% (22) from the university in Leon, Nicaragua; 43.5% (10) from the university in San Salvador, El Salvador; 42.0% (21) from the university in Santo Andre, Brazil; 29.1% (95) from the universities in Cundinamarca, Colombia; 25.0%
(4) from the university in Kingston, Jamaica: and 24.4% (10) from the university in Santiago, Chile. The distribution for the reason, “to fit in with others or because of social pressure”, was as follows: 17.4% (4) from the university in San Salvador, El Salvador; 16.0% (8) from the university in Santo Andre, Brazil; 14.6% (7) from the university in Leon, Nicaragua; 12.5% (2) from the university in Kingston, Jamaica; and 7.3% (3) from the university in Santiago, Chile.

**Table 31. Reasons for Simultaneous Polydrug Use in Social Settings, by Country**

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Enjoy Friends</th>
<th>More Confident</th>
<th>Lose Inhibitions</th>
<th>Keep Going</th>
<th>Fit in with Others Better</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre</td>
<td>26 52.0</td>
<td>21 42.0</td>
<td>29 58.0</td>
<td>21 42.0</td>
<td>8 16.0</td>
</tr>
<tr>
<td>n=50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>18 43.9</td>
<td>8 19.5</td>
<td>11 24.4</td>
<td>10 24.4</td>
<td>3 7.3</td>
</tr>
<tr>
<td>n=41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>118 36.2</td>
<td>66 20.2</td>
<td>77 23.6</td>
<td>95 29.1</td>
<td>29 8.9</td>
</tr>
<tr>
<td>n=326</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>5 31.3</td>
<td>4 25.0</td>
<td>6 37.5</td>
<td>4 25.0</td>
<td>2 12.5</td>
</tr>
<tr>
<td>n=16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>18 37.5</td>
<td>13 27.1</td>
<td>13 27.1</td>
<td>22 45.8</td>
<td>7 14.6</td>
</tr>
<tr>
<td>n=48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>13 56.5</td>
<td>5 21.7</td>
<td>5 21.7</td>
<td>10 43.5</td>
<td>4 17.4</td>
</tr>
<tr>
<td>n=23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

**To Facilitate Activities**

Table 32 provides the reasoning for simultaneous polydrug use in terms of facilitating activities. The main reason, “to help make something I was doing less boring”, was reported as follows: 43.5% (10) from the university in San Salvador, El Salvador; 31.3% (5) from the university in Kingston, Jamaica; 29.2% (14) from the university in Leon, Nicaragua; 26.1% (85) from the two universities en Cundinamarca, Colombia; 14.6% (6) from the university in Santiago, Chile; and 12.0% (6) from the university in Santo Andre, Brazil.
Table 32. Reasons for Simultaneous Polydrug Use: Facilitating Activities, by Country

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Facilitating Activities</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concentrate on Work or Study</td>
<td>N</td>
<td>%</td>
<td>Enhance Activities</td>
</tr>
<tr>
<td>Brazil/Santo Andre n=50</td>
<td>5</td>
<td>10.0</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>Chile/Santiago n=41</td>
<td>4</td>
<td>9.7</td>
<td>3</td>
<td>7.3</td>
</tr>
<tr>
<td>Colombia/Cundinamarca n=326</td>
<td>28</td>
<td>8.6</td>
<td>40</td>
<td>12.3</td>
</tr>
<tr>
<td>Jamaica/Kingston n=16</td>
<td>2</td>
<td>12.5</td>
<td>4</td>
<td>25.0</td>
</tr>
<tr>
<td>Nicaragua/Leon n=48</td>
<td>2</td>
<td>4.2</td>
<td>9</td>
<td>18.8</td>
</tr>
<tr>
<td>El Salvador/San Salvador n=23</td>
<td>3</td>
<td>13.0</td>
<td>4</td>
<td>17.4</td>
</tr>
</tbody>
</table>

Source: Multicenter database

Legal Implications of Simultaneous Polydrug Use

Table 33 provides legal problems experienced by students who engaged in simultaneous polydrug use. The option, “have been a victim of a violent act”, was reported as follows: 25.0% (4) from the university in Kingston, Jamaica; 22.9% (11) from the university in Leon, Nicaragua; and 16.0% (8) from the university in Santo Andre, Brazil. The option, “motor vehicle accidents”, was reported as follows: 26.1% (6) from the university in San Salvador, El Salvador; 25.0% (4) from the university in Jamaica, Kingston; 14.6% (6) from the university in Santiago, Chile; and 12.5% (6) from the university in Leon, Nicaragua. The response, “have been hurt or injured by another person” was distributed as follows: 37.5% (6) from the university in Kingston, Jamaica; 12.5% (6) from the university in Leon, Nicaragua; 8.7% (2) from the university in El Salvador, San Salvador; 6.4% (21) from the two universities in Cundinamarca, Colombia; 6.0% (3) from the university in Santo Andre, Brazil; and 4.9% (2) from the university in Santiago, Chile. The response, “trouble with the University administration”, was provided as follows: 47.9% (23) from the university in Leon, Nicaragua; 21.7% (5) from the university in El Salvador, San Salvador; 10.0% (5) from the university in Santo Andre, Brazil; 7.3% (3) from the university in Santiago, Chile; and 6.7% (22) from the two universities in Cundinamarca, Colombia. There were no reported problems with administration among participants at the university in Kingston, Jamaica. Rates for the response of, “[had] problems with the police” were distributed as follows: 22.9% (11) from the university in Leon, Nicaragua; 5.2% (17) from the two universities in
Cundinamarca, Colombia; 4.0% (2) from the university in Santo Andre, Brazil; 4.3% (1) from the university in San Salvador, El Salvador; and 2.4% (1) from the university in Santiago, Chile. There were no reported problems with police among participants at the university in Kingston, Jamaica.

Table 33. Legal Implications of Simultaneous Polydrug Use, by Country

<table>
<thead>
<tr>
<th>Country/Place</th>
<th>Victim of acts of Violence N</th>
<th>%</th>
<th>Automobile Accidents N</th>
<th>%</th>
<th>Injured by Others N</th>
<th>%</th>
<th>Trouble with univ. admin. N</th>
<th>%</th>
<th>Problems with the Police N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil/Santo Andre</td>
<td>8</td>
<td>16.0</td>
<td>3</td>
<td>6.0</td>
<td>3</td>
<td>6.0</td>
<td>5</td>
<td>10.0</td>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>n=50</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile/Santiago</td>
<td>3</td>
<td>7.3</td>
<td>6</td>
<td>14.6</td>
<td>2</td>
<td>4.9</td>
<td>3</td>
<td>7.3</td>
<td>1</td>
<td>2.4</td>
</tr>
<tr>
<td>n=41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia/Cundinamarca</td>
<td>28</td>
<td>8.6</td>
<td>15</td>
<td>4.6</td>
<td>21</td>
<td>6.4</td>
<td>22</td>
<td>6.7</td>
<td>17</td>
<td>5.2</td>
</tr>
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<td>n=326</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica/Kingston</td>
<td>4</td>
<td>25.0</td>
<td>4</td>
<td>25.0</td>
<td>6</td>
<td>37.5</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>n=16</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua/Leon</td>
<td>11</td>
<td>22.9</td>
<td>6</td>
<td>12.5</td>
<td>6</td>
<td>12.5</td>
<td>23</td>
<td>47.9</td>
<td>11</td>
<td>22.9</td>
</tr>
<tr>
<td>n=48</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>El Salvador/San Salvador</td>
<td>3</td>
<td>13.0</td>
<td>6</td>
<td>26.1</td>
<td>2</td>
<td>8.7</td>
<td>5</td>
<td>21.7</td>
<td>1</td>
<td>4.3</td>
</tr>
<tr>
<td>n=23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Multicenter database

Discussion

While research broadly examining simultaneous/polydrug use within the university population as a whole exists within the health realm, international study of polydrug use among the specific population of health sciences undergraduates remains scarce.

Results of the current research provide a foundation for future study of simultaneous polydrug use among university students in Latin America and the Caribbean. The ability to identify patterns of polydrug combinations among simultaneous users, and establish the frequency of use, can aid in facilitating the development of preventative strategies and interventions aimed at high-risk populations. The current study also identified potential individual and environmental factors associated with simultaneous polydrug use, in addition to various gender, legal and social implications in accordance with the conceptual framework of the study.
Student participants from the university in Kingston, Jamaica, reported the lowest level of simultaneous polydrug use, both in terms of past-year and past-month (30 day) use. Both universities in San Salvador, El Salvador, and Santiago, Chile, reported the highest figures for past-year and past-month (30 day) polydrug use. Marijuana may be more socially accepted in Jamaica because of cultural factors.

The most frequently reported combination of psychoactive substances among simultaneous polydrug users was alcohol and tobacco, both in terms of past-year and past 30-day use. This pattern reflects findings from the 2008 National Study on Psychoactive Substance Use in Colombia and the Colombian National Survey of Psychoactive Substance Use by Youth aged 10–24 (Ministry of the Interior and Justice of Colombia, 2009). Our study further identified a high prevalence of the simultaneous use of alcohol and marijuana, alcohol, tobacco and marijuana, and alcohol with prescription drugs. These combinations are frequently mentioned in literature pertaining specifically to university students at the beginning of their university careers, or those in the healthcare field (Urrego, 2002; Martin et al., 1992). With this in mind, in the current study, past-year simultaneous use of alcohol and prescription drugs, in excess of five cases, was only reported at the university in Santo Andre, Brazil (11 cases, 22% of polydrug users). This is important to note, as there is some evidence that simultaneous polydrug use involving prescription drugs results in higher toxicity (Cone, et al., 2004).

A number of studies identify the use alcohol, tobacco and marijuana, alone or in combination, as a risk factor for transition to the use of other psychoactive substances such as cocaine (Barrett, et al., 2006). This has been described as the “gateway model”, and is a significant factor for young people (Herrera-Vázquez, et al., 2004).

**Gender, Social and Legal Implications of Polydrug Use**

Each of the universities in Cundinamarca, Colombia, Kingston, Jamaica, and Leon, Nicaragua reported more frequent incidents of men influencing women to engage in simultaneous polydrug use. Conversely, students from the university in San Salvador, El Salvador, reported higher rates of women influencing men. With this in mind, it is important to consider the over-representation of female students in each sample, as it likely influenced the response pattern. In addition, because these results were obtained from students who engage in polydrug use, they may be a reflection of their own experiences.
According to Klingemann (2003), youth experimentation with drugs may stem from negative experiences in a school setting. In our study, the most prevalent reasoning for engaging in drug use was associated with positive elements of improvement, such as, “helping me to enjoy the company of friends”, or, “helping to make something I was doing less boring”. However, this response pattern might have been different, had the questionnaire focused more on negative factors.

The majority of those who reported polydrug use indicated that psychoactive substances were obtained off campus. This is likely a result of university and local government policies prohibiting the sale of alcohol and tobacco, both on campus and within determined perimeters around universities premises. It is important to consider the priority given to the application, control and monitoring of these regulations by universities within the region.

Of note is the high percentage of participants who said they did not know whether psychoactive substance use is a problem within universities. Only those from the university in Leon, Nicaragua, considered drug use to be a “very important” problem, which was reported at a rate of just over half of those surveyed. The response rate may be a reflection of the growing availability of, and accessibility to, psychoactive drugs as a result of greater social acceptance of use among the population under study.

Popular reasons for simultaneous polydrug use were related to relaxation, boredom, staying awake, and facilitating relationships with friends. Other elements to consider include use as a means of escaping from problems, coping with symptoms of depression, or simply the desire to get high or to follow the trend (Boys et al., 2001; Royo et al., 2004).

The present study identified stressful situations that may increase the likelihood of simultaneous polydrug use among some students. These situations included problems related to university, work, family and the economy. This information relates to the theory that postulates stress as playing an important role in the reasons for substance abuse (Tomkins 1966; Leventhal and Cleary 1980).

Analysis of these data leads us to consider the importance of preventative strategies, such as health education, as well as encouraging students to engage in sports, games, and academic activities during their spare time. When proposed to those at risk of polydrug use, these recommendations were generally well received, with affirmative responses ranging from 27% to 72% of those surveyed.
In our opinion, simultaneous polydrug use requires the development of innovative preventative programs, which actively engage at risk students, their peers, and their families.

Conclusions

- The most commonly reported polydrug combination among simultaneous users was alcohol and tobacco;

- Other frequent drug combinations included alcohol and marijuana, alcohol, tobacco and marijuana, and alcohol with prescription drugs;

- The main reasons reported for simultaneous polydrug included desired physical effects, and their use as a means of social facilitators, or alleviating boredom;

- According to our theoretical models, we found three settings that were related, positively or negatively, with simultaneous polydrug use: the student environment, the family environment, and sexual behavior.

Limitations of the study

Given the specific criteria of the population studied, these research findings cannot be generalized. Students in other faculties and universities may present characteristics that are different from those found in this study, as may also be the case with students in different countries, and the youth population as a whole. The small sample size, the fact that it is non-random, and the fact that there were non-responses to several of the questionnaire items are sources of potential bias. Further, the predominantly female population surveyed may affect the validity of some responses.
Recommendations

General

- Conduct informational campaigns to help increase the understanding of the risk and protective factors for simultaneous polydrug use;
- Encourage the formation of student groups to bring to attention the problem of psychoactive substance use;
- Organize activities to help integrate first-year students into university life, and ease the transition from secondary school into university;
- Encourage development of university policies, counseling services, and student associations intended for vulnerable students.

To families

- Encourage families to discuss issues related to university life and drug use.

To the National Drug Commissions

- Propose the integration of drug education into undergraduate and graduate curricula;
- Utilize universities and government agencies to allot funding for academic events pertaining to drug awareness.

To CICAD/OAS

- Continue to provide training to academics and faculty in the field of drugs and the addictions;
- Promote the development of university research networks to encourage discussion, and carry out faculty exchange programs to enhance the management of drug prevention, as well as the promotion of healthy lifestyles;
- We recommend that any intervention designed to reduce the incidence of simultaneous polydrug use among first and second year students in the schools of medical and health sciences consider the following: focus on issues pertaining to the family unit, such as a poor relationship with parents, and/or some kind of problem
with intimate partners, such as risky sexual behaviors, or unprotected or unwanted sexual relations. In addition, consider intervening strategies for students who frequently skip class, or who have little interest in academic activities. Individually, beliefs, values and knowledge about drug use should be considered.

Acknowledgements

To the Government of Canada/DFAIT, the Organization of American States (OAS), the Inter-American Drug Abuse Control Commission (CICAD), the Centre for Addiction and Mental Health (CAMH), University of Toronto, Canada, the advisors and all faculty participating in the program, the students and other collaborators.
REFERENCES


PART II

SUMMARY OF FINDINGS BY UNIVERSITY, CITY AND COUNTRY
Introduction

The use of psychoactive substances by university students may be related to the transition between secondary school and university, as well as the availability [of drugs], positive expectations, insertion into and acceptance by a new group, and involvement in social activities. Psychoactive substance use by health sciences students is of concern, in that it may have a negative impact on their capacity as future professionals to advise people about the adverse consequences of using psychoactive substances.

The prevalence of psychoactive substance use by Brazilian youth is over 60%, even up to 80%, and use by university students is higher than that of high school students. The 18-24 age group, which includes university students, has a high prevalence of licit and illicit drug use, at rates that may be higher than in the general population. Specifically among university students, alcohol is the substance that is used the most, with a prevalence of 83.2% for males and 72.6% for females; followed by tobacco (43.4% and 33.9%) and of the illicit drugs, cannabis is the substance most used (21.8% and 12.6% respectively) (Carlini, Galduróz, Noto & Nappo, 2005).

A National Survey on Use of Alcohol, Tobacco and Other Drugs among University Students from 27 Brazilian Capitals brings a picture of alcohol, tobacco and other drugs for more than 18,000 students. The study reveals that almost half of Brazilian university has already made use of some illegal substance and that 80% of respondents who said they were under 18, said they had consumed some type of alcoholic beverage; 40% of the students used two or more drugs in the past 12 months, and 43% reported having used multiple drugs simultaneously and in life. Of these 43%, 47.8% claimed to use as motivation "simply because they liked or because they could forget the troubles of life. Another surprising point is that the consumption of alcohol, tobacco and other drugs among college students is more frequent than in the general population, which reinforces the need for a better understanding of this phenomenon for the development of prevention and preparation of specific policies directed for this segment (Brasil, 2010).
Since the nineteen eighties, Brazil has been the country in Latin America that has done the most research on the use of psychoactive substances by university students. However, these studies did not address polydrug use. We hope here to provide additional information about this phenomenon in Brazilian university students in one university in a city in the State of São Paulo, and find new avenues for planning strategies for prevention in the universities.

**Methodology**

This is a cross-sectional case study that was part of a multisite study. The population group consisted of first and second year undergraduates in a private university located in the south-east of the country. At the time, 513 students were enrolled. The sample consisted of 275 undergraduates in the schools of nursing (32), medicine (116), pharmacy (39), nutrition (45), physiotherapy (30) and occupational therapy (13), enrolled as full-time or part-time students. All were eighteen years or older.

For the purposes of data collection, four obligatory classes were selected at random in each course. A self-administered anonymous questionnaire that had been developed by the investigators was used. With the authorization of the authors, some additional questions taken from instruments published in the literature were added, such as: *Wasting the best and the brightest: substance abuse at America's colleges and universities* (2007); *Razões para o consumo de droga* (Klingemann & Gmel, 2003), and CAGE (Ewing, 1984). The final questionnaire consisted of four sections, with a total of 58 questions, which covered sociodemographic data, psychoactive substance use, and related consequences. It was developed in English, and then went through a process of back translation. Prior to collection of the data, a factor analysis was done and adaptations made.

Recruitment was done by the principal investigator and two trained assistants. The survey was administered without incident, in the classrooms with the support of the professors but without their being present. The objectives and general nature of the study were explained, the informed consent form was read out, and time was set aside for a question period. Participation was voluntary, and was allowed only after the students had signed the free and informed consent form. The survey took 40
minutes on average. One box was provided for deposit of the questionnaires, and another for the signed consent forms; both boxes were properly secured.

The variables examined were: **gender implications**, or the social roles and expectations of men and women and their reasons for drug use; **social implications**, that is, academic, family, work, financial and sexual experiences; **legal implications**, or suspensions or problems with the university administration, the police. The data analysis was descriptive, and looked at the distribution of frequencies and correlations between the variables. The Chi-squared test was used to analyze the category variables. The quantitative variables were analyzed using Pearson’s goodness-of-fit test. The confidence level used was 95%. The data were analyzed using the SPSS statistical program, version 15.0.

The research was approved by the Research Ethics Board of the Centre for Addiction and Mental Health (CAMH-Prot. 225/2008), and, in accordance with Resolution No. 196/96 of the Ministry of Health of Brazil, was submitted to and approved by the Research Ethics Committee of the School of Medicine of ABC in the city of Santo André, São Paulo, Brazil (Prot. 312/2008).

**Findings**

**Sociodemografic characteristics**

The sample was composed of university students with a mean age of 22 and an age range of 18-51; 90.1% were unmarried; 85.4% were living with family; 80.7% were female, and 71.3% engaged in paid employment. The sample consisted of students of medicine 42.2%; nutrition 16.4%; pharmacy 14.2%; nursing 11.6%; physiotherapy 10.9%, and occupational therapy 4.75%, of whom 49.5% were first-year students and 50.5% in their second year. As to their parents’ education, 35.2% said that their mothers had completed secondary school and 32.1% said their fathers had completed their secondary education. The figures for completing university were 51.5% and 51.1% respectively. The students considered that their relationship with their parents was “very good” 54.6% and “good” 39.6%.

Students were satisfied overall 56.2% with their academic performance; 18.3% were very satisfied, and 23.1% somewhat satisfied, and 62.7% said that their grades were good. Religion was considered “important” 39.6%; “very important” 37.5%, and “somewhat/not important” 23%. Everyday experiences reported were: financial
difficulties 44.4%; family conflict 42.5%; conflict with partners 30.5%; unprotected sexual activity 21.1%; unplanned/unwanted sexual relations 13.1%, and frequent absences from class 8.7%.

Academic activities were considered very important by 66.1%. They reported as being “important” the following: student associations or organizations 50.9%; political associations or organizations 47.6%; community or volunteer activities 46.9%; cultural, ethnic and religious associations and organizations 43.2%; sports 42.9%; parties 41.8%; the arts 38.9%, and recreational clubs 40.4%

Source of stress were school work 73.5%; family problems 67.3%; economic problems 65.8%; university schedule 60%; problems with intimate partners 49.5%; problems at work 45.8%; social life/friends 27.3%, and health problems 9.5%.

**Characteristics of psychoactive substance use**
Psychoactive substance use began on average at the age of 16.27 (72.7%) of the sample). Of the total sample, 89.5% had used psychoactive substances in the past year. Past-year and past-month substance use was as follows: alcohol was the substance used the most, both in the past year 93.9% and in the past month 77.1%) Alcohol was followed by tobacco 27.4% in the past year, with past month use at 15.1%. Prescription drugs 16.8% in the past year, and 14.5% in the past thirty days. Cannabis was 13.4% for past year use, and 4.5% in the past month. Inhalants: 7.8% past year use and past month was 2.8%. As to the frequency of use, prescription drugs were used daily by 41.9%; weekly by 9.7%, and on the weekends, by 3.2%. Tobacco was used daily by 20.4%; weekly by 8.2%, and on the weekend by 32.7%. Alcohol was used on the weekends by 79.5% and daily by 11.7%. Daily use of inhalants was 7.1%, and use on the weekend was 64.3%. Cannabis was used at the weekend by 50%.

**Characteristics of simultaneous polydrug use**
Simultaneous polydrug use, or the use of more than one psychoactive substance at the same time, was 27.9% in the past year (N=50) of the total of 275 users and 16.8% (N=30) in the last 30 days, with an average age of onset of 17.85—an interval of 1.84 years since the time of first use. The combinations used in the last 12 months were: alcohol + cannabis 30%; alcohol + prescription drugs 22%; alcohol + tobacco + cannabis 16%; tobacco + cannabis 8%, and tobacco + prescription
drugs 8%. In the last 30 days: alcohol + cannabis 20%; alcohol + prescription drugs 26.7%; alcohol + tobacco + cannabis 16.7%; tobacco + cannabis 16.7%, and tobacco + prescription drugs 13.3%. Other combinations were alcohol + tobacco; alcohol + inhalants; alcohol + tobacco + inhalants, and alcohol + tobacco + prescription drugs.

The circumstances of polydrug use were the influence of friends 52%; own initiative 44%; influence of other people 12%, and the media, 8%. They did not report any influence by a boyfriend or girlfriend or family members. Four per cent of students felt pressured, while six per cent had influenced someone else to use. Polydrug use occurred in a group 79.6%.

We found that the reasons for simultaneous polydrug use by students were very diverse. Under the heading of “changing mood”, the reasons were: “to relax” 74%; “to make me feel better when depressed” 44%; “to stop worrying about a problem” 38% and “to feel elated or euphoric” 36%. Under the heading of “social purposes”: “to lose inhibitions” 58%; “to enjoy the company of my friends” 52%; “to feel more confident in a social situation” 42%, and “to keep going on a night out” 42%. Under the heading of “physical effects”: “to stay awake” 32%; “to help me to sleep” 24%; “to enhance feeling when having sex” 14%, and “to lose weight” 8%. Under the section on “facilitate activities”: “to make something less boring” 12%; “concentrate on work or study” 10%, and “enhance activities” 8%. Under the heading of managing effects of other substances, the reasons were: “to improve the effect” 10%, and “to ease the after-effects” 8%.

Of the 50 students who reported simultaneous polydrug use, 64.6% did not feel the need to cut down on their use; 60.4% did not feel annoyed by criticism; 56.3% felt guilty about it, and 43.7% did not perceive their use as a problem. No-one engaged in polydrug use to steady their nerves or relieve a hangover.

**Gender implications of simultaneous polydrug use**

As to their perception of psychoactive substance use by both sexes, 55% of the students felt that it was not good for women and 55.7% said that it was not good for men. They felt that men have more influence than women 47%, compared with the other way round 38.7%. There was no significant difference between men’s and women’s polydrug use in the last 12 months.
Social implications of simultaneous polydrug use

The places where the students reported they used more than one drug simultaneously were: nightclubs 70%; parties on campus 38%, and other 50%. They reported that polydrug use took place at home and outside at the beach or in parks.

The students obtained psychoactive substances on campus 28%, probably at parties, or in their spare time—a situation possibly fostered by the students themselves since they reported that it was friends or members of the group 70.8% that obtained the substances, while 33.3% reported that they did not need any help in obtaining the drugs. Another 33.5% of the students pointed to their friends as their suppliers; dealers 11.6%; family members 6.5%, and purchases in local pharmacies 7.3%.

Most of the students bought psychoactive substances with their own funds 66%, as against 30% who bought them with family funds. It was the group as a whole that decided which type of substance to use 64.1%; 10.3% were the whole group who decided what type of substances to use 64.1%, 10.3% were influenced by friends, and 33.3% decided on their own. The group of friends was mixed (men and women) 97.4%.

The students believed that psychoactive substance use on campus was “a very important problem” 46.5%, and use by health professionals was a “big problem” 76.2%. The days chosen for simultaneous polydrug use were Fridays 66.7%, and Saturdays 97.4%. The members of the groups tended not to meet on Sundays, Mondays, Tuesdays or Wednesdays.

Students who had never used psychoactive substances considered religion to be very important 28.2%, or important 47.7%. Simultaneous polydrug users 46.7% judged religion to be somewhat important or not important.

The 50 students who were simultaneous polydrug users thought it important to organize university clubs or support groups to help people manage the situation 70.2%. They encouraged the development of university policies on psychoactive substance use on campus 67.3%, and stressed the need for specific educational activities, such as seminars or lectures, about psychoactive substances 60.4%.

Legal implications of simultaneous polydrug use

For the 179 students who said they had suffered an act of violence when they were under the influence of drugs, only 5.6% (N=10) had reported the situation. Of the 275 participants in the study, only 5.5% had been hurt or injured and reported that
at the time of the attack, the attacker was under the influence of psychoactive substances.

Discussion
The sociodemographic characteristics of the sample were: young, predominantly female, unmarried, living with their family of origin, studying full time or part time, consisting of first and second year students of Medicine, Nutrition, Pharmacy, Nursing, Physiotherapy and Occupational Therapy. They considered religion to be important or very important.

The age of first use at 16.27 years was young, and for some, it began before they entered university, a finding similar to the study by Lucas et al. (2006) in public and private universities, and Mardegan et al. 2007, and Lemos et al. 2007 among nursing and medical school students, but older than in Oliveira, et al., 2005) among students of pharmacy.

Alcohol was the substance most used, a finding similar to that of the studies by Lemos et al. (2007), Lucas et al. (2006), Boniatti et al. (2007), CASA (2007), and Tockus and Gonçalves (2008). Tobacco use was higher than in the study by Lemos et al. (2007), which was 14.8% past year use and 5.70% past month use, but lower than in the study by Silva et al. (2006), which showed 22.8% use in the past year in a sample of 926; Lucas et al. (2006); Boniatti et al. (2007), and Tockus and Gonçalves (2008). Prescription drug use was lower than in Silva et al. (2006), where 10.5% of the students used "medicine with potential for abuse", such as amphetamines 6.8%, tranquilizers 3.2% and opiates 0.6%; similar to Mardegan et al. (2007) in nursing students where lifetime use of anxiolytics was 13.4%; Kerr-Corrêa et al. (1999) at 14%; and close to Boniatti et al. (2007) in a sample of 183 medical students, where the past year and past month prevalences were 10.4% and 8.7% respectively. Cannabis was similar to the rate found by Boniatti et al. (2007), 13.7% for past year use; and higher than in Mardegan et al. (2007), 6.7%. Inhalant use was lower than that found in Boniatti et al. (2007), 13.1% and 4.9%; Tockus and Gonçalves (2008), 3.4%; and Lemos et al. (2007), 28.5%.

The combination of alcohol + cannabis is unsurprising, since it is considered as the most common, but the higher rate of THC is of concern, given its greater absorption and intensification of its effects, as well as alcohol dependence (Lukas and Orozco, 2001). The combination of alcohol + prescription drugs was higher than in McCabe et
al. (2006), and is particularly dangerous because of its cumulative (or addictive) effects or synergetic effects (Ensslin 2004; Ashton 2008).

The combination of alcohol + tobacco + cannabis was echoed by Barrett et al. (2006) as the most frequent combination by university students. The association tobacco + cannabis has serious psychosocial consequences and an elevated risk of cannabis abuse and dependence (Agrawal and Lynskey, 2009).

Other combinations were alcohol + tobacco + inhalants, the latter being fairly widespread among Brazilian university students (Alves, 2005), and alcohol + tobacco + prescription drugs, with alternating use of stimulants and depressants in an effort to balance out the effects. Simultaneous polydrug use by the students participating in this study mirrors the macro-context in Brazil in terms of early age of onset of use of psychoactive substances (Carlini et al., 2005).

As to the frequency of use of psychoactive substances, 41.9% used prescription drugs daily. We did not investigate whether there were any clinical conditions to justify the use of these substances. The students in the sample perceived that access to prescription drugs was through the influence of friends and from dealers. The use of prescription drugs is a significant problem in Brazil, and there have been calls for pharmacy controls to curb access to them without a proper doctor’s prescription (Carlini and Nappo, 2003).

Tobacco and inhalants are used on the weekends, probably during recreational activities along with cannabis; in addition to the weekend, alcohol is used on a daily basis by a small number of the students in the sample.

Simultaneous polydrug use is undertaken on the students’ own initiative, but principally through the influence of friends, and in a group where everyone decides what to use. The students in the sample felt the need to reduce their polydrug use, and felt guilty about their use. Despite financial difficulties, some in the sample who had jobs purchased drugs with their own money.

The students in the sample did not feel influenced by anyone to engage in simultaneous polydrug use, nor did they influence anyone to do so. For Peuker et al., (2006), influencing someone to use may be a direct influence, as in offering, encouraging to buy and to use, or indirect, in the sense of sharing norms, imitation or reinforcing behavior, as well as choosing friends and the type of substance, establishing a pattern and the way in which it is perceived by peers.
Thus, when we discuss first and second year university students, we are addressing a group that is in a phase of transition from high school to university, and that is rapidly absorbing the influence of new social models for which their repertoire of behaviors is not yet adequate. The students in the sample believed that psychoactive substance use is not good for either sex, and viewed the harmful consequences as equal for men and women.

The students in the sample thought that men have more influence over women in the use of psychoactive substances, rather than the other way round. This perception is charged with the symbolism of power relationships between the sexes, since it discounts women’s ability to exercise their own free will and keeps alive the discourse about the role of men. This idea needs to be deconstructed so that these specific clients can be engaged in activities to prevent drug dependence (Nóbrega, 2007).

The findings of the study show that drug use took place on campus. If the days chosen for polydrug use are mainly Fridays and Saturdays, then drug use occurs in part at on campus parties. Drug use on campus by future health professionals is perceived as problematic by the students in the sample, pointing to the faculty’s social commitment to develop internal policies, specific educational activities and counseling services for its students.

We note that simultaneous polydrug use is engaged in with a view to relaxing, with the expectation of staying awake or to keep going, and in order to manage social situations, improve relationships, lose the inhibitions that are natural at their stage in life, lessen conflicts and mitigate the crisis of entering university, which is often accompanied by uncertainty as to the student’s professional choices.

The legal, social and gender consequences of simultaneous polydrug use were not determined. It was reported that family conflicts—a negative influence on the lives of the students—may have contributed to lifetime drug use. This is different from religion, which played an important role in the life of a significant number of students in the survey and which may have acted as a protective factor against psychoactive substance use.

The findings may not be generalized to the entire student population, because the sample only considered first and second year health science students in a single university.
Conclusions
We described simultaneous polydrug use by the university students in the study sample. It was lower among the students in the study than the levels found in the international literature. This research is a step forward in the study of the subject in Brazil, and opens up a new approach to the topic. It may be said that going to parties, poor family relationships and economic problems were factors associated with simultaneous polydrug use in this population. The opposite was true in the case of the importance that the students attached to religion and beliefs, academic activities, student and political organizations, and community volunteer activities, the arts and sports. In our opinion, simultaneous polydrug use is a matter for concern and warrants attention by the authorities and faculty of institutions of higher education. It is also important to provide an ongoing flow of scientific information about the drug issue. Since psychoactive substance use occurs in part on campus, university policies on reducing drug use and related harms should be rethought. It is also important that action be taken to promote student mental health and find ways of helping students to deal with personal and professional conflicts.

Limitations
Some limitations were found in conducting this study, such as the fact that there was a large number of categories of variables, which involved the need for a larger number of subjects in order to maintain the study’s value in terms of research partners. Another issue is that since polydrug use was not high, the comparisons were weak. The findings cannot be generalized, because the population studied was very specific.

Recommendations
- The findings should be published and used as scientific evidence on which to develop programs to promote sustainable healthy lifestyles, as well as programs to prevent the use and abuse of drugs in other educational settings.
- Replicate this type of study in other institutions of higher education in Brazil, in an effort to understand better the expectations of these clients and conduct prevention programs with a random sample that would allow for broader inferences to be drawn.
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Case Study in the University in Santiago, Chile

Principal Investigator
Giselle Riquelme H.

Introduction

Substance use is most prevalent among the 18-25 age group (WHO, 2004), the age that coincides with university. In the 22-25 age group, the highest prevalence of the use of any type of substance is among males (Pillon, O’ Brien and Chavez, 2005), while the rate of marijuana use among male university students is double that of women (Chilean National Drug Control Council [CONACE], 2007).

In our region, university students have a higher lifetime and past-year prevalence of drug use than the general population (Carlini, Galdurzo, Noto and Nappo, 2005; CONACE, 2007). Together with this group’s vulnerability, this high prevalence rate makes it the population that is the subject of this case study (Laranjo and Soares, 2006; Simons, Gaher, Correia, Hansen and Christopher, 2005).

The situation in Chile is similar to the situation throughout the region: the 18-25 age group has the highest lifetime and past year prevalence of licit and illicit drugs, and it is estimated that nearly 30% of young people in that age group use alcohol in a way that is considered problematic (CONACE, 2007).

The high rate of use of illicit substances by this group is related to problems in their family, academic and employment circles, and in the society in which they live, which translates into dropping out from school, risk of suffering violence, risky sexual behaviors, and arrests and imprisonment for possession and use of drugs (CONACE, 2007). The main substance used is alcohol. However, the use of substances such as marijuana and cocaine has doubled over the last twenty years (CASA, 2007).

The amount and type of substance use differs depending on the university programs in which the students are enrolled: it is higher in engineering, social sciences and humanities, moderate in the health sciences, and low in schools of education (Gómez, Herde, Laffee, Lobo and Martín, 2006). Students in the health sciences are
of particular interest, since they tend not to be sufficiently represented in studies of this nature as they are often considered not to be substance users (Maddux, Hoppe and Costello, 1986). However, it is they whose licit and illicit substance use is harmful not only to themselves but also to those around them, since they are service providers and responsible for people’s health care.

Generally, the available data on drug abuse by university students focus on the use of a single substance (only alcohol or only marijuana), and have paid little attention to the simultaneous use of several drugs. This has been particularly true in developing countries in regions such as the Caribbean and Latin America.

This case study focused on simultaneous polydrug use and its legal and social consequences and gender implications among first and second year undergraduate students in the health area of a university in Santiago, Chile. It was part of a multisite research project conducted in the faculties of health and medical sciences in seven universities in five countries of Latin America and one Caribbean country.

It had the approval of the Research Ethics Board of the Center for Addiction and Mental Health (CAMH), Ontario, Canada, and the ethics committees of the schools that formed part of the study.

This research is designed to fill the gaps in information about simultaneous polydrug use in our region. The findings may add to existing information and help our region to develop prevention plans and intervention strategies in the universities, on the basis of empirical knowledge of simultaneous polydrug use, understood as the simultaneous use of drugs and/or substances, that is, the use of two or more substances at the same time.

**Methodology**

This was a multicenter study of first and second year undergraduates in the schools of health and medical sciences of seven universities in five Latin American countries and one Caribbean country. It was a cross-sectional study that was descriptive in nature, and used a survey methodology. The sample was calculated on the total number of first and second year undergraduates in the health and medical sciences,
(an estimated 433 students), using the Sample Size Calculation Programme for Survey System. The estimated sample size was 188.

Findings

**Description of the sample**
The population consisted mainly of women, who represented 73.9% of the 188 cases examined in this study, as against 26.1% men. The participants’ ages (the total sample of 188) ranged from 18 to 28, with 68.1% of the students surveyed being between the ages of 18 and 20. About 77.1% of those surveyed lived at home with their families; they were largely unmarried 96.3%, and considered religion or beliefs to be “very important” 48.4% or “important” 33.5%. By academic course, 77.13% of the students were studying nursing, and 22.87% were medical students; 67.6% were in their second year, while the remaining 32.4% were first-year students.

**General characteristics of psychoactive substance use**
Of the 188 students surveyed, 58.5% (110 cases) stated that they had used psychoactive substances at least once in their lives; medical students reported higher substance use than nursing students 72.1% vs. 54.5%. The average age of first use was fifteen.

When asked about the frequency of their use of psychoactive substances, 51.1% of the students (97 cases out of the total of 188) said that they had used psychoactive substances in the past 12 months, with alcohol being the most frequently used (89 cases), followed by tobacco (42 cases) and marijuana (23 cases). One case of Ecstasy use was reported. It should be noted that for this question, the students could indicate more than one answer when indicating the substance(s) they had used in the preceding twelve months.

With regard to past month use of psychoactive substances, seventy-two cases out of a total of 97 said they had used alcohol, followed by tobacco (36 cases) and prescription drugs (11 cases). For past month use, no cocaine, heroin or other illicit substances were reported. As with the question above, the students could mark more than one answer when indicating the substance(s) they had used in the past thirty days.
In terms of the frequency of use of these substances in the past 30 days, marijuana was used mainly at the weekend (5 cases), while tobacco was mostly reported as being used on a daily basis (14 students). Alcohol was the substance most used at the weekends, with a total of 62 cases.

**Characteristics of simultaneous polydrug use**

Of the total sample of 97 (identified as users), 42.3% reported having used more than one substance at a time in the past year; this percentage dropped to 30.9% for past month use. The average age of onset of polydrug use was sixteen.

When asked about the combination most frequently used in the past year, the combination most often reported was alcohol + tobacco 48.8%. Other combinations often mentioned were: alcohol + marijuana, tobacco + marijuana, tobacco + prescription drugs, and alcohol + prescription drugs.

The most frequently reported way in which students learned about combining psychoactive substances was learning "from a friend" (14 cases), followed by "on my own" (13 cases).

The places where the students said they used drugs were: off campus/in nightclubs 33.8%; campus parties 23.9%, and other locations 18.3%, which were most often reported as friends’ houses. They also said that they obtained the substances largely off campus and used them in a group (24 cases).

User groups were mostly men and women together. The days most often reported for drug use were Fridays and Saturdays (19 and 26 mentions respectively). Those surveyed said that they themselves decided independently which substances to use simultaneously, and also that they were responsible for obtaining the substances to be used (17 mentions). The money to buy the substances came from their own funds or from a family member.

The principal reasons the students gave for simultaneous polydrug use were: to relax (22 cases), to enjoy the company of friends (18 cases), to stop worrying about problems (12 cases), and to feel elated or euphoric (12 cases). (For this question,
the students could select more than one answer, regardless of whether or not they were polydrug users).

Only three students reported having felt pressured to begin to use several psychoactive substances at the same time, while seven said they had pressured others. Most said that they thought it very easy or easy to obtain psychoactive substances 72.3%, even when they were not polydrug users.

Specifically in the case of prescription drugs, when asked how they obtained them without a medical prescription, “from a friend” was the most frequent reply (88 cases), followed by “from a dealer” (33 cases) (for this question, the students could select more than one alternative, regardless of whether they were polydrug users or not).

Asked whether they saw psychoactive substance use as a problem in the university (the question was asked of all of the students surveyed, a total of 188), 22% of the total universe thought that it was a very important problem, 20% that it was somewhat important, 22% said that they did not think it was a problem, and 35% said that they did not know. When asked about what they thought about psychoactive substance use by health professionals, 39.9% of the students considered it to be “a big problem”, 19.5% that is was “somewhat of a problem” and only 6.9% that it was “not a problem”.

Those students who thought that religion was important reported lower rates of lifetime use of psychoactive substances. Some 59.3% of the students who considered their religion to be “very important” had not used drugs in the past year. This figure fell to 44.4% for students for whom religion is “important”, to 29.4% for those for whom religion was “somewhat important”, and to 11.8% for whom it was “not important”. This difference was analyzed using the Freeman-Halton test, whose unadjusted result showed a significant difference for a 95% confidence level.

**Gender implications of simultaneous polydrug use**

The students said that they viewed psychoactive substances by both sexes as a negative. Some 75% of the students said that drug use by women was not good, and 73.9% said it was not good for men. However, when they were asked about the
influence that people of one sex could have on the other to use drugs, they perceived a slightly higher influence of men over women 40.4% versus 27.7% for the influence of women on men. When asked about the association between substance use and unprotected sexual relations, no differences were observed since no-one reported having engaged in unprotected sex.

**Social implications of polydrug use**

The students’ university activities included community service 36.7%; academic activities 21.8%, and artistic or sports activities 15.4%, which were those most often considered “very important”. Participation in political associations or organizations was described as “somewhat important” 46.8% or “not important” 32.4%.

When we looked at the association between these variables with drug use variables, we noted that most of those surveyed who had not used psychoactive substances responded that sports activities were very important or important, while among those who said they had used drugs, the most frequent response was “somewhat important”.

When we related simultaneous polydrug use to the importance of parties, we noted that those students who reported polydrug use in the last 12 months described parties as very important 23.3% or important 53.3%. Even though the students who did not report polydrug use in the past year also described parties as important or very important, the percentages were lower.

Looking at the students’ relationship to the use of more than one psychoactive substance at the same time, we see that 26 students said that they had sometimes felt that they should cut down on their use, 25 said that they had been criticized for their substance use, and 19 said that they felt guilty about it. None felt the need to use more than one psychoactive substance at a time first thing in the morning.

When asked about the relationship between polydrug use and their academic performance, 60% of the students responded that their average grades in the university were good, while 31.9% said they were middling. Similarly, 55.3% of those surveyed said they were satisfied with their academic performance, as compared to 25.5% who said they were somewhat satisfied.
They said that principal source of stress or anxiety for them was university work and the university schedule 88.8% and 79.3% respectively. Family problems, problems with their partner, and work problems were also often mentioned. Stress because of economic problems 43.1% was mentioned less frequently (For this question, students could select more than one answer, regardless of whether or not they were polydrug users).

Asked whether they had been a victim of an act of violence under the effects of psychoactive substances, 4.3% replied in the affirmative, and 3.7% said that the attacker had also been under the influence of psychoactive substances.

**Legal and administrative/academic issues for the students surveyed**

The questions on this subject could be selected by students who were users and non-users. Of the total of 188 surveyed, 2.7% of the students reported have had motor vehicle accidents; 2.1% had had problems with the police, and 1% had had trouble with the University administration (probation or trouble with the university administration).

**Discussion**

Psychoactive substance use by young people has become a worldwide problem in recent years, and year after year, draws the concern of the principal stakeholders in our society because these young people are “emerging adults”, that is, people who are still developing but who have current and future responsibilities. It is therefore essential that different initiatives be developed on the subject, such as conducting local and regional research in order to understand what is happening with our young people.

The present study reported first on the overall characteristics of psychoactive substance use by a sample of first and second year students in two health sciences courses (medicine and nursing) in a Chilean university, and then looked at issues potentially related to polydrug use in order to try to trace a pattern of use.
The present investigation focused on young people between the ages of 18 and 20, which is the age when there is the highest prevalence of drug use in Chile, among the youth population group (CONACE, 2004).

Alcohol was the psychoactive substance that was most often used by the students, both in the past year and the last 30 days, which coincides with some studies conducted in the United States, where alcohol was one of the substances most often used by young people (MTF, 2012).

Most of the women in the total sample population said they had used psychoactive substances at least once in their lives, which is similar to what is reported worldwide, where prevalence of psychoactive substance use among women has been rising in comparison to men (CONACE, 2004).

The literature associates polydrug use predominantly with alcohol and tobacco as the main drugs, combined with other substances (McCabe et al., 2006; O’Reily and Jessen, 2005; Barrett, Darredeau and Pihl, 2006). This coincides with what we found in our study, where students combined tobacco and alcohol with other substances such as prescription drugs and marijuana, which are the four most frequent combinations.

The average age of onset for polydrug use in our study was 16, which also coincides with the literature, namely, that in general, young people begin polydrug use at a very early age, and generally speaking at school, that is, between three and four years before going to university (McCabe et al., 2006; O’Reily and Jessen, 2005; Webb et al., 1996). It is important to examine this age relationship, given that the age of first use of any drug and the age of onset of polydrug use itself are close together; it may be posited that young people tend to begin this behavior (polydrug use) early on and that it is not necessarily a subsequent or later experimentation once they have already established themselves as drug users.

No differences were seen in academic performance or university obligations between those who reported polydrug use and those who did not, even though this has been observed in other studies (O’Reily and Jessen, 2005). Going to parties was reported as important for the students as part of their university life.
Relations with the family, friends and partners are important in the analysis of the issue, since they may be a significant source of stress and could potentially be either a risk factor or a protective factor.

The lower figures of reported polydrug use by students who said they attach value to religion lead us to think that religion may have a potential role as a protective factor against drug use. Something similar may occur with sports. When developing strategies to address the problem of substance use by university students, it will be important to bear these points in mind, and to ask the students’ opinions about prevention activities. In our specific population, for example, the formations of university clubs or support groups for those who need them were seen as positive suggestions.

We observed no particular opinions about the students’ perceptions of substance use in the university, and in fact, one third of those surveyed said that they did not know whether it was a problem for the university or not. However, they did respond positively to the importance of having the university develop support groups. It may be argued that despite not knowing, the topic is of concern to students.

The reasons for polydrug use may be related to particular situations and the sensations experienced when different substances are combined. The need to relax, to enjoy the company of their friends, to experience euphoria or new sensations, and at the same time, the desire to avoid situations that cause them to be sad or worried were the reasons most often mentioned by the survey participants. This is similar to the findings of Webb et al. (1996).

The factors related to polydrug use that emerged in this research are consistent with those suggested in the model proposed by the researchers on the basis of the bio psychosocial theory. This theory holds that issues such as beliefs, stress and relationships with peers and family members influence drug using behavior and determine the nature of the patterns of polydrug use. From the social standpoint, a significant percentage of the students said that they often felt guilty about their behavior and rejected by those around them, or that they had experienced acts of violence under the influence of substances. There were also many references to situations that led them to consider the possibility of stopping their substance use.
These findings are similar to those of the CORE study, where direct implications for family life and self-regard were also observed (Perkins, 2002).

As to risky behaviors, no student, regardless of gender and independently of whether he or she used drugs or not, reported having had unprotected sex.

As to gender implications, the students, regardless of sex, agreed that polydrug use is inappropriate both for men and women. When describing the influences on drug use, men were identified as influencing women more than the other way round.

There were no significant reports of legal implications. We believe that this should continue to be considered in future research projects.

We find it of concern that the future professionals—nurses and physicians—should be polydrug users, given the short and long term consequences both for their own lives and their professional careers, and that it might even undermine the quality of care that they will provide to their clients. For these reasons, future challenges must be unified, existing prevention strategies must be improved, and new partnerships must be built to ameliorate the problem. We also believe it necessary that holistic local and regional strategies be developed, if we are to help improve health, and particular the health of these young people who will be in charge of the health care of future generations and who ought to be promoting a better future in that field.

Conclusions
This case study in a university in Santiago, Chile enabled us to investigate the characteristics of simultaneous polydrug use by first and second year undergraduate nursing and medical students, and its gender, social and legal implications.

The principal combinations of substances were with tobacco, alcohol and marijuana. It is striking that polydrug use began at an early age, and not necessarily as a subsequent or later experimentation.
Most of the students in the sample who reported polydrug use have felt criticized and guilty for their behavior, and a majority said they had sometimes considered that they should cut down on their habit.

Among the group under study, there were few cases in which the student had had any legal problems or problems with the university administration.

The issues explored in this study are important to the development of health prevention policies, both for schools and for universities, focusing efforts on vulnerable age groups.

**Limitations of the study**

- There were missing responses to some questions in the instruments used, which may have introduced potential biases into the study. In addition, the findings of this research cannot be generalized to all students in this university, nor to all universities in Chile, nor to the entire youth of the country, since the study participants are not representative of these other population groups.

- The limited sample size, particularly given the low number of polydrug use cases identified in the study, restricted the possibility of looking further into the potential associations among variables and may have introduced additional biases.

**Recommendations**

- In order to facilitate administration of the questionnaire, there must be timely coordination with the student coordinators of the participating courses, and chiefly with the faculty leaders of the courses selected. Consideration should also be given to administering the questionnaire at the beginning of the day when the students are more alert and receptive; the questionnaire should not be given during exam periods.
Since students begin their polydrug use at a young age—practically three or four years before they enter university—it would be useful to consider conducting future research with high school students, and students in higher-level courses, so as to gain a broader understanding of how the changes in the life cycle influence polydrug use as people mature.

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References


Case Study in Two Universities in Cundinamarca, Colombia

Principal Investigators
Rosibel Prieto Silva
Mónica del Mar Veloza Gómez

Introduction

The drug issue is complex in nature and psychoactive substance use is a problematical situation that has harmful implications for the individual, the family and society, as well as worldwide social, economic and political repercussions. The 2008 World Drug Report prepared by the United Nations Office on Drugs and Crime (UNODC) reports on the increase in drug use worldwide and particularly in Latin America. It is estimated that 208 million people use drugs—the equivalent of 4.9% of the world’s population—in an age range of 15-64 (Austria, Vienna, 2008)

World, regional and national statistics, as well as information on particular issues of forms of substance use and the target populations, lead us to examine the problem from an increasingly complex perspective with enormous implications.

The upward trend in psychoactive substance use by students is considered by some countries to be a significant public health problem. In Latin America and the Caribbean, the increase in the numbers of university students who use psychoactive substances is of concern, in that it adversely affects their life plans and has legal and social repercussions.

According to the study, Wasting the best and the brightest: Substance abuse at America’s colleges and universities (CASA, 2007), the main substance used in universities is alcohol (65%-70%). The abuse of psychotropic substances goes beyond alcohol and includes other licit and illicit drugs. The trend seen in recent decades has intensified and students are immersed in a culture of abuse of addictive substances, with consequences for health, university and society. Although the substance most used in the universities is alcohol, the use of marijuana and other licit and illicit substances has increased (CASA, 2007).
We are seeing a new pattern of use of psychoactive substances, namely, simultaneous polydrug use, or the use of two or more psychoactive substances at the same time (McCabe, 2006).

The present case study was conducted with a sample of 1,452 undergraduate students in two Colombian universities, one public and the other private. It summarizes a technical report presented by the authors as part of a multicenter study, the purpose of which was to understand the patterns of polydrug use by first and second year health sciences undergraduates in universities in five countries of Latin America and one in the Caribbean, and its gender, social and legal implications. The study was approved by the research ethics committees of the institutions involved.

In this study, a polydrug user was defined as a student who used more than one psychoactive substance at the same time.

**Results**

**Sociodemographic characteristics**

The average age of the students in the simple was 20.5, and a median age of 20. The majorities were female 73.9% and unmarried 4.6%, and 85% of the students said they did not work. Some 69.1% said that they lived at home with their families, while 11.2% lived with other family members. Some 80.6% said that they were full-time students.

The study sample was distributed among the following academic courses: medicine 39.7%, nursing 29.1%, physiotherapy 12.3%, nutrition 9%, occupational therapy 5.2%, and speech therapy 4.7%. Around 53% of the students in the sample were in their second year. In terms of education, many of the students’ mothers had completed high school 37.8%, followed by 35.6% who had completed university. Their fathers’ education was similar: 34.4% had completed high school and 36.6% had completed college.
**Characteristics of psychoactive substance use**
Some 74.4% of the sample surveyed reported having used a psychoactive substance at least once in their lives; the reported average age of first use was 14.6. 66.5% of the students in the sample reported psychoactive substance use in the past year. The psychoactive substances most used by the students in the past year were alcohol 70.6%, tobacco 31.7%, and marijuana 9.6%.

**Characteristics of simultaneous polydrug use**
Around 33.6% of those students who said they had used a psychoactive substance in the last 12 months reported having used more than one substance at the same time during the past year, and 23% reported having used more than one substance simultaneously during the past 30 days. Thus, there were significant numbers of polydrug users during the past year, but a noticeable drop in simultaneous polydrug use during the past month. Most polydrug use was the simultaneous use of tobacco and alcohol, which was reported at 59.2% in the past year. Of that percentage, 86.1% reported simultaneous polydrug use in the past 30 days. Other combinations of simultaneous polydrug use in the past year were: alcohol + marijuana 10.1%; alcohol + tobacco + marijuana (8%); alcohol + cocaine 6.7%, and tobacco + marijuana 6.4%. Past month use was: alcohol + marijuana 12.1%; alcohol + tobacco + marijuana 9.4%, and tobacco + marijuana 7.6%.

**Gender implications of simultaneous polydrug use**
The study surveyed 1,028 women and 421 men. Of the 223 study participants who reported simultaneous polydrug use in the past month, 130 (58.3%) were women, and 93 were men 41.7%, that is, a higher rate of polydrug use by women. However, when we look at the total figures by gender (given that the study included more women than men), 12.6% of the 1,028 women surveyed said that they were polydrug users, while 22.1% of the 421 men surveyed were polydrug users, that is, a higher overall percentage of male polydrug users.

**Influence of men on women to use more than one psychoactive substance at a time**
Of the 1,420 students who responded, 55.8% felt that men influence women to use more than one psychoactive substance at the same time. Of the 218 polydrug users who responded, 43.1% considered that men influence women to use more than one
substance at a time. Of the 412 male students who responded, 53.9% thought that men influence women to use more than one substance at a time, while the remainder disagreed. Of the 1,008 female students responding, 56.6% considered that men influence women to engage in polydrug use.

**Influence of women on men to use more than one psychoactive substance at the same time**

Of the 1,418 students who answered this question, 37.2% felt that women influence men to use more than one substance at the same time, while the remainder disagreed. Of the 218 polydrug users who responded, 28.9% considered that women influence men to use more than one psychoactive substance at the same time, with a higher percentage of the total sample saying that women did not influence men to use more than one substance at a time. Of the 411 male students who responded, 43.3% felt that women influence men to use more than one psychoactive substance at the same time, and of the 1,007 female students who responded, 34.8% thought that women influenced men to engage in polydrug use. These findings show a higher percentage of female students who thought that women did not influence men to use more than one substance at a time. However, a high percentage of male students reported that men are influenced by women to use more than one substance at the same time.

**Social implications of simultaneous polydrug use**

Those students who reported simultaneous polydrug use gave as their main reasons for doing so: change of mood, social purposes, facilitate activities and physical effects. Within each of these categories, particular reasons were given. Under the heading “changing mood”, the main reasons were: “to help me to relax” 77.1%; “to help me to stop worrying about a problem” 49.3%, and “to feel better when down or depressed” 45.3%. Under the heading of “social purposes”, the main reasons were: “to help me enjoy the company of friends” 52.9%, and “to help me keep going on a night out with friends” 42.6%. Under “facilitate activities”, the main reason was: “to help to make something I was doing less boring” 38.1%. Under “physical effects”, the principal reasons were: “to help me to stay awake” 27.3%; “to enhance feeling when having sex” 23.3%, and “to help me to sleep” 20%. Those who reported that they were polydrug users said that it was “very important” and “important” to participate in the following: academic activities 69.2%; parties 46.2%; community
service activities 43.9%, and sports 43.9%. Activities that were less important, that is, “somewhat important” or “not important” were: political associations and organizations 81%, and “cultural, ethnic or religious associations and organizations 72%. Their sources of stress or anxiety were largely university work 77.3%; family problems 74.3%; economic problems 71.6%; university schedule 70.7%, and problems in intimate relationships 60.3%.

**Legal implications of simultaneous polydrug use**

Of the 1,452 students who made up the sample, 5.6% said that they had suffered an act of violence while under the influence of psychoactive substances. Of the 965 students who said that they had used a psychoactive substance in the past year, 8.5% said that they had been the victim of a violent act while under the influence of psychoactive substances. Of the 218 who reported polydrug use and who answered this question, 12.8% said that they had suffered an act of violence while under the influence of psychoactive substances. The percentage of students who had suffered violent acts under the influence of psychoactive substances was higher among polydrug users than in users of psychoactive substances in the past year. Of the 82 students who said they had suffered an act of violence while under the influence of psychoactive substances, 34.1% reported polydrug use. Of the 28 students who reported polydrug use and who said they had been the victim of an act of violence under the influence of psychoactive substances, 64.3% said that their attacker had been under the influence of psychoactive substances.

**Discussion**

**Patterns of simultaneous polydrug use by university students**

There have been few studies of simultaneous polydrug use by university students in the health field, and therefore, there is insufficient information available either in Colombia or worldwide. Some studies have been done on simultaneous and non-simultaneous polydrug use by university students as a whole, and a few on students in the health field, both locally and worldwide, including *Patterns of simultaneous polysubstance use in drug using university students* (Barrett, Darredeau, & Pihl, 2006); *Inicio en el consumo de alcohol y tabaco y transición a otras drogas en estudiantes de Morelos, México* (Herrera-Vázquez, Wagner, Velasco-Mondragón, Borges, & Lazcano-Ponce, 2004), and *Consumo de sustancias psicoactivas en*
In Colombia, the Ministry of Education reported that in 2008, 1,444,544 students were enrolled in higher education, that is, 33.3% coverage. Of these, 958,533 (66.3%) were undergraduate students. In 2005, a total of 117,085 students were enrolled in health sciences programs. (Ministry of Education, 2009).

The present study was carried out in two Colombian universities, located in the center of the country. A total of 1,452 first and second year health sciences students took part in the study. Two hundred and twenty-three students, or 15.3% of the sample, reported simultaneous polydrug use in the past thirty days. There is currently no information available in Colombia about simultaneous polydrug use by university students in the health field. The 2008 National Study on Psychoactive Substance Use in Colombia and the National Survey on Psychoactive Substance Use by Young People aged 10–24 (Ministry of the Interior and Justice, 2009) reported that alcohol and tobacco were the substances that were used the most. The following prevalences were reported for alcohol use: 86.08% lifetime use, 61.18% past year use, and 34.77% in the past month. For tobacco, the following prevalences were reported: 44.49% lifetime use, 21.46% in the past year and 17.06% in the past month. These figures are comparable to those found in the present study for simultaneous polydrug use.

In our review of the scientific literature, we found a number of studies, including those by Urrego (2002), López, Santín, Torrico & Rodriguez (2003) and Viña & Herrero (2004) that showed that the use and polyuse of alcohol, tobacco and marijuana were the most prevalent among students in the health field.

The combination of tobacco + alcohol used simultaneously was most often mentioned as having been used in the past year and past month. This was the principal pattern of simultaneous polydrug use among health sciences students in the two universities studied. Other research, such as that by Liccardo (1998), Smucker, Barnwell & Earlywine (2006), Duncan, Duncan & Hops (1998), Barrett et al. (2006), reported polydrug use such as alcohol + tobacco; alcohol + marijuana; alcohol + tobacco + marijuana, and the use of other substances as a result of this polydrug use. The use of these psychoactive substances, either alone or in combination, may be identified as a risk factor for a transition to the use of other psychoactive
substances such as cocaine. This has been described in other studies as the “gateway model”, which is significant for young people (Herrera-Vázquez, et al., 2004). On the basis of the students’ reports, the present study identified other important combinations of psychoactive substances used simultaneously in the past year and past month, such as alcohol + marijuana; alcohol + tobacco + marijuana, and tobacco + marijuana,

The present study coincides with some other studies on the age of onset of drug use, and the active participation of adolescents and youth in the use and polyuse of psychoactive substances (Martínez-Mantilla, et al., 2007), (Kosterman, Hawkins, Guo, Catalano, & Abbott, 2000), (Rojas, et al., 1995) and (Pechansky, Szobot, & Scivoletto, 2004).

The sample consisted mainly of female students. The figures show a higher percentage of simultaneous polydrug use among men, which is consistent with what was reported in other studies on use and polydrug use broken down by sex (Herrera-Vázquez, et al., 2004), (Caballero, Madrigal de León, San Martín, & Villaseñor, 1999), (Maya & Garcia, 1986) and (Grant, 1997). As to the perception of whether women influence men, a high proportion of students, both male and female, say that there is no such influence. However, we note that a significant percentage of male students recognized that women influence men to use more than one psychoactive substance at a time—which was confirmed by the responses of the female students. This might be interpreted as a sign that society’s views of gender are moving to a more egalitarian approach.

A gender approach has been a subject of great importance in current research, with a number of different theories and philosophies (Foucault, 1998), (Stolcke, 1999), (Lamas, 1996). A gender perspective may be considered as attempting to analyze and understand the specific characteristics that define men and women, their similarities and differences, the meaning of their lives, their expectations and opportunities, the social relations between genders, the daily conflicts they face and the way in which they deal with them (Lagarde, 1996), and how gender is a complex issue that is constantly in the process of being constructed based on a biological component and a social image that involves cognitive, behavioral and emotional aspects inherent in processes of interaction with the environment and with others,
which may impact differentiated behaviors and perceptions related to simultaneous polydrug use by male and female students. A study of the relationship between gender and drug use (Gore, 2004) suggests that gender is a social construct of roles that is perpetuated by the agents of socialization (family, school, church, etc.) and an important factor in the drug use model (particularly alcohol) by men and women. Some authors (Meneses Falcón, 2001) consider that male drug use has been the usual pattern, both statistically and culturally, and that this has meant that drug use by women has often been considered an exception or deviation from the norm.

Gender may therefore be said to differentiate between the ways in which men’s and women’s thought processes, feelings and behaviors approach a particular situation, and in this case, simultaneous polydrug use and, as some authors propose (Sánchez-Huesca & al, 2006), gender may be part of the social and cultural symbols of sexual differences, where gender determines forms of perception, action and relations between members of a group, depending on their gender. In reviewing the scientific literature, the findings in the present study on psychoactive substance use and its social and legal implications are related to the findings of some other studies, including Laranjo (2006), Meneses Falcón (2001), Pons Diez (2008), Pechansky et al. (2004), De Boni (2002) and Giancola (2002).

As some authors have said (García, González, & Egea, 2008), psychoactive substance use may be associated with a variety of negative consequences, including an increase in the risk of drug use years later, failure at school and irresponsibility that may put adolescents at risk of accidents, violence, unplanned and unsafe sexual relations, and suicide. Psychoactive substance use has consistently been associated with a series of behaviors that are harmful to health (such as non-lethal violence, either as attacker or victim), and many health disorders. The data associated with the legal implications of polydrug use refer to acts of violence that are not specifically described in this study, with broad connotations given that such acts are committed under the influence of psychoactive substances. The effects of psychoactive substances change the relationship between the individual and his environment and produce a series of biological and behavioral processes that make the individual vulnerable to harmful behaviors, in this case, acts of violence by others. The variations in the effects that drugs and alcohol cause to different individuals suggests that organic, sociocultural and personality factors are at work.
We know that individuals with the same level of intoxication have different emotional responses and demonstrate different types of behaviors (Minayo & Deslandes, 1998).

The literature on the legal aspects of drug use and polydrug use by university students is sparse. One study refers to problems of violence related to alcohol use (Engs & Hansen, 1994), and provides the following statistics from student counseling offices of U.S. universities: 11.6%-17.2% of violent acts in universities were associated with the use of alcohol or other drugs; 9.3%-10.5% of vandalism on university campuses was associated with alcohol or drug use, and 1.9%-2.5% of students who abused drugs had problems with the university administration. The study also found that 81% of acts of violence against persons and property were related to alcohol, which was also associated with 75% of campus vandalism in U.S. universities. As part of the legal implications, the study discussed the relationship between psychoactive substance use and a number of actions and consequences (acts of violence, vandalism, problems with the university administration). A number of studies have shown the relationship between the use of alcohol and other psychoactive substances and driving a vehicle, for example (Calafat Far, Adrover Roig, Juan Jerez, & Blay Franzke, 2008; Perkins, 2002), (Perkins, 2002), (Engs & Hansen, 1994). A study on violence and the use of psychoactive substances (Engs & Hansen, 1994) indicates that 17% of men and 10% of women whose alcohol use was moderate or heavy reported driving under the influence of alcohol. Of those whose alcohol use was very heavy, 56% of men and 43% of women reported driving under the influence.

Simultaneous polydrug use produces an effect of releasing inhibitions, where action is not preceded by thought, where emotive and behavioral components prevail, giving rise to risky behaviors and sometimes, to acts that are described as criminal, which require admonestations, suspensions and legal actions, with the corresponding penalties. From the standpoint of the “juridical” model, this relates to a perception of drugs and drug use as dangerous and capable, under certain circumstances and in the hands of certain individuals, of creating risky situations that endanger the physical safety of individuals and collective health (Pons Diez, 2008).

A study on social representations among young drug users (Sierra, Pérez, Pérez, & Núñez, 2005) describes some points that are related to the social aspects found in
The authors say that as reported by the young people, the most important reasons for using psychoactive substances are family problems, and the desire or need to “escape reality”, as well as the favorable opinions and satisfactions derived from drug use, such as enjoyment, reducing uncomfortable feelings or situations, and the excitement of breaking established rules. They also mention substance use in order to enhance sexual desire or performance, to be accepted by the group, or break out of a rut. This highlights the use of psychoactive substances as a "social facilitator": in his or her social life, the young person interacts with an environment in which there are a number of circumstances that are related to substance use, such as peer pressure, interaction with dysfunctional families and drug use modeling, media pressure, complicated transitions from high school to university, management of free time, interpretations of what recreation means, the interplay of gender roles, and acceptance as part of a group with social roles. In addition, for the specific case of alcohol, a paper on community psychiatry and the addictions describes how in small quantities, the effects of alcohol translate into relaxation, losing inhibitions, sociability and euphoria, which make it an important social facilitator (Sánchez Bravo-Villasante, 2001).

The triple interaction between the individual (and his/her biological and psychological characteristics), the psychoactive substance used and the social situation in which it is used is part of the social dynamics of psychoactive substance use (Sánchez Bravo-Villasante, 2001). The university student is thus the individual, with his biological and psychological characteristics, the psychoactive substance is the variety, combination, routes of administration and frequency of use of the psychoactive substance(s), and the situation is the student’s family, university and societal context in which interaction with peers plays an important role because of its influence on the introduction to and subsequent control and use of psychoactive substances.

This is complemented by the suggestions of (Díaz Negrete & García-Aurrecoechea, 2008), who allude to the variety of factors that go to make up multifactorial models and hence the complexity of substance use. A number of studies have recognized the impact of sociocultural, interpersonal, psycho-behavioral and biogenetic factors, while others mention the effect of demographic, socio-environmental, behavioral and individual factors, or else factors related to malaise, which predispose to
regarding illicit substance use as "normal" (inter alia, easy availability, positive expectations, taking part in contexts where substance are used, and contact with drugs at an early age).

Thus, the study of the dynamics of simultaneous polydrug use by university undergraduates involves a variety of factors, which makes it necessary to consider the three elements discussed above, namely, the individual, the psychoactive substances, and the context, which should always be considered together.

**Conclusions**

The combinations most often mentioned in simultaneous polydrug use were, in descending order, tobacco + alcohol; alcohol + marijuana; alcohol + tobacco + marijuana, and tobacco + marijuana. Males reported higher percentages of polydrug use.

A number of social issues were related to simultaneous polydrug use, such as better social interaction, and a feeling of well-being when dealing with stressful situations that cause worry, depression or boredom. These factors may be working as social facilitators of polydrug use, while potential protective factors against polydrug use may be participation in academic activities, community service activities and/or sports.

The relationship between simultaneous polydrug use and its gender, legal and social implications may be the contextual reference point for the development of intervention strategies that take different but complementary approaches to the student, his family, university and society at large. Such strategies may translate into mechanisms for prevention interventions, which can be evaluated to assess their impact on controlling this problem that has a day-to-day adverse effect on this vulnerable population of university students in the population under study.

**Limitations of the study**

Missing responses to several of the questions may have introduced biases into the study. The findings of this study cannot be generalized to the overall student population of the universities surveyed, or to other universities in Colombia or elsewhere, given the specific nature of the sample surveyed, which consisted only of
first and second year students in the schools of health and medical sciences of these two universities. The low number of cases of reported simultaneous polydrug use may have introduced additional biases.

**Recommendations**

- Strengthen interdisciplinary support networks within the universities, and form work groups that will empower university students to see themselves as part of the solution and not part of the problem of simultaneous polydrug use and its gender, legal and social implications.

- Encourage the creation of study groups on the topic of simultaneous polydrug use, which would serve as an observatory on drugs within the universities to monitor developments and provide the underpinnings for action to control the problem academically, scientifically and legislatively.

- Form research seedbeds on simultaneous polydrug use and invite students to play an active role in them, so that they may see themselves as part of a research team that is working to provide knowledge-based alternatives and solutions.

- Activate the students’ potential to manage their free time through regular scientific, recreational, cultural and sporting activities, so as to help them develop their life plans as university students.

- Take the information from the present research to investigate further the dynamics of simultaneous polydrug use and expand the knowledge base in order to guide the development of action plans that will have a real impact on controlling drug use.

- Replicate this study with a larger sample of students in all university courses.

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Case Study in the University in San Salvador, El Salvador

Principal Investigator
Fabio Bautista-Pérez

Introduction

The upward trend in psychoactive substance use by university students is considered a public health crisis (CASA, 2007). There is concern in the region that drug use is endangering the wellbeing of those who engage in risky health behaviors that increase the burden on the countries due to the costs incurred to care for patients (CASA, 2007; CNA 2005).

Studies on psychoactive substance use by university students indicate that the main drugs of abuse on university campuses are alcohol, ranging from 53.30% to 90%; tobacco 19.20%-67.40%; marijuana 2.83%-21.80%; cocaine 2.5%-9.40%; Ecstasy 2.50%-5%; heroin 4.4%, cocaine paste (bazuco) 3.3%, and crack 1.29%-2% (CASA, 2007; CNA 2001-2008; Gómez, 2006; Salazar, 1996; Chacón et al. 1998; González, 2000; Boskovitz et al., Canuto et al., and Kerr-Correa et al., cited by Gómez, 2006; Carlini et al, 2005; Wagner et al, 2006; Giraldo et al. 2006; OAS/CICAD, 2006, and Zárate, 2006).

In a study on simultaneous poly-drug use, MacCabe et al. (2006) found prevalence of polydrug use involving alcohol and prescription drugs of up to 12.1%, and that it was more prevalent among males who had begun to use alcohol at a young age. They also found that simultaneous polydrug use of alcohol and other drugs is related to problems of concurrent drug use.

In two studies, researchers at the University of Michigan found that the majority of young adults aged 18 to 24 were at risk for concurrent or simultaneous abuse of alcohol and prescription drugs. Another study that focused on a group of young adults at the Midwest University showed that 7% of those surveyed had used medication without a doctor’s prescription at the same time as alcohol during the past year (Ashton, 2008).
In a study carried out in Australia, O´Reilly and Jessen (2005) found that polydrug use among students was significant, in that one fourth of those who took part in the study had used alcohol and tobacco at the same time during the last six months of the study. Over the same period, one out of twenty students had used cannabis along with amphetamines or Ecstasy, and 1% used opioids and cannabis at the same time. The factors related to the pattern of consumption on that university campus included students’ academic performance, their place of residence and the course in which they were enrolled. Those who lived in university residences were two or three times more likely to use substances, and those who lived off-campus were twice as likely to use substances than students who lived with their families.

Webb et al. (1996) conducted a study of second-year students in ten universities in the United Kingdom and found that 11% did not drink alcohol; males used more units of alcohol than females, and 60% of males and 55% of females used marijuana. Twenty per cent of the students were regular substance users, whether weekly or more frequently. Thirty-three percent of those surveyed said that they had used drugs such as LSD, amphetamines, Ecstasy or amyl/butyl nitrate. Overall, 34% of study participants reported themselves as being simultaneous polydrug users.

The principal reasons for drug use were feelings of pleasure, reported by 89% of males and 92% of females; anxiety, by 17% of males and 22% of females; boosting confidence 22% of males and 33% of females, and out of habit, with 31% for men and 22% for women. They also found that 46% of those surveyed began their substance use before entering university, while 13% started to use drugs after the first year of university.

In a study conducted through student affairs offices, Engs and Hanson (1994) found that between 11% and 17.2% of acts of violence on campus were associated with the use of alcohol and other drugs; that 9.3%-10.5% of vandalism on campus was related to drug and alcohol use, and that 1.9%-2.5% of substance abusers had problems with the university administration.

Citing other sources, Engs and Hanson (1994) noted that 81% of acts of violence against persons and property were related to alcohol, which was also associated with 75% of vandalism occurring on university campuses in the United States. The study
also found that 17% of males and 10% of females were heavy or moderate weekly users of alcohol and had driven under the influence of alcohol. Heavy drinkers--56% of males and 43% of females—reported that they had driven a car under the influence of alcohol.

A multi-site study involving Canada, the United States and Australia highlighted the social cost of drug use to society. It showed that the economic cost of substance abuse in Canada in 1992 was 2.7% of GDP, or US$40 per capita. Twenty-nine percent of this amount was spent on law enforcement, and 6% on health services, while 60% of the total cost was due in large part to loss of productivity as the result of illness, premature death from drug use and related crimes. In Australia, the social cost of licit and illicit drugs amounted to a total of 4.8% of GDP, or the equivalent of $70 per inhabitant. Thirty-two percent of the total cost was due to lost productivity, 26% to substance-related mortality; funding for prisons and the courts represented 18% of the cost, and 13% was used addictive use. Other social consequences cited in the study were breakdown of the family; the social burden of high rates of drug use related to emergency room visits, and reduced cognitive capacity of drug abusers, which contributed to poor academic performance.

Klingemann (2003) indicated that alcohol use by adolescents and young adults could affect their capacity to prepare for tests and exams and/or go to class, could contribute to their dropping out of school, being suspended or held back, participating and becoming involved in school activities and their attitude towards school and teachers, all of which are linked to different levels of alcohol use.

In a survey on alcohol and drug use, Perkins (2002) found that 22% of students had failed their examinations; 28% had had to repeat a school year because of use of alcohol and other drugs; 13% reported having suffered injuries; 47% reported having suffered nausea and vomiting, and 40% had had a hangover. In addition, 5.1% of substance users reported suicidal ideation, and 1.6% had attempted suicide over the past year.

Frintner and Rubinson (1993) cited by Perkins (2002), state that 25% of those surveyed admitted to engaging in risky and sometimes unwanted sexual behaviors. Some 14% experienced forcible sex and rape while they were under the influence of
substances, 55% of undergraduate women were victims of sexual aggression, intimidation, unlawful detention and at least one attempt at battery. These incidents occurred when the women had been drinking; 60% of the women reported having been moderately or seriously injured at the time of the incidents.

This research is designed to help close the information gap about simultaneous polydrug use in our region. This information may be added to what is already known, and we hope that it will be of help to our region in designing prevention plans and intervention strategies for the universities based on empirical knowledge of simultaneous polydrug use by students.

**Methods**

The present study was part of a multi-site research project conducted among first and second year students in faculties of health sciences in five Latin America countries and one in the Caribbean. In El Salvador, the study participants were from a university in San Salvador.

The design of the study was cross-sectional. A questionnaire was used to survey the subject and collect the information. The sample size was 309 students. Some of the questions in the questionnaire were taken from existing instruments such as Reasons for Drugs, the CAGE Questionnaire and the Canadian Survey (Boys, Marsden and Strang, 2001; Ewing, 1984).

The final questionnaire had four sections and 58 closed questions that covered sociodemographic characteristics and the use of psychoactive substances. It was developed in English and then translated into Spanish. The students who agreed to participate did so voluntarily, and signed an informed consent letter.

The sample was selected from full-time and part-time students enrolled in the first and second years of Medicine, Nutrition and Dietetics, and Nursing. The information was collected in the classrooms by the principal investigator. The completed questionnaires and the informed consent forms signed by the students were placed in separate boxes to ensure their safety.
The analysis of the statistics was descriptive. Associations between variables were studied using the Chi-squared test for independence, with a 95% confidence level. The SPSS statistical program for Windows, Version 17, was used to analyze the data.

The study was approved by the Research Ethics Board of the Center for Addiction and Mental Health of Canada (CAMH) (Protocol reference #225/2008) and by the Research Ethics Committee of the university in San Salvador, El Salvador.

Findings

Sociodemographic characteristics

The sample consisted of 309 students, 80.9% of whom were female, with an average age of 19.6. The majority were students of Medicine 77.3%; Nutrition and Dietetics 14.2%, and Nursing 8.4%, of whom 90.5% were full-time students; 94.2% were not employed; 97.7% were unmarried; 79.6% lived with their parents; 74.4% considered religion to be very important; and 55.7% of their fathers and 50.5% of their mothers had a university education.

General characteristics of psychoactive substance use

The average age of first use of any psychoactive substance was 15.13; 25.2% of the students said they had used psychoactive substances at least once in their lives, while 18.8% had used in the past year. The substances used were principally alcohol and tobacco. Both alcohol and tobacco use in the past year was significantly higher among men than among women (p=0.003 and p=0.002 respectively). No significant differences were found, however, for past month use.

Alcohol and tobacco were the drugs reported most often used. Alcohol use in the past year was 14.9%, and 10.7% in the past thirty days. Tobacco was reported at 10.4% for past year use and 8.4% for past-month use. Reports of the use of marijuana, inhalants and prescription drugs were few. No use of cocaine, heroin or Ecstasy was reported.

Characteristics of simultaneous polydrug use

Some 5.18% of the students said they had used more than one psychoactive substance at the same time during the past year, but that figure fell to 4.21% for
past-month use. The average age of onset of polydrug use was 16.9. The combination most used by the students was alcohol and tobacco, reported by 7 students, or 2.3% for both past year and past month use. Use of the combinations of alcohol and marijuana; alcohol and prescription drugs; alcohol, tobacco and marijuana; alcohol, cocaine and tobacco; marijuana and cocaine, and marijuana and prescription drugs ranged from 0.3 to 0.6% (1 to 2 cases). There were no reports of the use of the combinations of alcohol + cocaine; alcohol + cocaine + marijuana + tobacco; tobacco + marijuana, or tobacco + prescription drugs.

As to how the students learned about combining psychoactive substances, the way most frequently reported was “by myself” 4.2%, followed by “from a friend” 2.6%. The places where polydrug use took place were at “off campus parties/night clubs” 4.2%; “my residence off campus” 2.6%, and “other location” 1.6%. The substances were obtained off campus by 8.1%.

Some 6.1% said that the groups in which students used psychoactive substances were mixed male and female; 2.9% said that they obtained the substances themselves, either with their own money 5.5% or with funds requested from a family member 2.3%. Some 3.6% of the students who were users said “I decide” which type of substances to use simultaneously. As to how they learned about combining substances, 4.2% said “by myself”.

The students perceived access to illicit psychoactive substances as very easy 23.0%, easy 30.7%, difficult 1.9%, very difficult 0.6%, don’t know 43% and 0.6% did not respond to this question.

Regarding the students’ access to prescription drugs, 45.6% said they obtained them from friends and 12.6% said from a dealer, while 35.9% responded that they did not know. Only five students reported use in the past year.

As to the students’ perception of the importance of psychoactive substance use to the university, 27.5% said that it was a very important problem; 7.4% that it was somewhat important; 25.6% that it was not a problem, and 38.5% said that they did not know whether it was a problem or not. One per cent did not answer the question. Psychoactive substance use by health care professionals was thought to be a big
problem 64.1% or somewhat of a problem 12.0%, while 16.5% said that they didn’t know.

Only two students 0.6% said that they had been pressured to begin to use several psychoactive substances at the same time, while 1.3% had influenced someone else to begin to do so.

**Gender implications of simultaneous polydrug use**

Of all the women in the sample, 20.8% said that they had used psychoactive substances at least once in their lives. The figure for men was 44.1%. This difference was statistically significant (p<0.001). Past year and past month polydrug use was 11.9% and 10.2% for men and 6.8% and 6.0% for women respectively. These differences were also statistically significant using the chi-squared test (p=0.015 for past year; p=0.019 for past month). Regarding the influence that men have on women to use more than one psychoactive substance at a time, 52.4% agreed, while 36.2% said that women influence men to do so.

**Social implications of simultaneous polydrug use**

On the basis of the students’ own experiences in participating in university-sponsored activities, they felt that the activities that were considered to be “very important” were academic (lectures, discussions, symposia) and community service activities (tutoring, counseling, volunteering), at 45.3% and 40.1% respectively. The following activities were considered to be “important”: sports, 37.5%; the arts (fine arts, dance, music, drama), 32.4%; recreational clubs and student associations/organizations, 38.2%; cultural associations/organizations, 38.5%, and ethnic and religious organizations, 33.3%. Parties and political associations/organizations were considered “somewhat important” by 34.3% and 37.5% respectively.

**Legal implications of simultaneous polydrug use**

Anomalous situations, such as fights, fines, motor vehicle accidents, incarceration, being hurt or injured, problems with the police, academic probation, suspension from university or other trouble with the university administration, were experienced as follows: academic probation 7.1%, motor vehicle accidents 3.6%, and being hurt or injured by another person 3.2%. There were few reports of fighting resulting in
arrest, incarceration, other trouble with the university administration or the police, at rates ranging from 0.3% to 1.6%. There was no case of a student having been fined for driving under the influence of drugs, or suspension from the university.

Discussion
The prevalence of drug use overall was similar to that found by Rivas de Río and Jenner (2004), who reported use of alcohol and tobacco at 24.8 and 19.2% respectively. The age of first use of psychoactive substances ranged from 14 to 18 years, similar to that found by other authors: Rivas de Río and Jenner (2004), Boskovitz cited by Gómez (2006).

Alcohol and tobacco were the licit substances used most often, followed by marijuana—which is an illicit drug in El Salvador—and prescription drug use. These findings differ from those of other authors, who found higher rates of prevalence of alcohol and marijuana, as well as cocaine, Ecstasy, heroin, cocaine paste (bazuco) and crack (CASA, 2007; CNA, 2001-2008; Gómez, 2006; Salazar, 1996; Chacón et al. 1998; González, 2000; Boskovitz et al., Canuto et al., and Kerr-Correa et al., cited by Gómez, 2006; Carlini et al. 2005; Wagner et al. 2007; Giraldo et al. 2006; OAS/CICAD, 2006, and Zárate, 2006).

Prevalence of polydrug use as reported by the students was low, at 5.18% for past year use, a finding that suggests low levels of polydrug use by this group in contrast to what has been presented in other studies, which have reported prevalences of up to 34% (McCabe et al., 2006; Jessen, 2005; Web et al., 1996; CNA, 2005).

Psychoactive substance use is a problem that involves many social, educational, cultural and health factors and as a result, preventing it requires considerable effort by individuals, institutions and the countries as a whole. We think it important to take action to prevent the use of psychoactive substances, alone or in combination, so as to ensure that our population is healthy, particularly young people who are the future of our countries and the world.

Conclusions
In the present study, 25.2% of the students reported having used psychoactive substances at least once in their lives. The average age of first use reported was
15.1. Figures on polydrug use were 5.18% and 4.21% for past year and past month use respectively, with an average age of first polydrug use of 16.9. The combination of polydrug use most frequently reported was alcohol+tobacco. Low percentages were reported for other combinations.

Limitations
Missing responses may introduce biases into the findings. Given the specific nature of the population surveyed, the study has little potential for being generalized. The study covered only health sciences students in one university. The sample was small, and the indices of reports in some categories of questions were low, which limits the validity of the observations.

Recommendations

- University Social Outreach Offices should offer intensive programs on preventing the use and simultaneous polydrug use of licit and illicit substances, in an effort to have the student body be drug-free.

- The universities’ psychological services should provide special counseling services for students who use psychoactive substances.

- University student services should promote strategies to encourage students to participate in group activities such as sports, art and culture, in an effort to keep them away from drugs.

- We suggest that CICAD continue to promote new research on simultaneous polydrug use in Latin American Universities, covering all university courses.

- The National Drug Commissions of the countries of Latin America should set policies for the universities on the drug problem, and should support drug use prevention programs that the universities are conducting.

Acknowledgements
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References


Case Study in a University in Kingston, Jamaica

Principal Investigators
Carole Mitchell
Patrice Whitehorne-Smith
Joy Harrison

Introduction
Psychoactive substance use/misuse in universities to a large extent reflects the general use pattern of such substances in the social environment of these universities and is occurring at earlier ages (Kuo, M., Lee, M., Eun, J. & Henry, W., 2001; Passos, L. S. R., Alveranga, P.E., Des Santos, B., & Costa de Aquino, M. T., 2006). These substances are for the most part socially acceptable and accessible, thereby making it very difficult for universities to control or counter them. Use at such early ages also runs the risk of students experiencing poor academic performance, dropping out of school or getting into trouble with the law, in addition to long-term aftereffects, long after they may have stopped use (Oesterle,S., Hill, K.G., & Hawkins, J. D, Abbott, R. D., 2008).

A study done by William E. McAuliffe, et al. (1991) revealed that students enrolled in the health/medical science faculties are “not more vulnerable than other faculties”. They are, however, prone to burnout and a heavy workload that may precipitate substance use (Kriegler, K. A & Baldwin J. N., 1994). Based on their chosen professions, students from the health/medical science faculties are expected not only to be aware of the injurious effects of the misuse of psychoactive substances, but also to act as role models of healthy lifestyles, and educate and treat others for the bio-psychosocial impact of negative lifestyle behaviors, including substance use.

In Jamaica, data from a National Adolescent Students’ Drug Survey (1997) (n=2,380) revealed that 70.9% of respondents reported having consumed alcohol, and 28.8% reported alcohol use in the month before the survey was done. Another survey of rural-urban high schools (n=2,417) with 1,063 boys and 1,354 girls between the ages of 16 and 17 found 50.2% alcohol use among this sample. This information suggests that Jamaica is no different as it relates to students entering universities and colleges already initiated into substance use/misuse. The
simultaneous polydrug use patterns of students are, however, not paid enough attention and so data in this area of substance use pattern and profile are lacking. This study therefore focused on simultaneous polydrug use at a corporate area university in Kingston, Jamaica, with a view to understanding the patterns of simultaneous polydrug use at the university and to help devise intervention strategies to address the attendant issues from such use.

This was an initiative that came about through the collaborative efforts of the principal investigators, students, school administration, lecturers and funding agencies: the Organization of American States (OAS) and its Inter-American Drug Abuse Control Commission (CICAD), and the Centre for Addiction and Mental Health (CAMH), Toronto, Canada.

The study had a sample of 295 students from the medical/health science faculty at the university. The design was cross-sectional, employing a convenience sample, used a survey methodology, and a self-reported technique of data gathering. Data analysis was descriptive, and the chi-square test was used for some comparisons among variables. Due process was carried out where ethical considerations are concerned, in terms of informed consent and signing of these documents. This case study is an abridgement of the research’s final report.

Results

Sociodemographic characteristics

The sample in this study consisted primarily of females 80.3%, most of who were from the Department of Nursing. The ages of the participants ranged from 18-50, with a mean of 23.4 years. Most participants were enrolled full-time 95.6%. The majority of the respondents were not employed 87.1%. Most of the participants were in their first year at university 70.5%, with the remainder in their second year of their programs. Approximately 80% reside off campus, with about 50% of them living at home with family members. Regarding marital status, 91.5% were single, while 5.1% were in a legal married union, 2.7% were living in a common-law union, and 1% were estranged from their spouse.
Other key findings
The proportion of students who reported lifetime use of psychoactive substances was 34%, and of them, 66% reported use within the last 12 months.

Gender differentials
There was more reported lifetime use by males than by females 46.6% and 31.2% respectively. Males also reported more psychoactive substance use in the last 12 months, with 38.7% of males and 26.6% of females. We compare these variables using a chi square analysis, obtaining p-values of 0.020 for lifetime use and 0.061 for use in the last 12 months by sex.

Psychoactive substance use
Alcohol featured prominently as the substance most consumed, both in the last 12 months and the last 30 days. The data showed 27.5% use of alcohol in the last 12 months; cannabis, 6.1%; prescription drugs, 5.4%, and tobacco, 4.7%. Within the last 30 days, alcohol use was reported by 15.6%; prescription drugs, 4.4%; cannabis, 2.7%, and tobacco, 2%. There was no reported use of cocaine, heroin, Ecstasy or inhalants. In relation to simultaneous polydrug use, males outnumbered females: 40.9% of males used in the past year versus 14.3% of females, and 8.6% males versus 1.7% females in the last 30 days (p=0.009; p=0.014, respectively).

Simultaneous polydrug use
Ten combinations of substances were presented on the questionnaire, with four of them receiving an affirmative report in the survey. Of these four combinations, alcohol and cannabis was reported as the most widely used combination 3.4%, followed by alcohol with tobacco and cannabis 1.4%; tobacco and cannabis 0.3%, and alcohol with prescription drugs 0.07%, all in the last 12 months. The combinations used within the last 30 days were reported as: alcohol and cannabis 1.4%; tobacco and cannabis 0.3%, and alcohol with prescription drugs 0.03%.

Age of first substance use
A significant number 95.6% of study participants did not answer the question about the age when they first started simultaneous polydrug use. Among the 4.4% who did respond, the mean age of onset was 16.5 years.
Places where substances were consumed
The results showed that 4.4% of respondents purchased substances off campus, while 0.3% indicated they obtained substances on campus. Most of the substance use was reported as occurring off campus 8.1%.

Reasons cited for psychoactive substance use
The top three categories of reasons cited by participants for their psychoactive substance use were: "to change mood", "for social purposes", and "for the physical effects the substances produce".

Problem use among professionals in the health field
Almost half 42.4% of the respondents said they believed psychoactive substance use was a big problem; 25.8% perceived it to be 'somewhat' of a problem; 23.1% were unsure whether it was a problem or not, and 5.1% said they believed it was not a problem.

Discussion
Alcohol was the substance most frequently reported as used by students in the study, alone and in combination with other substances, which coincides with the literature (Barrett, P., Darredeau, C. & Pihl, R. O., 2006; Newcomb, M. D., Maddahiam, E. & Bentler, P., 1996; Fiorini, J. E.. et. al, 2003).

Males consistently reported more substance use than females, a difference that was found to be significant. The same patterns were observed regarding simultaneous polydrug use by sex. This could be related to societal norms on appropriate drug use behavior by males and females. Generally, the ability to consume and tolerate drugs, especially multiple drugs, is seen as a positive sign of masculinity and thus is considered more acceptable among males and unattractive among females (Murphy, Murphy & Barnett, 2005).

No significant differences were identified between substance users and non-users in relation to extracurricular activities, academic performance or violence stemming from substance use. This seeming lack of difference may be in part attributed to the apparent low frequency and amount of drugs used by individuals in our sample.
Conclusions
It is apparent that substance use/misuse is part of the university’s culture, especially those substances accepted by societal norms. Many respondents declared simultaneous polydrug use to be a problem for the university. This is encouraging, in our opinion, as students can therefore partner with the school’s administration in helping to formulate, implement and evaluate intervention measures aimed at tackling substance use/misuse in the institution.

Limitations of the study
The small sample size reduces the reliability of our findings. The low generalizability due to the specificity in the population studied limits the applicability of the conclusions to other groups of students or to the youth population as a whole. The high number of female respondents in comparison to males influenced the reported results. The self-reported character of the survey and the missing answers could have introduced bias.

Recommendations
- It is recommended that this study be extended to include all faculties at this university and other universities in Jamaica, in order to obtain a true picture of the severity of simultaneous polydrug use in these institutions.
- Further research directed towards different aspects of simultaneous polydrug use is also needed to create and facilitate effective prevention and intervention programs across the region.
- In addition, more substance use/misuse educational programs should be offered at the institution, as a means of sensitizing students in general to the injurious effects of substance misuse.

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Case Study in the University in Leon, Nicaragua

Principal Investigator
Andrés Herrera Rodríguez

Introduction
There is concern region-wide that university students in the Latin American and Caribbean countries are increasingly vulnerable to drug use, which endangers their wellbeing and increases the health care burden on each country. The rise in substance abuse among university students is considered a public health crisis for some countries. According to a CASA (2007) study on substance abuse in U.S. colleges and universities, the chief substance used is alcohol, at an estimated rate of 65-70%.

The trend seen over recent decades has intensified, and students are now immersed in a culture of the abuse of addictive substances that causes a series of academic, health and social consequences that penetrate neighboring communities (CASA, 2007). The highest prevalence on university campuses continues to be alcohol 49.4%, but the use of other licit and illicit drugs has risen in recent years. Recent studies have reported that students’ use of marijuana and other illicit substances has doubled, from 1.9% to 4.0%, while the use of other drugs such as cocaine increased by 52 % (CASA 2007).

This research was part of a multicenter study that focused on simultaneous polydrug use (use at the same time of different combinations of psychoactive substances) by first and second year undergraduates in the schools of medical and health sciences in universities in five countries in Latin America and one Caribbean country, and the legal and social consequences of such use.

Students who use psychoactive substances are of concern to the universities, particularly since they represent the future professionals who will provide health care services. A number of risk factors contribute to their vulnerability, including difficulties in making the transition from high school to university, increased availability of substances, their developmental stage, acceptance by peers, and interaction with the family. Very few data on substance abuse by university students
are available, and those that do exist focus on ease of access to alcohol by high school and university students, and related problems. Most of the research has focused on the use of a single substance such as alcohol or marijuana, and little attention has been paid to the simultaneous use of multiple drugs. This is particularly true for developing countries and regions such as the Caribbean and Latin America.

The present study is designed to close the information gap about simultaneous polydrug use by undergraduate health sciences students in one university in León, Nicaragua, and its gender, social and legal implications.

Methodology

The study was cross-sectional and descriptive in nature. The university where the study was conducted has approximately 15,150 students and around 1,734 students in the following health sciences courses: medicine, nursing, clinical laboratory, and psychology. A convenience sample of 357 students was used. The classes chosen for the study were selected at random from those obligatory classes in the abovementioned courses.

Results

Sociodemographic characteristics

The study was cross-sectional, and the simple consisted of 357 subjects. Most of the participants were women 67.2%; the nursing school had the most women (80.6%), with 5.7% women in the medical school. The median age for the four schools (medicine, nursing, psychology and clinical bio analysis) was 19.5 years of age; the nursing school students had the oldest median age of 20.3. Most of those interviewed 93.8% were not employed. We found that 26.8% of nursing students lived in university residences, while 63.7% of the students of clinical bio analysis lived in the home of a family member, compared to 62.1% of the psychology students. Around 55.5% of the participants were in their first year of university, 67.5% of who were in the medical school and 51.5% of who were studying psychology.

About 94.4% were unmarried, most of whom were in the medical school, followed by the psychology students. When asked about the importance of religion in their lives, 62.5% considered it to be very important 67.2% in the nursing school. The students
were also asked about their parents’ level of education: 22.4% of their mothers had finished primary school, 21.0% had completed secondary school, and 37.8% had completed university. Some 46.2% of the fathers of the medical school students had a university education, while overall, 17.4% of fathers had completed primary school, 29.4% had completed secondary school, and 40.6% had completed their university education.

**Characteristics of the use of psychoactive substances and prescription drugs**

Of the 357 participants in the study, 52.1% said that they had used a psychoactive substance at least once in their lives; the rates were higher for psychology students 62.1% and clinical laboratory students 52.7%. The average age of first use was 15.5, with nursing students reporting the youngest age of onset compared to the remainder of those surveyed. They were also asked whether they had used psychoactive substances in the past year, and here, 42.6% of the total number of participants said that they had done so; the highest rate of use was by psychology students 51.5%, followed by students in clinical bio analysis 43.6% and with medical students in third place 40.2%.

The study subjects were also asked which psychoactive substances they had used in the past twelve months. The responses were that 80.3% had used alcohol, tobacco 34.2%, prescription drugs 5.9%, 4.6% had used cannabis and 3.9% had used cocaine/crack. The highest rates were among nursing and medical students. Asked about use in the past month, 53.9% of the total had used alcohol, 29.6% tobacco, 5.3% prescription drugs, 2.6% cannabis and 2.0% cocaine/crack.

The highest prevalence rate was found for alcohol among medical students (10.3%); the next highest was cannabis at 8.8% among psychology. Daily use of tobacco was reported by 11.2% of the medical students. An average of 70.4% of drinkers reported alcohol use on the weekend 79.9% of psychology students, 79.2% of clinical bio analysis students, 69.2% of nursing students and 63.2% of medical students. However, use of drugs such as cocaine was reported by 2.9% of psychology and medical students.

Asked whether they had used more than one psychoactive substance at the same time in the last 12 months, 31.6% said yes; medical students reported the highest prevalence 36.8%, followed by nursing students 30.8%, 26.5% of psychology students and 25.0% of clinical bio analysis students. When asked about the use of more than one psychoactive substance at the same time in the past month, 22.4%
overall said yes; psychology students had the highest rate 26.5%, 25.0% of medical students, 16.7% for clinical bio analysis, and 15.4% for students of nursing.

**Characteristics of polydrug use**
The most usual combinations of psychoactive substances used in the past year were alcohol + tobacco + cannabis 14.7%, and alcohol + cannabis, alcohol + cocaine, and cannabis + cocaine, all at 8.8%. The highest rate of use of alcohol + tobacco + cannabis was by nursing students 75.0%, followed by the use of “other combinations of substances” by medical students 58.8% and clinical bio analysis 100%. The most significant combinations used in the past month were “other combinations” 58.8%, alcohol + cocaine, alcohol + prescription drugs, and cannabis + cocaine 5.9%, with the highest rates among psychology students for all combinations, followed by medical students. The average age of first use for all courses of study was 17.4, with the youngest in psychology students 16.9 years.

**Biological effects of simultaneous polydrug use**
Nearly one third 29.4%) said that their simultaneous polydrug use was in order to have a physical effect (to help stay awake and to help them sleep), with the highest rate among medical students 41.1%, followed by clinical bio analysis and nursing students, who mostly engaged in simultaneous polydrug use to enhance feelings when having sex 50.0%. Helping them to facilitate activities (make something they were doing less boring) was the reason for 32.4% overall, and 29.4% for medical students. Some 50.0% of clinical bio analysis students said that it helped them to improve the effects of other substances, while 23.5% said that it helped them to manage the effects of other substances (improve the effect or ease the aftereffects of other substances). When asked whether they had ever had to use more than one substance simultaneously first thing in the morning in order to wake up, steady their nerves or alleviate a hangover, 11.8% of the participants said yes, with a higher rate among nursing and medical students.

**Psychological effects of simultaneous polydrug use**
Simultaneous polydrug use was in order to change mood, or help them to relax 76.5%, with a higher rate among nursing and medical students 100% and 82.4%. When asked whether they had ever felt they ought to cut down on using more than one psychoactive substance at a time, 55.9% overall answered yes, with a higher rate among psychology students 77.8% and nursing students 75.0%. Answering the
question of whether they had ever felt bad or guilty about using more than one substance at the same time, 55.9% said yes, with a higher number of positive responses from clinical bio analysis and psychology students 75.0% and 55.6% respectively. Common sources of stress and anxiety were reported to be economic problems 75.1%, university studies 70.9%, and the university schedule 71.7%. With regard to their relationship with their parents since they entered university, 61.9% reported that they were very good, with 30.3% of all participants saying that they were good. The participants said that their academic performance had been good 70.0% and middling 21.0%.

**Cultural aspects of simultaneous polydrug use**

Here, the study explored how the participants learned of different combinations of psychoactive substances. The source most often reported was a friend 52.9%, followed by “on my own” 41.2%. When asked where they normally used these substances, 67.6% said it was at off campus parties and nightclubs in the city, followed by on campus parties 44.1%, at home off campus 29.4% and other locations 38.2%. The highest rate of simultaneous polydrug use was among medical students off campus/night clubs 76.5%, at on-campus parties 41.2%, at home off campus 35.5%, and at their residence on campus 17.6%.

When they were asked “where do you normally get the substances that you use?”, most said “off campus”; however, 17.6% obtained them on campus, with the highest percentages found among psychology and clinical bio analysis students 25.0%, followed by medicine at 17.6% and nursing at 11.1%.

The participants were also asked whether they felt pressured to begin using several psychoactive substances at the same time. Some 8.8% of the total said that they had felt pressured, with 25.0% of clinical bio analysis students having felt pressured, followed by psychology 11.1% and 5.9% of medical students. Asked whether they had influenced other people to start using psychoactive substances simultaneously, 26.5% said yes 50.0% of nursing students, 29.4% of medical students, and 22.2% of psychology students). About 82.2% said they used more than one psychoactive substance when they were in a group of people, with the highest rate being among clinical bio analysis and nursing school students.

Answering the question: “What was the most frequent composition of the group where you used substances?” the response was generally “both men and women”. As
to who in the group of users decides which kind of psychoactive substances to use at the same time, 57.1% said “I decide” (with a higher number among medical students), while “the entire group decides” was reported by 75.0% of the students of clinical bio analysis. When asked who is the person in the group that usually obtains the psychoactive substances for you, 46.4% said that more than one person obtains them. As to the day(s) on which the group meets to use psychoactive substances, most said Saturdays 67.9% and Fridays 53.6%.

Another issue studied was whether they had ever felt they ought to cut down on using more than one psychoactive substance at the same time: 61.8% said yes, with the highest percentages among psychology students 77.8% and nursing 75.0%.

Asked whether people annoyed them or criticized them for their use of more than one psychoactive substance at the same time, 35.3% said yes, with the highest percentages in nursing and medicine 50.0% and 35.3%. Examining how the respondents perceived psychoactive substance use by women, 79.8% said that it was not good for women and 81.2% said that it was not good for men; the nursing students were in the majority in feeling that it was not good for women 85.1% or for men 83.6%. Some 62.2% of the participants felt that men influenced women to use more than one psychoactive substance at the same time, with higher percentages among nursing students 67.2%, medicine (63.9%) and psychology 57.6%, while 42.3% thought that women influence men to use substances. Among medical students, 44.4% thought that women influenced men 43.6% among clinical bio analysis students, 40.9% of psychology students and 37.3% of nursing school students.

Asked about their relationships with their parents since they entered university, most said that they had been very good 61.9% and “good” 30.3%; the highest percentage was among medical students 72.2%, while it was psychology students who most often reported poor relationships with their parents 10.6%.

**Social aspects of drug use**

Drugs were used for social purposes (to help them keep going on a night out with friends) 50.0%; medical students used drugs to help them enjoy the company of their friends, while clinical bio analysis students used drugs to feel more confident or
more able to talk to people in a social situation 75.0%; and 50.0% of nursing students and 55.6% of psychology students said it was in order to keep going on a night out with friends.

We also describe the ease of obtaining substances, and perceptions of and influence on substance use. Most of the participants felt that it was very easy to obtain illicit substances (marijuana, cocaine, heroin or Ecstasy) and licit substances 24.6% and 30.8%. This perception was greater among medical students very easy, 29.6% very easy, 34.3% followed by psychology students, 21.2% and 33.3% respectively.

Students have access to prescription drugs through their friends when they do not have a medical prescription 46.8%, with a higher percentage among psychology students 59.1% than among bio analysis students 45.5% or medical students 45.0%. When asked whether they perceive psychoactive substance use as a problem for the university, most 68.3% said that it was a very important problem psychology, 75.8%, medicine, 67.5%, 67.2%, nursing, and a lower percentage among bio analysis students.

**Social experiences and the importance of taking part in university activities**

Under the heading of the importance of taking part in university activities, 41.7% felt that it was not important to go to parties; 40.6% thought sports were important; 36.4% thought that the arts were important, and 60.7% said it was important to take part in academic activities. Some 42.6% thought it was only somewhat important to participate in political organizations or associations, while 37.0% said that it was important to take part in recreational clubs. In addition, 41.2% thought that participating in student associations/organizations was important, while 38.1% thought cultural/ethnic and religious associations or organizations were important, and finally, 45.7% said it was important to take part in community service activities.

**Gender implications of simultaneous polydrug use**

According to the participants, 60.4% (29 cases) said that it is men who influence women to engage in simultaneous polydrug use, while 39.6% (19 respondents) said that women influence men.
Social implications of polydrug use

This section describes whether the participants were satisfied with their performance at university. Some 38.9% said that they were very satisfied, with the highest percentage among nursing students 44.8%. They were also asked about how they perceived psychoactive substance use by professionals in the health field: 68.1% thought that it was a big problem, with higher percentages among nursing students 73.1% and clinical bio analysis students 72.7%. They were then questioned as to whether, in the last 12 months, they had experienced any of the following situations: financial difficulties 65.5%, and family conflicts 37.3%; family conflict and economic problems were the most prevalent among psychology students. Some 3.9% of the participants said that they had been the victim of a violent act while under the influence of psychoactive substances, with the highest prevalence among psychology students 6.1%, nursing students 6.0% and 3.8% of medical students. They reported that 92.9% of the attackers had been under the influence of psychoactive substances.

Legal implications of polydrug use

The following situations were reported as having been experienced in the past year: suspension from university 6.7%; having been hurt or injured by another person 3.1%; having had motor vehicle accidents 2.5%; fights resulting in arrest or other trouble with the university 2.0% for both. The rate of suspension from university was 10.6% among psychology students, 9.0% among nursing students, and 5.6% of medical students.

Mechanisms for support and help

As to the recommendations on helping individuals who use or are at risk of using more than more than one psychoactive substance at the same time, 68.6% recommended providing them with special counseling services through the health sciences faculties. Developing university-based clubs or support groups to help those who need help to manage the situation was recommended by 67.5%; 59.1% recommended providing specific educational activities such as seminars or talks about psychoactive substances, while 45.7% recommended developing university policies on the use of psychoactive substances on campus.
Discussion

This study suggests that the simultaneous use of psychoactive substances by undergraduates in the health field is a problem. Simultaneous polydrug use has been described as particularly prejudicial to the health of adolescents and young people (Collings, R.L et al, 1999). Factors that might be predictors of simultaneous polydrug use include a favorable environment, social beliefs and deviations from the norm, and family dysfunctionality may be an environment that predisposes to drug use.

Eight out of ten of the students interviewed reported having used alcohol in the past twelve months, the rates being the highest in the schools of nursing and medicine, while more than half reported use of alcohol in the past month. A general population study done by PAHO/WHO (2006) in León, Nicaragua found that nearly one-third of the 18-24 year-olds participating in the study said they had used alcohol in the past 12 months, and that alcohol use was concentrated among university students. The present study reinforces the idea that prevention programs must be promoted for undergraduate students.

One quarter of the study participants said that in the past month, they had used some combination of substances, with the most common being alcohol + cannabis and cannabis + cocaine, among others. According to Midanik et al. (2007), alcohol and cannabis are the two substances most commonly taken together, and that the prevalence depends on the type of drug used and the pattern of use, which coincides with our own findings. We found that the “biological determinants” most mentioned by the students as being associated with drug use were physical reasons (helping them to stay awake or helping them to sleep), mentioned most often by medical students, at least one in ten of whom had had to use drugs in the early morning. The “psychological determinants” were most commonly found among medical students and clinical bio analysis students, particularly those used to change a person’s mood, most often, to relax.

However, the response on the need to reduce drug use was found most often among nursing and psychology students, around three-quarters of the participants. They said that sources of psychological stress were most frequently the university
schedule, economic problems and family problems, with these stressors being more often reported by psychology and nursing students.

The form in which more than half of those surveyed learned to use drugs was from friends, or on their own. Drugs were used more often off campus and in local nightclubs, influenced mainly by other people. Another significant finding of this study is that more than half of the respondents said that they themselves are the ones that decide which substances to use in combination, and that more than half use on Fridays and more than two-thirds on Saturdays.

The most common social aspects of psychoactive substance use are for social purposes, mostly to help them keep going when they go out at night with their friends. Around two-thirds of the participants said that was very easy or easy to obtain drugs in León, which may suggest the need for social regulation policies.

Nearly half of the participants said that they obtain substances from a friend, but two out of ten obtain them from a dealer. It is notable that more than two-thirds say that psychoactive substance use is a problem for the university. According to Boys, A. et al., (2001), the most common reasons for use by young people of alcohol, cannabis, amphetamines, Ecstasy, LSD and cocaine are to relax 97%; to become intoxicated 96%; to stay awake when socializing at night 96%; to facilitate activities 86%, and to alleviate symptoms of depression 87%.

The biological, psychological and social effects have been examined by other authors who have described drug use as a mechanism for escaping problems, in order to be fashionable or to communicate better (Porciel, A.J., 2000; Royo J.I. et al, 2004). In general, drugs should not be used for entertainment, much less should simultaneous polydrug use be engaged in, because of its more prejudicial effects on health.

**Conclusions**

Of the 357 participants in this study, 52.1% said they had used a psychoactive substance at least once in their lives; the highest rate of use was among psychology students 62.1%, followed by clinical bio analysis students 52.7%, medicine 51.5% and nursing 43.3%. The average age of first use was 15.5, with nursing students having the younger age of first use in comparison to the remainder of those
surveyed. Some 42.6% of participants said they had used drugs in the past year, with highest use among psychology students 51.5%, followed by clinical bio analysis students 43.6%, with medical students in third place 40.2%)

With regard to the individual questions about past year psychoactive substance use, 80.3% of the total had used alcohol, 34.2% tobacco, 5.9% prescription drugs, 4.6% cannabis, and 3.9% cocaine/crack, with alcohol use being highest among nursing and medical students. Past month prevalence was: 53.9% had used alcohol, tobacco 29.6%, prescription drugs 5.3%, cannabis 2.6% and 2.0% cocaine/crack.

Regarding simultaneous polydrug use, the study found that: the combinations of psychoactive substances most frequently used in the past year were: alcohol + tobacco + cannabis 14.7%, and alcohol + cannabis; alcohol + cocaine and cannabis + cocaine, all at 8.8%. The combination alcohol + tobacco + cannabis was most notable among nursing students 75.0%, followed by the use of other substances among medical students 58.8%. All of the clinical bio analysis students used other combinations. Factors reported as related to simultaneous polydrug use included unprotected sex. The students who said that parties were important had higher reported rates of simultaneous polydrug use than those who did not consider parties to be important.

**Limitations of the study**

The limitations of the study include the fact that there were missing answers to some of the questions, which may have introduced biases into the study. Further, the findings of this research cannot be generalized to all university students in Nicaragua, nor to all of the countries participating in this study, because the participants are not a representative group, but rather, are only the first and second year undergraduates in the schools of health and medical sciences. Finally, the small number of cases of simultaneous polydrug users identified made it difficult to find correlations among the variables examined, and may have introduced bias into the study.
Recommendations

- To the University: conduct campaigns to inform people about the dangers of simultaneous polydrug use, particularly those that are combined with prescription drugs. Organize self-help groups that involve the students. Promote the organization of ongoing recreational activities for students when they first enter university, so as to distance them from activities that could put them at risk for simultaneous polydrug use.

- Promote prevention programs for students to identify signs of the danger of psychoactive substance use and seek help. In addition, organize university counseling services for the most vulnerable groups via campus student associations. We suggest that self-help groups be formed to prevent and treat psychoactive substance use. Promote university policies on healthy lifestyles and drug-free spaces.

- To the National Drug Commission: we suggest promoting exchanges among human development institutions, and discussing with the rectors of universities in different countries how to include the subject of drugs and the addictions into the curriculum, at the very least as an optional or elective module.

- To CICAD/OAS, strengthen means of cooperation with universities as institutions that develop human resources. Also continue to promote training for teachers and academics in the field of drugs and the addictions, and different forms of prevention. Encourage joint research with universities to produce knowledge and the use of findings in teaching. Participate in fora for discussion of these subjects and carry out national and international exchanges among teachers and researchers in the drug and addictions field.

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