INTERNATIONAL RESEARCH CAPACITY BUILDING PROGRAM
FOR HEALTH RELATED PROFESSIONALS TO STUDY
THE DRUG PHENOMENON IN LATIN AMERICA AND THE CARIBBEAN

RESEARCH PROPOSAL

KNOWLEDGE OF CONSEQUENCES, ACADEMIC
PERFORMANCE AND DRUG CONSUMPTION AMONG
UNDERGRADUATE STUDENTS IN NINE
UNIVERSITIES FROM SIX LATIN AMERICAN AND
THREE CARIBBEAN COUNTRIES

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ABSTRACT

The objective of the proposed study is to determine the relationship between knowledge of consequences, academic performance and consumption of alcohol, cocaine and cannabis among selected undergraduate university students from six countries in Latin America and three in the Caribbean. This research project uses a cross sectional design; and is grounded in a bio-psychosocial theoretical framework. A total of 250 undergraduate students aged 18 to 35 years and majoring in either Health or Social Sciences will be chosen from a sample of classes selected through a randomized cluster sampling process. A modified survey instrument consisting of over 70 items derived from socio-demographics, knowledge of consequences, drug consumption and academic performance measures will be used to test the research question and hypothesis. The data will be collected between January and June 2013 and then analyzed using the current version of SPSS available at each institution. Statistics to be used to analyze the data will include descriptive, correlation and logistic regression. Reports of the findings will be disseminated to various stakeholders.
1 INTRODUCTION

Assessing the link between the level of knowledge that university students have regarding the adverse consequences of drug use and the role academic achievement plays in relation to drug consumption is critical in understanding why university students continue drug consumption behaviors. Accessing how these two dimensions of cognitive functioning (knowledge and achievement) relate to drinking and other drug use behaviors will also aid efforts to reduce drug use among undergraduate university students in Latin America and the Caribbean.

About 4.8% of the world’s population ages 15-64 are estimated to use illicit drugs. About 250,000 worldwide die due to the use of illicit drugs, 2.5 million die from alcohol-related causes and 5.1 million due to tobacco (UNODC, 2011). Other consequences of drug use include stigma and discrimination, as well as disruption in the ability to think and act responsibly which adversely affects an individual’s performance at work or school. University students are particularly vulnerable to involvement with licit or illicit drugs. Illicit drug use is likely to continue “to be linked primarily to young people as it is probable that youth culture will continue to play a key role in shaping drug use behavior” (UNODC, 2011).

Factors driving the use of licit and illicit drugs among university students in Latin America and the Caribbean are of ongoing concern to policy makers, health professionals, university administrators, parents, and the wider community. Understanding these underlying associations will be critical in reducing drug demand among university students in this region. In their article “Measuring outcomes of alcohol, marijuana and cocaine,” Gillespie and colleges (2007) stated that college/university provides a context for experimentation with alcohol and drugs, the consequences of which may range from mild to severe (Gillespie, Holt, & Blackwell, 2007).

In the proposed study, we consider knowledge of adverse negative or harmful consequences (biological, psychological, and social) and academic performance, and whether these factors are predictors of alcohol, cannabis, and cocaine consumption. Some previous research has suggested that important links among these measures may exist. For example, a national survey of alcohol-related knowledge and behaviour among high school and university students (aged 16–25) in the UK revealed that knowledge about consumption guidelines was generally poor; in five of the 7 items examining knowledge and guidelines, fewer than half of
the respondents gave correct responses (de Visser & Birch, 2012). Another study of
knowledge of short term consequences of alcohol and alcohol-related harm in a sample of
Australian university students suggests the existence of a high-risk population who were not
aware of the drinking-related risks (Hasking, Shortell, & Machalek, 2005).

To confirm these findings, we undertook a systematic review of studies published since 2000.
Few studies examining the effects of drug usage have focused primarily on its impact on
academic achievement (Jeynes, 2002). Studies on alcohol consumption among college
students across most countries of the world generally show a negative association across
academic performance; college students who consume more alcohol tend to have lower
GPAs due to the effect of alcohol consumption on cognitive ability and study hours. The
National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2002) identified ‘difficulty
meeting academic responsibilities’ as one of the most common consequences of alcohol use.
Its Task Force on College Drinking found that about 25% of college students in the United
States reported academic problems caused by alcohol use, such as lower grades, doing poorly
on exams or papers, missing class, and falling behind (NIAAA, 2002). A study of
undergraduate students in New Orleans (Larrieu, 2009) reported that alcohol and marijuana
use were both negatively correlated with GPA.
2 JUSTIFICATION

The use of licit and illicit drugs among university students is a major public health concern. Patterns of licit and illicit substance use have been assessed among undergraduate students worldwide (Abdullah, Fielding, & Hedley, 2002; Mustaine & R, 2004). Some studies examined the consumption of males, residents of university hall, senior students, and among those who possessed a positive attitude towards substance use (Abdullah, et al., 2002). Most studies conducted in Latin America and the Caribbean have reported that alcohol, cannabis, and cocaine are the most-consumed drugs among university students (Cogollo-Milanes et al., 2011; Picolotto, Libardoni, Migott, & Geib, 2010; M. J. Sepulveda, Roa, & Muñoz, 2011).

Drug consumption is a very complex phenomenon; it involves social, psychological, cultural, economic, spiritual, and behavioural aspects, and relatively little information is available from Latin American and Caribbean countries on how these aspects interrelate. One study reported rising levels of alcohol consumption among students as they progressed through university (Bewick et al., 2008). The rate of substance use was higher among males, residents of university halls, senior students, and among those who possessed a positive attitude towards substance use. Perceptions of risk from the use of different substances were found to be low among those who use substances and among senior students. (Abdullah, et al., 2002). This evidence thus suggests a dangerous combination where consumption is on the increase while the perception of threat from the use is low. The consistently high levels of consumption among the large population of students highlight the need for effective preventative and treatment interventions for all age groups.

However, few studies have focused on the extent to which university students’ knowledge about the biological, psychological, and social consequences from drug use affects their academic performance, influence or affect their own drug use. It is important to assess these linkages because they may have important effects on learning.

The data obtained by this study will be used for prevention, intervention, and public policy development. These initiatives are particularly important for university students, who are at risk - based on their developmental stage as young adults and their social stage - as they begin to be independent. Data about knowledge of consequences of drug use is also important for the identification and better understanding of populations at risk for heavy or harmful drug consumption. In addition, many prevention programs focus on increasing knowledge about
the consequences of drug consumption, with the goal of overcoming misconceptions that may act as a disincentive for behavioural change toward safer practices (Sussman et al., 1993).

Another important reason for conducting the proposed study is to measure academic performance. Academic performance involves various factors: intellect (IQ), academic motivation, past achievement, interest in school, school and classroom environment, parental support, parent educational level, and socioeconomic status. Of these factors, academic motivation, interest in school, and socioeconomic status are likely to be correlated to substance-use behaviours (Cox, Zhang, Johnson, & Bender, 2007). In a study by Cox et al. (2007) they describe current patterns of poor academic performance and assess the relationship between academic performance and substance use among Mississippi public high school students. They found a relationship between low academic performance and substance use, and highlighted the importance of continuing to study this topic.

Sansgiry and colleges (2006) investigated the relationship between marijuana and alcohol use and academic performance among undergraduate students and found that both marijuana and alcohol use were negatively correlated with academic performance. The 2008 College Academic Performance and Alcohol and Other Drug Use report revealed a positive relationship between low academic performance and use of alcohol and other illicit drugs.

Thus, while only a few studies analyze the relationship between knowledge of consequences, academic performance and drug use, the available evidence suggests that these relationships may be important for understanding alcohol and drug use among university students and other young people. In considering that the design of drug intervention programs for young people is an important public health goal, the present multicentre study will address relationships between knowledge of consequences and drug consumption in undergraduate students with a goal of contributing to the design of more effective prevention programs. Furthermore, the results of the study may facilitate drug policy development within each participating university and for the region in general, and contribute to the prevention of drug-related problems among students.
3 RATIONALE OF PARTICIPATING COUNTRIES / UNIVERSITIES

3.1 BRAZIL

Brazil is the largest country in South America, and is located in the north-east of the continent. It has 26 states and 1 federal district, and an area of 8,514,876.6 km², a population of 190,755,799 (2010) and a median age of 28.2 years. The overall literacy rate is 89.6%. Its gross domestic product (GDP) per capita is reportedly US$8,295.00 (2008) (CICAD, 2010).

The most recent data from Brazil reported an approximate rate of dependence on alcohol and tobacco among the Brazilian population at 12.3% and 10.1%, respectively. The use of cannabis is ranked first among illicit drugs at 8.8%. Prevalence rates of lifetime use (except tobacco and alcohol) were: solvents (6.1%); cocaine (2.9%); crack (0.7%), and paste of cocaine or “merla” (0.2%). Non-prescription drug use prevalence is reported as follows: anxiolytics (5.6%) and stimulants (anorexigens; 3.2%) (Carlini, Galduróz, Noto, & Nappo, 2005).

In 2010, a study of 18,000 university students from 100 public and private universities revealed that 86.2% had ever used alcohol, 46.7% had used tobacco, 26.1% had used cannabis, 20.4% had used inhalants, 7.7% had used cocaine, and 1.2% had used crack. Within the last year, 72% had used alcohol, 27.8% had used tobacco, 13.8% had used cannabis, 6.5% had used inhalants, 3% had used cocaine, and 0.2% had used crack. In the last 30 days, 60.5% had used alcohol, 21.6% had used tobacco, 9.1% had used cannabis, 2.9% had used inhalants, 1.8% had used cocaine, and 0.2% had used crack (CICAD, 2010).

The State of Sao Paulo has 547 universities, of which the major ones are private. The University of Sao Paulo (USP) was established in 1934. This public university has the largest enrollment of students than any other university in Brazil. The total population is 75,000. It ranks 43rd in the Webometrics Ranking of world universities. USP has nine campuses: two in the city of Sao Paulo and others in Bauru, Ribeirao Preto, Sao Carlos, Piracicaba, Pirassununga, Lorena, and Santos. This research will be conducted at the Ribeirao Preto campus, which has a total of 25 faculties. A previous study conducted at the University of Sao Paulo reported that 40% of all students had ever used illicit drugs, 95.6% had ever used alcohol 95.6%, 51.7% had ever used tobacco, 9.1% had ever used psychedelic drugs, 8.1% had ever used amphetamines, and 7.7% had ever used tranquilizers (CICAD, 2010).
3.2 CHILE

Chile occupies a long, narrow strip of land in South America between the Andes Mountains to the east and the Pacific Ocean to the west. It borders Peru to the north, Bolivia to the northeast, Argentina to the east, and the Drake Passage in the far south. Chilean territories include the Pacific islands of Juan Fernández, Salas y Gómez, Desventuradas, and Easter Island. Chile also claims about 1,250,000 km$^2$ of Antarctica. Chile’s distinctive shape, with a length of 4,300 km and an average width of 175 km, makes it longest country in the world, north to south, and the fifth longest coastline, at more than 78,000 km (Marine Jurisdictions, 2011).

Chile’s GDP per capita is US$15,400 and its annual growth rate is as high as 5.6%. In early 2011, the estimated total population was 17,000,000 with a median age of 32.1 years and a literacy level of 99.20%. In 2010, alcohol was the most common of the licit or illicit drugs consumed by the general population, with a prevalence of 40.5%; this was followed by tobacco (24.5%), marijuana (4.6%), and cocaine (0.7%). Young people (aged 19–25) were most likely to consume licit or illicit drugs: 55.4% had used alcohol, 27.4% had used tobacco, 12.3% had used marijuana, and 1.3% had used cocaine (Senda, 2010).

The University of Concepcion is a traditional private university, but is subsidized by the state. It has three campuses, and the undergraduate program includes 21,780 students and 57,000 certified professionals teaching in 18 faculties. The Postgraduate Program includes 1,300 regular students and 1,235 faculty members (883 faculty members with academic degrees), with 23 doctoral programs, 48 master’s programs, and 28 specialty programs in the health sciences.

The main campus of the University of Concepcion is located in the city of Concepcion, 500 km south of Santiago, and the capital of Chile. The Chillan Campus is located in the city of Chillan, 117 km north of Concepcion. The Chillan Campus has three faculties and two independent degree courses. Its diverse facilities include administrative buildings, classrooms, auditoriums, laboratories, teaching staff offices, and sports fields. It covers more than 25,000 m$^2$ and is distributed among the trees and gardens of an old and beautiful park. The Los Angeles Campus was founded in 1962; it has 1,300 students and the equivalent of 58 full-time faculty members.
In recent years, two studies have explored licit and illicit drug use at the University of Concepcion: one analyzed the relationship between perceived norms about drug use among peers and actual use among university students. It was a qualitative, multicentre study involving sophomore and junior students enrolled in health courses. Of the 380 students enrolled in these courses, 286 (75.2%) agreed to participate. The study reported that more than 50% of the students observed their peers smoking cigarettes on a daily basis, drinking alcohol three times a week, using marijuana once a week, and using cocaine at least once a year. Of the participants, 68% had ever smoked, 57% smoked on a daily basis, 88% had ever used alcohol, 26% had ever used marijuana, and 16% had used marijuana during the last 12 months. The researchers concluded that the students were not aware of any university policies about drug use and confirmed that drug use is generally underestimated (Ramirez Castillo, Cunningham, Brands, Strike, & Wright Mda, 2009).

Another study was carried out in 2009. A questionnaire exploring drug consumption and social-demographic, economic, and religious variables was administered to 1,577 third-year students aged 22 ± 2 years (54% females). Of respondents, 68% were from the middle socioeconomic class, 71% belonged to a religion, and 29% declared themselves to be agnostic. Overall, 96% had ever used alcohol and 29% had never smoked. With regard to illicit drugs, 22% had ever used marijuana, 5.3% had ever used cocaine, 2.6% had ever used hallucinogenic drugs, 2.3% had ever used inhalants, 1.4% had ever free-based cocaine. free base in 1.4%. Another 6% had ever used stimulants and 13.8% had consumed sedatives. A higher economic income appeared to facilitate drug consumption, and adherence to a religion appeared to have a protective effect. The findings revealed that alcohol is the most commonly consumed drug, and is the substance that generates most problems among students at the University of Concepción ((Sepúlveda, Roa, & Muñoz, 2011).

3.3 COSTA RICA

Costa Rica is located in Central America between the Caribbean Sea, Pacific Ocean, the Republic of Nicaragua, and the Republic of Panama (República de Costa Rica, 1949). The country has an area of 51,100 km² (INEC, 2011). In 2011, the population was estimated at 4,301,712 (2,106,063 males and 2,195,649 females); more than 67.9% of the population was between the ages of 15 and 64, and 7.3% of the population were over 65 years old (INEC, 2011). The annual growth rate between 2010 and 2011 was 1.1 and the overall literacy rate
was approximately 96% (INEC, 2011). As of 2012, Costa Rica had a gross domestic product of US$4,607 (BBCR)

About the drug situation in the country, the Costa Rican Drug Institute (ICD) is the institution responsible for planning, designing, and executing the policies, plans, and strategies for drug use prevention, treatment, rehabilitation, and reintegration of individuals who are dependent on drugs, as well as policies, plans, and strategies to combat illicit drug traffic (ICD, 2012). The most frequently used licit drug is alcohol and the most frequently used illicit drug is marijuana. As of 2006, 41–62% of the population had ever used alcohol, and 21.5–41% had ever used tobacco (ICD, 2008).

Regarding illicit substances, marijuana is the substance of major preference with statistical information showing, between 4% and 11% of general population has tried alcohol. Available statistical evidence shows for 2006, between 3.2 and 3.7% the percent of people would have tried these psychoactive and other stimulant substances, at least once in their first lifetime (ICD, 2008).

The University of Costa Rica has a total population of 54,160 undergraduate students, distributed on the 13 campuses around the country. Sede Rodrigo Facio, which is located in San Pedro de Montes de Oca, is the main campus with six major areas of knowledge concentration: Arts and Humanities, Basic Sciences, Agro Sciences, Social Sciences, Health, and Engineering. It has 13 faculties, 46 schools, and 42 research units (UCR, 2012). The sample for the present study will be extracted from following population:

- Health Sciences: 3,719 students distributed across 4 faculties. These faculties are Pharmacy, Medicine (School of Medicine, School of Nursing, School of Human Nutrition, School of Health Technologies, and School of Public Health), Microbiology and Odontology.
- Social Sciences: 3,493 undergraduate students distributed across 8 schools. These schools are Collective Communication, Political Sciences, Social Work, History and Archive, Geography, Anthropology and Sociology.

A study involving nursing students revealed that 44.9% of respondents had ever used alcohol and 1.4% had ever smoked marijuana (Rojas, 2010). In another study of 107 fourth-year nursing students, the most frequently consumed drugs were reportedly alcohol and tobacco (Díaz, 2008).
3.4 EL SALVADOR

El Salvador is located in Central American and borders the North Pacific Ocean between Guatemala, Honduras and Nicaragua. Its land area is 20,720 Km2 and a coastline of 308 Km. It has a population of 5.7 million with a density of 299 persons per km2. The population growth rate is 0.445% while life expectancy is 72.3 years. The Gross Domestic Product (GDP) reported in 2010 was estimated at US$ $7,300 per capita (CENSO, 2007).

Drug consumption in the general population typically occurs among persons who are between the ages of 12 to 71 years old. The most commonly used substances are alcohol and tobacco (18.6% and 14.6%, respectively). The most prevalent illicit drugs are marijuana, used by 6.1%, cocaine used by 1.9% and solvents and inhalants used by 1.5% (CNA, 2005).

According to the 2008 SIDUC school survey (CICAD, 2010), the prevalence rates of psychoactive substance use during the past year among El Salvadorian students in grades 7, 9, and 11 were as follows: alcohol 20%; tobacco 15%; and marijuana 3.5%.

A 2011 survey of El Salvadorian undergraduate students reported that 40% had used alcohol, 21% had used tobacco, 3.3% had used marijuana, and 1.4% had used tranquilizers at least once between the ages of 16–19 (CICAD, 2010). The most frequently combination was alcohol plus marijuana (1.2%) and alcohol plus smoking plus marijuana (1%) (Bautista & Osmel, 2011). According to (Rivera, 2009), the cause of heavy drug use was weak family relationships and at least 2 out of 10 students knew peers who used drugs with an estimated 30% to 40% of university students possibly at risk for substance problems.

A study about licit and illicit psychoactive substances conducted at 14 El Salvadorian universities showed that of 594 participants, during the last year 5.8% had used tobacco, 8.4% had used alcohol, 1.9% had used marijuana, 0.7% had used cocaine, and less than 0.5% had used ecstasy, heroin, inhalants, and prescription drugs (Bautista & Osmel, 2011).

The Evangelic University of El Salvador is a private non-profit institution located in San Salvador. The student population is approximately 2,250 and the school has six faculties: Medicine (41.11% of students); Dentistry (8.48% of students); Social Sciences (16.84% of students); Law (7.15% of students); Engineering (8.75% of students); and Business Sciences (14.17% of students) (UEES, 2012).
3.5 JAMAICA

Jamaica is an island in the Caribbean Sea; it has a length of approximately 234 km and a width of approximately 80 km, with an approximate area of 10,990 km$^2$. The island is divided into 14 parishes and three counties. At the end of 2011, the estimated population was 2,709,300 with an annual growth rate of 0.7%; the median age was 24.2 years, the literacy rate was 87.9%, and the unemployment rate was 12.7%. In 2011, the estimated gross domestic product per capita was US$8,300.

Between 2006 and 2009, the substances with the highest prevalence rates of abuse were cannabis (marijuana), crack cocaine, and alcohol. Although tobacco is used extensively, relatively few tobacco users sought treatment for substance-related problems (CICAD/OAS, 2010).

Northern Caribbean University is a private liberal-arts institution that is owned and operated by the Seventh-day Adventist church. The institution is located in the town of Mandeville, which is in the parish of Manchester, Jamaica. The university has an enrollment of more than 5,000 students who are registered in the following programs: Arts and General Studies, Natural and Applied Sciences, Business and Hospitality Management, Teacher Education and Behavioural Science, and Religion and Theology.

3.6 MEXICO

Mexico is located in North America; it is bordered by the United States in the north and Guatemala and Belize in the south. It is the fifth-largest country in the Americas, with an area of 1,959,247.98 km$^2$. It has 31 states and one Federal District. In 2010, INEGI (CPV, 2010) estimate the total population at 112,337,000. More than 70% of the population is older than 15 years; the median age is 26 years. Among the population aged 15 and older, the literacy rate is 86% (86.9% male and 85.3% female). In 2002, the gross domestic product per capita was US$6,092. In 2010, Mexico’s economy had a growth rate of more than 5.5%.

In 2008, the Encuesta Nacional de Adicciones (ENA) reported that consumption of licit and illicit drugs in Mexico among the population aged 12–65 years had increased to 5.7%, a 5% increase compared with 2002 rates. Consumption of illegal drugs (cannabis, cocaine,
heroin, methamphetamines, hallucinogens, inhalants, and others) had increased by 4.6% to 5.2% of the population, and consumption of potentially addictive medical drugs without a prescription had remained at the same level.

Of the population aged 12–25 years, 2.20% consume cocaine, and 0.57% consume methamphetamines (ENA, 2008: 137). Men between 18 to 34 years of age present a high rate of abuse/dependence on alcohol. Among women, 2.4% have similar problems. The 2008 ENA results revealed an increase in the rates of individuals abusing psychoactive substances in Puebla: 0.2% of the total population in Puebla, but this rate is lower than the national average of 0.6%. The most vulnerable population is young people who do not attend school, who work, and who live with one parent (SINA VE).

In Puebla, surveys suggest an increase in abuse of psychoactive substances (SecretariaSalud, 2008). Highly vulnerable populations include youth who do not study or who continue to work and live just with one parent (SINA VE). Of the population aged 18–65 years, 3.6% use legal drugs, 3.4% use illegal drugs, and 0.3% use medical drugs. Overall, 0.9% use alcohol daily, 29.4% are considered high consumers, 4.0% casual consumers, and 7.7% exhibit abuse/dependence. According to the ENA, the population aged 12–17 years has no problem with alcohol consumption, compared with the population aged 18–65 (ENA, 2008: 166).

The Benemeritus University Autonomous of Puebla (BUAP) is based in central Puebla. The university has several campuses (Centro, University City, Angelópolis, Health Area, and regional campus) with an average of 35,000 undergraduate students. The university has four principal areas of development, 22 faculties, and 61 programs at the undergraduate level. No statistics have been published about drug consumption at the university, but Flores et al. (2011) reported that the drugs most commonly used by undergraduate students are alcohol, cannabis, and tobacco.

3.7 NICARAGUA

Nicaragua is located in the middle of the Central American Isthmus, between Honduras and Costa Rica, and has an area of 130,373.4 km². It is made up of 15 Departments and two Autonomous Regions (located on the Caribbean coast). The population is about 5.815 million, with a population density of 45.8 inhabitants/km² (BCN, 2010; INIDE, 2008). The national language is Spanish; most residents of the Caribbean Coast speak English, Creole,
and Miskito. The literacy rate is 76.8% for men and 76.6% for women (INIDE, 2008). Agriculture is the greatest contributor to the gross domestic product (GDP), and in 2010 the total GDP, per capita was US$1,126.50, with an estimated PIB of 4.5% (BCN, 2010).

Drug consumption is an ongoing problem in Nicaragua because of the lack of research and resources for intervention and drug prevention programs. According to the World Health Organization, 41.1% of young people in Nicaragua have ever used alcohol and in 2003, the per capita recorded alcohol consumption (litres of pure alcohol) among adults (>=15 years) was 2.5 liters (WHO, 2010).

Sánchez, M (2003), reported that alcohol and tobacco were the most commonly used drugs among students. Marijuana was the most commonly used illicit drug among students, followed by cocaine hydrochloride, solvents-inhalants, and crack. Consumption tended to increase with age and education, with private schools reporting a higher prevalence of drug use (Sanchez, 2003). Another study of students enrolled in the Faculties of Medicine at two Nicaraguan universities reported a 36.8% prevalence rate of tobacco consumption within the last 12 months was 36.8% at one (University Autonomous National of Nicaragua, UNAN-Managua) and 50.7% at the other (Central American University of Business Studies, UCEM). The prevalence of alcohol consumption during the last 12 months was reportedly 53.6% and 77.6% at the two institutions, respectively (Silva, 2008).

The National Autonomous University of León (UNAN, León) is a public university with approximately 15,150 students. The Faculty of Medical Sciences is composed of four programs: Medicine (1208 students), Nursing (497 students), Clinical Laboratory (170 students), and Psychology (200 students) (UNAN-León, 2012).

A study performed in 2010 by Castro et al., found that 52.6% of the university students from the medical sciences consumed alcohol, 25.3% tobacco, 48.7% medication and 2.6% cocaine. (Castro, Cortés, Pereira-Vasters, & Lobo da Costa, 2010). In 2010, Carera et al. reported that 39% of university students consumed alcohol, 9.8% tobacco, and 1.2% cannabis (marijuana). Another study performed in 2012 by Aleman et al. reported that 78% of students had used alcohol, 45.6% had used tobacco, and 1.8% had used marijuana. Interestingly, in both of those studies the majority of consumers were females (77%) aged 17–24 (CICAD, 2012).
3.8 SURINAME

**Suriname** is located in northern South America. It borders French Guiana to the east, Guyana to the west, Brazil to the south, and the Atlantic Ocean to the north. It has a total area of 163,800 km², with 386 km of coastline; it is a constitutional republic and has 10 districts. The 2009 population was estimated at 481,267 with the following main ethnic groups: Hindustani, Creole, Javanese, and Chinese. Suriname has a literacy rate of 88%. In 2005 the GDP per capita was US$6,600 and the inflation rate was 9.5%. The annual growth rate in 2010 was 4.4. The types and prevalence of drugs consumed are alcohol (male 81%, female 56.5%), tobacco (male 60.0%, female 24.5%), marijuana (male 19%, female 3%), and cocaine (male 2%, female 0.5%) (CICAD/OAS, 2007).

The Anton de Kom University of Surinam is a public institution located in Paramaribo. It offers undergraduate and graduate programs and includes 3,600 full-time and part-time students. It has three main faculties: Social Sciences, Medical Sciences, and Technological Sciences. To date no studies have been conducted to determine the rate or extent of drug consumption and types of drugs consumed by the student population.

3.9 TRINIDAD & TOBAGO

The twin island republic of Trinidad and Tobago is located on the southernmost section of the Caribbean archipelago, with Tobago lying northeast of its sister island. Its closest neighbors are Grenada to the northwest, Barbados to the northeast, and Venezuela on the South American mainland separated by the 11-km strait of the Gulf of Paria. Trinidad and Tobago has a total area of approximately 5,128 km² and is divided into 14 municipal corporations (2 cities, 3 boroughs, and 9 regions).

According to the 2011 census, the estimated population is 1,317,714 (2010) and the estimated population growth rate is approximately-0.087%. The median age is 33.1 years. Approximately 98.6% of the total population are literate, defined as functional literacy at age 15 and over. The per capita gross domestic product (GDP) is estimated at around US$20,565.92 and the annual GDP growth rate at 6.98%. Trinidad and Tobago does not conduct national drug consumption surveys among adults on a regular basis, but a National Secondary Schools Survey was conducted in 2006 and indicated that the most commonly
used drugs among young people are alcohol, tobacco, marijuana, morphine, cocaine, crack, depressants, solvents, and inhalants.

The University of the Southern Caribbean (USC) is a private coeducational institution with a diverse student body located on more than 300 acres in the lush Maracas Valley. It is fully recognized as a tertiary-level educational institution by the Government of Trinidad and Tobago, through its accrediting body, the Accrediting Council of Trinidad and Tobago. The university offers various associate, undergraduate, and graduate programs through six schools: School of Education and Human Sciences, School of Humanities, School of Business, School of Science and Technology, School of Social Sciences, and School of Theology and Religion. There are more than 40 fields of study. Both full-time and part-time study options are available. In addition degree programs are also offered at satellite campuses located on several islands throughout the Caribbean region.

The University through its Department of Research supports faculty and staff to carry out their research; and disseminate and publish the results. USC has an undergraduate enrollment (2011-2012) of 3,500 students from over 25 countries; and a faculty and staff of about 499. No studies have been done to determine the rate or extent of drug consumption and types of drugs consumed by students at the University.
4 LITERATURE REVIEW

In the world literature the drug phenomenon is considered a very complex multi-disciplinary issue. Between 149 and 272 million people (3.3% to 6.1% of the population aged 15-64) consumed illicit substance at least once in the previous year. The use of illicit psychoactive substances (like cocaine, cannabis, and crack) is lower than the use of legal psychoactive substances (like alcohol and tobacco) (UNODC, 2011).

Cannabis remains by far the most widely used illicit substance. The number of cannabis users was estimated between 125 and 203 million in 2009, equivalent to a prevalence rate of 2.8%-4.5% of the population aged 15-64 (UNODC, 2011). Cocaine appears to rank fourth in terms of global prevalence, with estimates ranging from 14 to 21 million people, equivalent to an annual prevalence rate ranging from 0.3%-0.5% of the population aged 15-64. The global use of cocaine seems to be less widespread than the use of opioids, and the use of opiates (UNODC, 2011). Alcohol use, as a licit drug, is common across many countries, and the prevalence of alcohol use is related to hazardous drinking behavior. Heavy or hazardous use of alcohol is a leading contributor to morbidity and mortality internationally (WHO, 2011).

There are many myths and assumptions around alcohol consumption (WHO, 2011). Heavy episodic or binge drinking is a drinking pattern associated with many harmful consequences, but it has only been studied in only a few countries in the American hemisphere. In the Americas, alcohol has been identified as the most important risk to health in low and middle income countries (including Brazil, Mexico and most Latin American countries) (WHO/PAHO, 2007).

South America continues to be known for large-scale cocaine production and trafficking. The rate of drug use, notably in the Southern Cone countries, has also become significant. Similarly cannabis production in South America, Central America and the Caribbean has reached significant levels; and is clearly above the global average. In 2009, 70% of global cannabis plant seizures, an indirect indicator of cannabis production, occurred in this subregion. Three quarters of these seizures took place in South America alone. Cannabis production seems, in most countries, to be primarily for domestic use. About 0.9%-1.0% of the population aged 15-64 consumes cocaine. This is equivalent to some 2.6-3.0 million
PEOPLE OR 17% OF THE WORLD’S COCAINE-USING POPULATION (UNODC, 2011).

ALCOHOL, CANNABIS AND COCAINE USE AND ABUSE AMONG UNIVERSITY STUDENTS

Alcohol

Risk behaviours in young people especially among college students are increasingly linked to alcohol consumption; and this is of public health as well as political concern (Karam, Kypri, & Salamoun, 2007; Reavley, Jorm, McCann, & Lubman, 2011). In countries like the USA binge drinking is the leading cause of injury and death among university students (Hingson, Heeren, Winter, & Wechsler, 2005).

Results from other countries is mixed (Karam, et al., 2007). In Egypt, 14.4% never tried alcohol and 4.1% reported current drinking; more than one-half (55.6%) had knowledge of the dangers of using alcohol, and use was more common among students. In a Hong Kong university, a study of 2,630 students found that 7% reported having five or more drinks on one occasion, while 0.8% reported alcohol related problems. A study involving Lebanese university students examined alcohol consumption one decade after the Lebanese war. They found that lifetime alcohol use increased from a baseline of 42.9% to 70.8% over the decade, (27.0% increase) abuse increased from 2.8% to 9.1% (a three-fold plus increase), and dependence increased from 2.9% to 5.3% (almost twice as many) respectively (Karam, et al., 2007).

Two Australian studies involving university students were assessed. One was a group of 275 studying psychology. It found that 14% reported driving in the preceding month after having more alcohol than was recommended for their sex and license category. The other study compared 774 students and 422 staff. The staff was more likely to drink regularly, with over two-thirds (70%) drinking twice per month or more compared to less than half (48%) of male students 16-24 years of age. However, students were more likely to drink heavily, with 33% drinking 6 or more drinks in one session at least monthly, compared to 21% of staff (Reavley, et al., 2011). A study of 1,564 New Zealand students found that 63% met criteria for hazardous drinking, 6% reported driving after drinking, and 9% were passengers of a drink-driver. In Sweden, a study of 1,585 university students showed that heavy episodic drinking
was reported by 51% of women and 71% of men, and 40% of women and 56% of men experienced intoxication at least weekly. In Brazil, a study of 200 first year university students revealed that 86.5% of the sample tried alcohol at least once in their life, 75% reported drinking in the preceding 30 days, and 18% of men and 7% of the women reported driving at least once while intoxicated (Karam, et al., 2007).

**Cannabis**

In most of the countries where trend data are available, there has been an increase in cannabis use over time (CICAD, 2010). A multicenter study by Ramirez and colleagues (Ramirez Castillo, et al., 2009), involving 286 sophomore and junior students in health courses at a Chilean university found that over a quarter (26%) used cannabis once in their life, and 16% used cannabis over the last 12 months. Another Chilean prevalence study of university students indicated that cannabis was consumed by 22%, followed by cocaine at 5.3% and cocaine free base at 1.4% (M. J. Sepulveda, et al., 2011).

The alcohol and drug habits of 136 second-year medical students (46 men, 90 women) attending the University of Leeds were assessed. Findings showed that one third (33.1%) of students (28.3% men versus 35.6% women) used illicit drugs. The drug most commonly used was cannabis (Pickard, Bates, Dorian, Greig, & Saint, 2000).

**Cocaine**

Cocaine is mostly produced in South America and is consumed worldwide. In recent years use has increased in South America and the Caribbean and decreased among high school students in North America (CICAD, 2010). Half of the total world consumption is reported in the American hemisphere: 70% is found in North America, and 27% is found in South America, where cocaine use levels are similar of those in Europe (CICAD, 2010).

Romero and colleagues (Romero, Santander, Hitschfeld, Labbe, & Zamora, 2009) surveyed 569 Medical students in Chile. They found that 33% reported using cannabis compared to 1.1% using cocaine at least once in their lives. A study of university students in Brazil revealed that those older than 20 years of age and females reported less alcohol consumption in the previous month. Those from lower income family reported greater use of cannabis,
cocaine and inhalants (Picolotto, et al., 2010). Matallana and colleagues (2009) found, in a sample of 365 Columbian university students, that, in the past year, 43.6% reported tobacco use, 96.2% reported alcohol use, 8.2% reported marijuana use and 2.2% reported cocaine use (Medina Matallana, Cunningham, Strike, Brands, & Wright Mda, 2009). In a study involving 594 students at 14 universities in El Salvador, the prevalence in the past 12 months of the use of licit and illicit substances was as follows: alcohol 8.4%, tobacco 5.8%, cannabis 1.9%, cocaine 0.7% and ecstasy, heroin, inhalants and prescription drugs at less than 0.5% (Bautista & Osmel, 2011).

**ACADEMIC PERFORMANCE AND DRUG CONSUMPTION**

Studies on the impact of drug consumption on the academic performance of university students appear mixed. One study from Belgium of 128 students comparing those who met the criteria for alcohol dependence (62%) and those who did not (50%) found no significant association between alcohol abuse and academic performance (Aertgeerts & Buntinx, 2002).

Cox and colleagues (Cox, et al., 2007) found that low academic performance was more prevalent among males, frequent smokers, binge drinkers and cannabis users among high school students in Mississippi. Another study assessed the relationship between adolescent patterns of consumption of cannabis, cocaine, alcohol and tobacco and their academic achievement in the USA (Jeynes, 2002). The results showed that increased frequency of smoking, usage of cannabis, cocaine and alcohol also had a negative impact on adolescent academic achievement. When different types of drug consumption were considered together, cigarette smoking, being drunk and under the influence while at school were the variables that produced the most consistent statically significant effects. This study underlines the relationship between consumption of alcohol, cocaine and cannabis on academic performance (Jeynes, 2002).

Other research reported an association between alcohol and academic performance mediated by the sleep habits of the student (Singleton & Wolfson, 2009). Students who drank more alcohol had later sleep schedules. These sleep schedules correlated self-reports of greater daytime sleepiness with lower grades or academic performance. This means that the relationship between alcohol consumption and poor academic performance can be mediated by other factors such as sleep that in turn can be influenced by alcohol consumption. The influence of alcohol consumption on academic performance can be direct or indirect (Singleton & Wolfson, 2009). It is also important to note that other characteristics have an influence on
academic performance such as academic ability and academic achievement, participation in deviant behavior, evidence of psychopathology, and parental education achievement (Aertgeerts & Buntinx, 2002).

**RELATIONSHIP BETWEEN KNOWLEDGE OF CONSEQUENCES AND DRUG CONSUMPTION**

The consumption of alcohol, cannabis and cocaine can have substantial negative biological, psychological and social consequences. Potential consequences can range from having a hangover, to attempting suicide, problems with law enforcement or other authorities, psychosis and disease including cirrhosis and cancer ("CORE INSTITUTE. Measuring change, delivering results," 2005; Gillespie, et al., 2007).

In the United States, almost 600,000 college students were injured because of drinking, and about 700,000 reported being assaulted by another college student who was drinking. Also, 474,000 students admitted to having unprotected sex because of drinking alcohol, and alcohol consumption was involved in nearly 100,000 sexual assaults or date rapes among college students (Hingson, et al., 2005). Another study show that alcohol is the primary factor contributing to unintended and unprotected sexual activity, property damage and vandalism and interpersonal violence (Hasking, et al., 2005).

The evidence indicates that frequent and prolonged use of cannabis can be detrimental to mental health. A high risk of psychotic symptoms in predisposed individuals, with higher for frequent users, has been reported, while the findings on symptoms of depression and anxiety are less consistent. On the cognitive-behavioral level, the functions most affected seem to be the attentional and executive ones (Tziraki, 2012). Chronic cocaine use is associated with neurobiological and cognitive deficits that persist into abstinence, hindering success of behavioral treatment strategies and perhaps increasing likelihood of relapse. Cocaine-dependent individuals have functional alterations in the frontolimbic systems that support moral judgment and social decision making, leading to cognitive and neurobiological sequela underlying cognitive deficits (Gould, Gage, & Nader, 2012).

Elvik (2012) reported a systematic review and meta-analysis of studies that assessed the risk of accidents associated with the use of drugs including alcohol, cocaine and cannabis when
driving is presented. The results showed that the use of drugs while driving tends to have a larger effect on the risk of fatal and serious injury accidents than on the risk of less serious accidents (usually property-damage-only accidents) (Elvik, 2012). Accordingly it is important to consider that the consequences of substance use and abuse can be different, depending upon the patterns of drug consumption and the kind of the drug.

Although many studies suggest that alcohol, cannabis and cocaine are the principal drugs of choice for a large proportion of college students (CICAD, 2010; Karam, et al., 2007; Picolotto, et al., 2010); very few studies have examined knowledge of consequences and drug consumption among students. Identifying the relationship between level of knowledge of consequences and drug use may provide valuable information for prevention efforts in this population. Krupka and Vener (1987) found that in the United States undergraduate students had a low level of knowledge concerning the relationship between alcohol and alcohol-related health problems (Krupka & Vener, 1987).

A study of nursing students in Bologna found high levels of knowledge of the negative consequences of excessive alcohol intake. The negative consequences most commonly identified were those related to the gastrointestinal system. Interestingly, only a few students identified accidents as one of the risks of excessive alcohol intake (Bergamaschi, Zanetti, Stampi, & De Luca, 1995).

Another study of students from Bond University on the Gold Coast of Australia showed that they were generally inaccurate in their estimate of the alcohol content of beverages, and national guidelines for low risk drinking. Students were also found to hold different perceptions regarding how harmful different alcoholic beverages were (Hasking, et al., 2005). In addition, a study examining college students’ perceptions of positivity-negativity found that they varied depending on the consequence that was assessed. Most consequences were considered negative by greater than 50% of the sample. There were six consequences that were considered positive or neutral by greater than at least 50% of the sample. Finally, perceived positivity of the consequences were associated with higher weekly drinking patterns for vomiting, blackouts, regretted sex, late to work/class, skipping an evening meal, and being hung-over (Mallett, Bachrach, & Turrisi, 2008).
In Germany, a study assessed the impact of undergraduate medical training on alcohol use disorders (AUD) and smoking; and the perceived knowledge of medical students regarding consequences of, and treatment options for, these disorders compared with other chronic conditions (diabetes, hypertension). The results showed that courses devoted approximately half as many teaching hours on AUD and tobacco as on diabetes or hypertension. Final-year students reported high levels of knowledge of consequences of all four conditions and how to treat diabetes and hypertension, but only 20% believed they knew how to treat alcohol use disorders or smoking (Strobel et al., 2012).

Black and colleges (2004) examined the drinking patterns and problems of university students and specifically focused on the knowledge of urban university students related to alcohol use and drinking patterns (Black, Ausherman, Kandakai, & Jurjevic, 2004). They found that knowledge regarding alcohol and alcohol effects was generally low among urban college students. This study suggests that differences in knowledge regarding alcohol and alcohol effects may exist based upon the college setting (traditional vs. non-traditional). African Americans, younger students, and females tended to be less knowledgeable regarding alcohol and alcohol effects. Since many students experiment with alcohol during their college experience, concerns regarding their lack of knowledge about alcohol and alcohol effects exist with regard to their risk of unexpected outcomes in relation to alcohol consumption. It is also important to note that the research considered here focused on the consequences of alcohol consumption. Almost no studies have examined relationships among knowledge of consequences and drug consumption among university students.
5 THEORETICAL FRAMEWORK

A number of theories and models are available to describe the drug consumption phenomenon. The cognitive model focuses primarily on influences other than the patient’s own beliefs. The most important aspect of this model is the cognition or mental process which relates to perception, judgment and reasoning. For a therapist it means finding out what core beliefs (conscious or unconscious) are allowing the addiction behavior to emerge. In this model, therapists have to interview and assess patients as individuals. Particularly, the cognitive model considers whether the patients feel stress and believe the addictive behavior is a good solution, in this case, the treatment is direct at exposing the false beliefs at the root of the problem. Cognitive therapy is combined in addiction treatment most often with pharmacotherapeutic interventions.

George Engel critiqued the model used in western medicine and emphasizes the need of health professionals to change the way they approach disease in order to best serve their patients (Engel, 1977). He developed a new model for understanding psychiatric illnesses (including substance use and dependence), based on influences from the social and psychological environment. Specifically, his model encapsulates the complexities of disease in terms of how it presents, and its symptoms, severity, response to treatment, which are difficult for the biomedical model to express.

There are several advantages of using this biopsychosocial model. As based on the General Systems Theory, in which the sciences are organized around a hierarchy of systems, all the sciences or theories are at a system level and are interdependent from the others, and none has, theoretically, functional priority over the others (Alvarez, Pagani, & Meucci, 2012).

The biopsychosocial model is inclusive of the traditional health and addiction models and thus it can be used for therapeutic as well as intervention (short program) and prevention purposes. It also provides a flexible framework for explaining and demonstrating the complex nature of the drug phenomenon. This model is amenable to empirical evaluation and supports a broad range of empirical testing.

Lakhan considers that this model supports the holistic view of health where the state of being is accompanied by interrelationships and the quality of life (Lakhan, 2006). As seen earlier, research suggests a direct and strong relationship between drug use/consumption and
academic performance among high school, college and undergraduate students. These findings are represented in Figure 1.

![Figure 1: Relationships between academic performance and drug consumption.](Image)

In Figure 2 below, the solid black lines indicate that there is a relationship between KOC and Drug consumption and there is also a relationship between academic performance and drug consumption. However, the broken line indicates that academic performance may modify or influence the relationship between KOC and drug consumption.

![Figure 2. Biopsychosocial model for knowledge of consequences, academic performance and drug consumption](Image)

This kind of bio-psychosocial model will help us investigate the relationships between drug consumption, knowledge about consequences, and academic performance among university students in Latin America and the Caribbean. It supports the theory that complex interactions between biological, psychological, and sociological factors can significantly contribute to the development of drug consumption (Engel, 1977). The model shifts the focus from the disease to health, making it particularly relevant for disease intervention and prevention. Its flexibility makes it appropriate for clinical and health promotion of health and prevention of disease.
BIOLOGICAL FACTORS

Biological factors related to drug consumption include gender, genetic, neurological, and pharmacological components from the emerging literature on gender differences over the past 25 years, male and female substance abusers are clearly not the same. Women typically begin using substances later than do men. However, women tend to be strongly influenced by spouses or boyfriends to use, report different reasons for maintaining the use of drugs, and enter treatment earlier in the course of their illnesses than do men (Brady & Randall, 1999). Gender and enhanced novelty reactivity can predispose certain individuals to drug abuse. An individual’s sex continues to be a predisposing factor with respect to drug abuse and can be compounded by additional individual differences such as reactivity to novelty (Cummings et al., 2011).

From a neurological perspective, the immature brains of adolescents can reveal why they engage in risky behaviours. Over the past two decades, studies have used magnetic resonance imaging (MRI) and other imaging techniques to demonstrate that the human brain undergoes major changes during childhood and throughout the teen years, which are related to the risk taking, novelty seeking, and impulsivity that characterize adolescent behaviour. For example, gray matter in the brain begins thinning early in childhood – a sequential maturation process that begins at the back of the brain. This gray-matter thinning only finally reaches the forebrain areas – which are responsible for planning, reasoning, and impulse control – during early adulthood. As the prefrontal cortex develops, individuals slowly become more able to make appropriate choices and calm their unruly emotions.

When determining risk versus reward, teenagers tend to emphasize benefits while discounting dangers. Researchers have described this phenomenon and related cognitive constraints in various ways, including damaged decision-making ability, weak analytical ability, psychological barriers, or weak emotional control and expression. Neuroscientists have found that the orbitofrontal cortex and anterior cingulated cortex are activated in addicts while they are craving, intoxicated, and/or binging. When an addict begins treatment, these areas are deactivated (Lee, 2011). Goldstein and Volkow evaluated the role of frontal cortical structures in drug addiction, and found that the orbitofrontal cortex is connected with
limbic structures, are the frontal cortical areas most frequently implicated in drug addiction (Goldstein & Volkow, 2002).

From the pharmacological perspective, adolescent drug users are seen as having bodies that are malfunctioning with regard to the production of crucial neurotransmitters, so drugs are used as a form of self-medication and as a way of coping. The interaction between the pharmacological properties and the physical effects of the drugs habituates the adolescent drug user’s central nervous system to the drug via a neurotransmitter malfunction, which then reinforces the desire to use the drug (Lee, 2011). As early as the 1980s, research demonstrated that the acute administration of most commonly abused drugs increases dopamine transmission in the basal ganglia (Wise & Rompre, 1989), which is essential for reinforce behavior and thereby promote addiction (Koob & Le Moal, 2001; Robinson & Berridge, 2003). Therefore, dopamine projections to the basal ganglia and cortex are important in facilitating the encoding of learned associations necessary for the development of addiction (Jay, 2003). Once an individual is addicted, the uncontrollable urge to obtain drugs and relapse arises from a pathological form of the plasticity in excitatory transmission (J. Sepulveda, Astorga, & Contreras, 1999; J. Sepulveda, Oliva, & Contreras, 2004; M. J. Sepulveda, Hernandez, Rada, Tucci, & Contreras, 1998).

With regard to genetic predisposition, research has demonstrated that genetic makeup is a major factor in vulnerability to drug abuse (Volkow & Muenke, 2012). While drug abuse is the result of a complex interplay of biochemical, psychological, social and environmental factors, and genetic variance plays an important role in the susceptibility of adolescents’ drug use and abuse. It is also claimed that the more severe the abuse, the greater the role of genetic factors (Comings, 1996; Crabbe, 2002).

SOCIAL FACTORS

The social factors include family, children, friends and other social relationships as well as health, environmental, religion and legal factors. The social factors associated with the biopsychosocial model and the application to drug consumption is family, peers, health, environmental, religion and legal factors.

Family

The Social Work Dictionary (2001) defines family as a primary group of socialization, including persons who are related by blood, adoption or marriage, who usually share a
common residence. The family is usually composed of caregivers and/or parents such as father, mother and children. Although, the family generally has a positive effect on adolescent behaviors, there are instances when it may contribute to negative behaviors based on nature of parenting, and involvement in drug use and other negative behaviors.

Peers

Dube (2007) stressed the importance of peers. He arguing that peer group pressure was one of the major factors contributing to drug abuse particularly among youths who may seek acceptance from peers (Dube, 2007).

Environment

The environment or community where one lives plays an important role in people’s lives. This is of particular importance for adolescents who as the popular song says,” live what they learn”. Based on the concepts of learning, adolescents who are reared in communities with high levels of drug use and other negative behaviors tend to become drug users adopt and exhibit negative behaviors. Communities that also have limited opportunities for access to education and vocational training, high levels of unemployment and overcrowding as well as lack of economic opportunities can also contribute to negative behaviors such as drug use (WHO, 2003a). The report also noted that poverty in the home may also contribute to crimes frequently associated with drug use and other criminal activities.

Religion

Gordon (2004) reported that religious and spiritual beliefs based on faith and trust in God or a greater spiritual being tends to support development of inner strength and the development of a sense of meaning and purpose to life, thus providing an informal means of social control and reducing the likelihood of drug use among the youths (Gordon, 2004). Involvement in religious or spiritual factors could play a protective role for the adolescent (WHO, 2003b).

Legal

Many adolescents who use drugs also come in contact with the criminal justice system. They may drive after using drugs, or be involved in a motor vehicle accident when impaired. Continued use of drugs reduces the ability to think logically and act rationally.

Together, these social factors are strongly associated with drug consumption. Adolescents from a negative family background of poverty and crime, and those who have a history of
mental illness or have experienced economic or social difficulties are at greater risk for involvement in illegal drug use. In contrast, involvement in religious or spiritual activities may play a protective role for adolescents (WHO, 2003b).

**PSYCHOLOGICAL FACTORS**

The psychological factors associated with the bio-psychosocial model and it is application to drug consumption are related to three principal areas: cognitive (motivation, attention, memory, decision making, and solving problems ability impairment), behavioral (aggressive and violent behavior, mood swings, etc.) and emotional (personality aspects such as anxiety, depression, paranoia, panic and mania).

**Cognitive**

The relationship between motivation and addiction has been explored. (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004). The authors presented a reformulation of the negative reinforcement model of drug addiction and proposed that the escape and avoidance of negative affects is the principal motive for addictive drug use. The authors emphasized that negative effects in the motivational core of the withdrawal syndrome facilitate the detection of interoceptive cues of negative preconscious affects.

Goldstein and Volkow (2002) focused on the effects of motivation, memory, behavior (loss of control) and cognitive problems (executive functions), and argued that prolonged drug use causes emotional, behavioural, and cognitive effects. They also discussed alternative reinforcement and deficits in the inhibitory control of drug responses (Goldstein & Volkow, 2002).

Kelly (2004) described the relationship between the process of drug addiction and the natural processes of reward, learning and memory, and their basis in different neurotransmitter systems (dopamine and glutamate) (Kelley, 2004). These two main systems appear to play an important and key role in motivation, learning, and memory, thus modulating adaptive behavior. Many drugs of abuse present principal effects precisely on these pathways and are able to induce alterations in motivational network and thereby produce maladaptive behaviors. Relapse, recovery, and forgetfulness can be explained also as effects of drug use (Goldstein & Volkow, 2002).

**Behavioral**
Bechara and Eileen (2004) focused on alterations in the working memory process, and found a relationship between impairments in this process and decision-making. They suggested that impaired decision-making and/or inhibitory control process may explain the continuous risk behaviours common among drug users (Bechara & Martin, 2004).

**Emotions**

Motivation and emotions are two important networks that have similar functional organization, connectivity, neurochemical and neurohumoral integration, molecular biology, and role in cognition and behavior (Kelley, 2004). This is why all these networks can be altered by drug use.

**Figure 3** displays the complex interaction and interrelatedness of the factors which are associated with the knowledge of consequences, with academic performance and with drug consumption in the context of the biopsychosocial model.
CONSEQUENCES OF ALCOHOL, CANNABIS AND COCAINE USE

The principal consequences of use of alcohol, cannabis and cocaine described by the World Health Organization in the biological, psychological and sociological domains (WHO, 2002) are summarized in table 1.

Table 1. Consequences of alcohol, cannabis and cocaine use

<table>
<thead>
<tr>
<th>DRUG</th>
<th>BIOLOGICAL</th>
<th>PSYCHOLOGICAL</th>
<th>SOCIOCLOGICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALCOHOL</td>
<td>Hangover</td>
<td>Aggressive and violent behavior</td>
<td>Accidents and injury</td>
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<td></td>
<td>Reduced sexual performance</td>
<td>Anxiety and depression, Relationship difficulties.</td>
<td>Financial and work problems</td>
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<tr>
<td></td>
<td>Premature ageing</td>
<td>Difficulty remembering things and solving problems.</td>
<td>Family problems, friendship problems</td>
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<td></td>
<td>Digestive problems, ulcers, inflammation of the pancreas,</td>
<td>Suicde</td>
<td>Work/ employment.</td>
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<td></td>
<td>High blood pressure</td>
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<td>Car accident</td>
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<td></td>
<td>Deformities and brain damage in babies of pregnant women (FAS) Stroke,</td>
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<td>Risky behavior</td>
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<td></td>
<td>Permanent brain injury, Muscle and nerve damage</td>
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<td>Unprotected sex</td>
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<td></td>
<td>Liver and pancreas disease</td>
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<td></td>
<td>Cancers</td>
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<td></td>
<td>Addiction</td>
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<td>Physical Dependence</td>
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<td></td>
<td>High blood pressure</td>
<td>Problems with attention and motivation</td>
<td>Accidents and injury</td>
</tr>
<tr>
<td>CANNABIS</td>
<td>Asthma, bronchitis</td>
<td>Anxiety, paranoia, panic, depression</td>
<td>Financial problems.</td>
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<tr>
<td></td>
<td>Heart disease and chronic obstructive airways disease</td>
<td>Decreased memory and problem solving ability</td>
<td>Risky behaviors</td>
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<td></td>
<td>Cancers</td>
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<td>Legal problems</td>
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<td></td>
<td>Psychosis</td>
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<td>Psychiatric disorder in those with a personal or family history of</td>
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<td></td>
<td>schizophrenia</td>
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<td>Physical dependence</td>
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<td>Addiction</td>
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<tr>
<td>COCAINE</td>
<td>Difficulty sleeping, Heart racing, Headaches, weight loss.</td>
<td>Skin scratching or picking Irrational thoughts.</td>
<td>Accidents and injury, financial problems</td>
</tr>
<tr>
<td></td>
<td>Numbness, tingling, clammy skin.</td>
<td>Mood swings - anxiety, depression, mania</td>
<td>Risky behaviors</td>
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<td></td>
<td>Psychosis after repeated use of high doses</td>
<td>Aggression and paranoia.</td>
<td>Legal problems</td>
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<tr>
<td></td>
<td>stroke</td>
<td>Intense craving, stress from the lifestyle</td>
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<td>Physical dependence</td>
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<td>Addiction</td>
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Extracted from (WHO, 2002).
6 TERMS DEFINITION OF CONCEPTS

6.1 DRUG CONSUMPTION

**Pattern of drug consumption:** This is the pattern of consumption of psychoactive (licit and illicit) substances/drugs which may or may not have medicinal value (WHO, 2011). The biopsychosocial model/framework suggests the important classification of individuals into users and non-users based on whether or not they have used drugs.

**Non-Users:** The nonusers are respondents who abstain and have never used any psychoactive drug (licit or licit nor have abused medically prescribed drugs) within a particular relevant timeframe such as the last twelve months.

**Users:** The users can be further subdivided into three groups: those who use drugs, abuse drugs or are dependent on drugs.
- Use of drugs refers to occasional use of the drug such as once weekly.
- Abuse of drugs refers to the use of illegal drugs, or the misuse of alcohol, prescription or over-the-counter drugs which cause negative consequences for at least for one year
- Dependency means that a person needs a drug in order to feel or function normally; stopping the drug will most likely result in withdrawal symptoms.

6.2 KNOWLEDGE OF CONSEQUENCES

**Knowledge of consequences:** This is knowledge and awareness of correct information on the outcomes and effects of the abuse of psychoactive (licit and illicit) substances/drugs.

6.3 ACADEMIC PERFORMANCE

Academic performance refers to the student’s level of achievement in their academic program. Academic performance is assessed in different ways by different institutions, e.g., letter grades, Grade Point Average on a 4 or 9 point scale... In order to adopt a common standard across institutions, the students will be asked to report their academic performance on a single scale.
Extensive research on academic performance has been conducted on the basis of student GPA. Bachrach & Read (2012) investigated academic performance by determining GPA during the previous semester. They supplemented it by determining whether the students had done a supplemental exam during a prior semester. Another study using GPA determined that the students tended to slightly over report their GPA (Bachrach & Read, 2012).
7 RESEARCH QUESTION AND HYPOTHESIS

Research Question

The overall direction of this research will be guided by the following question: what is the relationship between knowledge of consequences, academic performance and drug consumption among undergraduate university students in nine Universities in six countries of Latin America and three in the Caribbean?

Study hypothesis

The research will test the hypothesis that there will be important correlations between knowledge of consequences, academic performance and drug consumption among undergraduate university students in nine Universities in six countries of Latin America and three in the Caribbean. In particular, we predict that better or more accurate knowledge of consequences will be associated with less use of alcohol, cannabis and cocaine; and that better academic performance will be associated with less use of alcohol, cannabis and cocaine.
8 OBJECTIVES

8.1 GENERAL
The general objective of this study is to determine the nature of the relationships between knowledge of consequences, academic performance and drug consumption, among university undergraduate students in nine Universities in six countries of Latin America and three in the Caribbean.

8.2 SPECIFIC
The specific objectives of this study are

- To investigate the relationship between knowledge of consequences and drug consumption (alcohol, cannabis (marijuana) and cocaine) among university undergraduate students in nine Universities in six countries of Latin America and three in the Caribbean.

- To determine the correlation between academic performance and drug consumption (alcohol, cannabis (marijuana) and cocaine) among university undergraduate students in nine Universities in six countries of Latin America and three in the Caribbean.

- To examine the interaction between knowledge of consequences and academic performance in influencing drug consumption.

- To determine the prevalence of use or nonuse of drugs (alcohol, cannabis (marijuana) and cocaine) among university undergraduate students in nine Universities in six countries of Latin America and three in the Caribbean.
9 METHODOLOGY

9.1 STUDY DESIGN

This multicentre research project uses a cross-sectional study design. Several variables will be measured in this study in order to examine the correlations among student’s knowledge of consequences, academic performance and drug consumption. These variables will be derived from the scales of knowledge of consequences of using drugs [low or high knowledge score]; academic performance by using a score of 1-10 [low to excellent performance]; scale for alcohol, cannabis (marijuana) and cocaine consumption; and participant characteristics such as age, gender, program and religious beliefs.

9.2 STUDY POPULATION AND SAMPLE SIZE

Population: The population for this study will be composed of undergraduate students aged 18-35 years attending six universities in Latin America (Brazil, Chile, Costa Rica, El Salvador, Mexico and Nicaragua,) and three Caribbean (Jamaica, Suriname and Trinidad & Tobago) during the academic year 2012 and/or 2013; and enrolled in both Health and Social Sciences disciplines or programs. The estimated total population among those disciplines is 24,000 male and female students at the participating universities.

Sample: A sample of approximately 250 students enrolled at each of the universities participating in the study will be selected. This total will provide enough statistical power to detect meaningful differences at the 0.05% significance level when testing the hypothesis; and to generalize study findings to the population under investigation. Statistical power is viewed as a measure of the extent to which a study is capable of discerning differences or associations which exist within the population under study, and is of critical importance whenever a hypothesis is tested by statistics. Studies like this, should reach a power level of 0.8; so that four times out of five a false null hypothesis (no difference or no association within the population) will be rejected by the study (Dowdy, Wearden, & Chilko, 2004; Fox & Mathers, 1997). With a sample of 250 per university, this study will provide the ability to detect, in Cohen’s (1992) terminology, medium effect sizes at each institution and small effect sizes when data from the institutions are combined (Cohen, 1992).
**Sampling Procedure:** A random cluster sampling strategy will be used to ensure the sample obtained is representative of the targeted disciplines, Health Sciences and Social Sciences (summarized in Figure 4). In the first stage of this strategy, researchers from each university will develop a list of all courses from health and social sciences programs offered during the period of January to June 2013. At the second-stage sampling these researchers will randomly select classes from that list of courses or sampling frame (see flowchart). It is projected that with permission given by the majority of faculty to access both Health and Social Sciences classes, these selected classes should yield a sample of 250 undergraduate students aged 18 to 35. However, to achieve the desired sample size of 250, over-sampling may be necessary to compensate for the possibility of non-response.

![Flowchart of Sampling Procedure]

**Inclusion Criteria:** To be eligible to participate in this study, each student must be between 18 and 35 years of age; enrolled as a regular student and with a major in either Health or Social Sciences discipline.

**Exclusion criteria:** Students who are less than 18 and over 35 years of age and those not enrolled in either health or social sciences program.
## 9.3 VARIABLES AND OPERATIONALIZATION

<table>
<thead>
<tr>
<th>Variables</th>
<th>Definition</th>
<th>Instrument</th>
<th>Items (Qs)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic characteristics</td>
<td>This variable measures the characteristics of the students namely their age, gender, socioeconomic status, educational level and the strength of their religious belief.</td>
<td>CAMH-CICAD Group(^1)</td>
<td>A1-A6</td>
<td>Age</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Residence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Religious beliefs</td>
</tr>
<tr>
<td>Knowledge of consequences</td>
<td>Information that students have about the negative biological, psychological and social effects of the use/abuse of cannabis, alcohol and cocaine.</td>
<td>Based on ACSUS (^1)</td>
<td>B1-B42</td>
<td>Binary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASSIST-Manual(^2)</td>
<td>CAMH-CICAD</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group(^3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Consumption</td>
<td>The use and/or abuse of alcohol, cannabis and cocaine.</td>
<td>Based on ASSIST(^2)</td>
<td>C1-C7</td>
<td>Not Use = 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Use = 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Likert Scale (1-5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No, Yes</td>
</tr>
<tr>
<td>Academic Performance</td>
<td>A number selected to represent student’s academic performance.</td>
<td>CAMH-CICAD Group(^3)</td>
<td>D1</td>
<td>Select from 1-10</td>
</tr>
</tbody>
</table>

\(^1\) The adverse consequences of substance use scale (ACSUS), (Mann, Rootman, Shuggi, & Adlaf, 2006)

\(^2\) Alcohol, smoking and substance involvement screening test (ASSIST), (WHO, 2002)

\(^3\) CAMH-CICAD group 2012-2013

**Description of the Instrument**

**Knowledge of consequences:** This instrument measures the extent [high or low score] of a student’s knowledge of the adverse biological, psychological and social effects from alcohol, marijuana and cocaine use (whether the student himself or herself uses or not uses drugs). It was developed based on ACSUS that is an 8-item clinically-based instrument to assist assessment workers and counselors identify areas (biological, psychological, and social conditions) of life functioning affected by substance use.

The items about consequences of drug use and abuse were constructed based on a list of consequences from the ASSIST Manual and were classified as psychological, social and biological according to the theoretical framework. In our study we have selected three consequences of each category (3 social, 3 psychological and 3 biological) totaling nine consequences for each drug.
Finally we added five distractor items for each drug (real or imaginary consequences which are not associated with the drug) to control for random or patterned responding. This instrument has 42 items and the student needs to answer if each item is true or false for each drug. The score will be summed based on 1 point for each correct answer for each drug.

**Academic performance:** This variable will be measured by asking the student to self-report their performance in the current or most recent semester on a linear scale that ranges from 1 to 10 (1 = very low and 10 = excellent).

**Drug consumption:** This will be based on asking a student whether they used or not used drugs ever or in the last 3 months according to the ASSIST instrument. The ASSIST was created by a research group under the auspices of the World Health Organization. The goal was to develop an instrument for adaptation to different cultures, languages and contexts that is characterized by easy comprehension, low cost and rapid scoring and interpretation. This instrument has eight items (questions) to screen different kinds of psychoactive substances. The scores can range from 0 to 20. An occasional user is identified by a score from 0 to 3; a score of 4 to 15 is an indicator of abuse, and a score of 16 or higher suggests dependence (Henrique, De Micheli, Lacerda, Lacerda, & Formigoni, 2004; Humeniuk et al., 2008; WHO, 2002).

### 9.4 DATA COLLECTION AND DATA ANALYSIS

**Data Collection:** The researcher will enter the class room, explain the purpose of the study; and will give each student who volunteers an informed consent form stapled to a copy of the questionnaire. Participants will be instructed to read the informed consent form and if they decide to continue taking part in the study to then begin answering the survey. Once they complete answering the survey, or decide not to continue, they will be instructed to place the survey and the consent form in separate boxes on exiting the room.

The participants will be provided with a leaflet containing a telephone number they may call at the university if they were affected negatively in any way throughout or after the study. Data collection will occur on multiple days until the target sample is reached.
Data Analysis: Subsequent to data entry and cleaning, data analysis will begin with descriptive statistics in SPSS. This phase will provide distribution responses such as percentages, means and standard deviation (SD) for variables of study interest including demographics, knowledge of consequences, academic performance and drug use. Correlations will be used to test that the main variables are significantly correlated. Additional analysis will test for bivariate associations between all independent variables and the dependent variables (cannabis, alcohol and cocaine consumption). Chi-square tests of independence will be used, where relevant, to discover whether there are any significant differences between knowledge of consequences and drug use; difference between demographic categories (male and female, living accommodation and religious beliefs) and drug use. On the other hand, t-test will be used to examine the associations among outcome variable drug consumption and factors such as age and academic performance. Exploratory factor analysis will be used to create indices, where applicable.

Study hypotheses and research questions will be examined using multiple logistic regression. Specifically, we will examine the significance of predictor variables knowledge of consequences and academic performance on drug consumption. Separate models will be run relating knowledge of each drug to the consumption of that drug. Control variables will be included in each regression model—for example, gender, age, religious beliefs, living accommodation and academic major (Health Sciences or Social Sciences). We will test the significance of interactions to determine if academic performance moderates the association between knowledge and drug consumption (Dowdy, et al., 2004; Rossi, Wright, & Anderson, 1983).
10 ETHICAL CONSIDERATIONS

The research will be conducted using the ethical guidelines stipulated by the Research Ethics Board (REB) of the Centre for Addiction and Mental Health (CAMH), as well as from the Ethical Committee of each researcher’s affiliated university and/or country.

Research assistants, if utilized, will be trained and supervised by the investigators at each university. Each research assistant will be asked to sign a confidentiality agreement prior to their engagement in the study. Research assistants will be required to engage in weekly meetings with the primary investigator to monitor progress and obtain the data collected from each site.

During data collection, each participant will be informed that their participation in this study is completely voluntary; their participation will be completely anonymous and no name-related information will be linked to their completed questionnaires. There are no incentives or direct benefits associated with their participation; there are no risks associated with their participation; their involvement or lack of involvement in the study will not affect their courses while at the university. Their academic records at the university will not be accessed for the purpose of this study. Secondly, information obtained from the study will not be transferred to their records in the course or at the university. And thirdly, they have the option to refuse and withdraw their participation at any time.

The questionnaires will be administered to students in their classrooms. Each participant will be required to read and sign an Informed Consent Form which will be separated from the sequentially numbered questionnaires. A signed Informed Consent Form needs to be obtained from participants as a requirement by the Ethical Review Committee of each researcher’s university. It must be noted that should any participant have difficulty reading or understanding the Informed Consent Form, the investigator or research assistant involved will assist the participant by answering any questions. To ensure anonymity, the names of the participants will not be on the survey and only a numbered code will be used.

A computerized/electronic version of the data collected from this study will be stored in password-protected files in order to prevent unauthorized persons from accessing this information. Both hard and soft copies of the data files will be stored in locked cabinets and then transported in sealed cases to the investigators’ offices for approximately 5 to 7 years (or
whatever period of time proscribed by the individual universities) to comply with the regulations of the Ethical Committee of each university. After this time, all files will be carefully destroyed via incineration and or shredding. The consent forms will be stored separately from the questionnaires.
11 BUDGET

Each investigator will receive a budget of Ca $500 from CICAD to conduct the study. Below is an example of a budget based on this amount. However, when each investigator goes back to their own university and submits the proposal to the REB it would include a revised budget that reflects the specific situation at each university.

Table 2: Example of a budget

<table>
<thead>
<tr>
<th>Budget Headings</th>
<th>Numbers/Quantity</th>
<th>Cost per country</th>
<th>Total cost countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Human Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI</td>
<td>1</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Researchers</td>
<td>10</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>RA (data collectors)</td>
<td>3</td>
<td>75.00</td>
<td>675.00</td>
</tr>
<tr>
<td>Data entry</td>
<td>1</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Statistician</td>
<td>1</td>
<td>200.00</td>
<td>1,800.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td><strong>275.00</strong></td>
<td><strong>2,475.00</strong></td>
</tr>
<tr>
<td><strong>Materials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bond Paper (8 1/2 x 11&quot;)</td>
<td>63 (500 sheets x)</td>
<td>45.08</td>
<td>405.72</td>
</tr>
<tr>
<td>Pencils/Pen</td>
<td>2250/216 (21,21+=7,44)</td>
<td>28.65</td>
<td>257.85</td>
</tr>
<tr>
<td>Materials for printers</td>
<td>1 Laser Pinter and cartridges. Samsung CLP-320N</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Communication (internet and telephone)</td>
<td>Wireless USB internet. Service per contract. Base on $24.99 per month</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Office materials</td>
<td>(staples, folders etc.)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Posters, brochures and photocopies</td>
<td>All expenses included</td>
<td>150.00</td>
<td>1,350.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td><strong>223.73</strong></td>
<td><strong>2,013.57</strong></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>498.73</strong></td>
<td><strong>4,488.57</strong></td>
</tr>
</tbody>
</table>

*C= country
12 KNOWLEDGE TRANSFER PLAN

The objective of this knowledge transfer plan is to disseminate the findings of this research to as large a population as possible, i.e., to both academic and scientific communities as follows:

COLLABORATION / DISSEMINATION

To develop collaboration by exchanging research finding with the participating universities/countries. This information will be disseminated electronically to the other participants.

To inform to the university administration about the research findings

To present findings at scientific meetings or in scientific papers through:

- Participating Universities:
  - Meetings, seminars and conferences
  - Academic papers

- National and International Scientific Events:
  - Poster and Oral presentations
  - Workshops, Seminars or Conferences.
  - Round table talks, panel discussions, etc.

- General publications:
  - Publications in university and/or college journals.
  - Brochures, where feasible, should be printed to disseminate to the public and/or private agencies.
  - Interviews on university radio and/or T.V local stations.

INFORMATION/MESSAGE

The findings of the research will be presented based on the following key points:

Messenger(s): The primary messengers will be the investigators associated with the project in each university/country. However, additional messengers (individuals, groups, organizations etc.) will be carefully selected based on their credibility and expertise in this area as well as the extent to which they possess key behavioral competencies.
**Method:** At the beginning of the research key stakeholders on campus will be invited to sit on an advisory committee that will guide the process of information dissemination. The advisory team will be comprised of a representative of the campus register and or student services, a representative of the student body and other on-campus student organizations as well as the Principal Investigator (P.I).

The media channels decided upon will be dependent on the outcomes of the meetings held with the advisory team. Town hall style meetings will be held at a suitable site on campus. The P.I's from each country will approach these meetings with suggestions about possible methods to disseminate the information, such as: newspaper articles, magazine columns, television, radio broadcasts, posters and brochures. Members of the advisory team will also be given the opportunity to recommend additional methods of information dissemination.

**MONITORING AND EVALUATION**

This project will take a one-year period to complete (September 2012 to September 2013). During this time each principal researcher at the respective university/country, will submit all advances on this multi-centered project to the study coordinators as well as to the PI and Advisors. Country reports will be written and translated monthly, and the implementation of the knowledge and exchange plan will be completed between July and September 2013. (See Appendix E, Project Gantt chart).

To ensure the continuity and effectiveness of this knowledge transfer plan, this process must have inbuilt checks and balances to help determine whether the targeted outcomes are being achieved. By monitoring these checks and balance mechanisms the messenger will be informed about the extent to which the message was captured, shaped and used by the audience. At prescribed stages relevant evaluation activities will be used. For example, feedback meetings may be held between representatives of the identified messengers and members of the targeted audiences.
13 APPENDICES

13.1 INFORMED CONSENT FORM (APPENDIX A)

Consent Form

Knowledge of Consequences, Academic Performance and Drug Consumption among Undergraduate University Students in Nine Universities from Six Latin America and Three Caribbean Countries

Sponsors of the Study: Inter-American Commission for the Control of Drug Abuse / Organization of American States (CICAD / OAS) and Centre for Addiction and Mental Health (CAMH).

CAMH Principal Investigator: Robert Mann, Ph.D.

Advisors: Bruna Brands, Ph.D. (CAMH and Health Canada)

Principal Investigators by Country:

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Affiliated University</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ana Carolina Guidorizzi Zanetti, Ph.D.</td>
<td>University of São Paulo</td>
<td>Brazil</td>
</tr>
<tr>
<td>Jacqueline de Souza, Ph. D.</td>
<td>University of São Paulo</td>
<td>Brazil</td>
</tr>
<tr>
<td>Maria Jacqueline Sepúlveda, Ph. D.</td>
<td>Universidad de Concepción</td>
<td>Chile</td>
</tr>
<tr>
<td>Jaime José Fernández Chavez, MSc.</td>
<td>Universidad de Costa Rica</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>Rodrigo A. Peña S. MD., MSc.</td>
<td>Universidad Evangélica de El Salvador</td>
<td>El Salvador</td>
</tr>
<tr>
<td>Fay Verron William, Ph.D.</td>
<td>Northern Caribbean University</td>
<td>Jamaica</td>
</tr>
<tr>
<td>Dulce Maria Flores Olvera, Ph.D.</td>
<td>Benemérita Universidad Autónoma de Puebla</td>
<td>Mexico</td>
</tr>
<tr>
<td>Daniel Reyes Navarrete, MD, Ph.D.</td>
<td>Universidad Nacional Autónoma de Nicaragua, León</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>Sherif Abdoelrahman, MSc.</td>
<td>Anton de Kom University of Suriname</td>
<td>Suriname</td>
</tr>
<tr>
<td>Noel Arthur Brathwaite, Ph.D.</td>
<td>University of the Southern Caribbean</td>
<td>Trinidad &amp; Tobago</td>
</tr>
</tbody>
</table>
As part of the Research Services Quality Assurance role, studies may be audited by the Manager of Quality Assurance. Your research records and CAMH records may be reviewed during which confidentiality will be maintained as per CAMH policies and to the extent permitted by law.

**Purpose of the study:** The purpose of this study is to explore the relationship between drug use (specifically alcohol, cannabis and cocaine), knowledge of consequences and academic performance. Findings from this study across universities in several Latin America and Caribbean universities will help in better understanding the drug phenomenon and in designing strategies to reduce the demand for such substances.

**Procedure:** As a participant in this study you will be required to answer a questionnaire. Questionnaires will be numbered, not signed consent forms. The questionnaire has a total of 73 questions and will take approximately 20-30 minutes to complete. Participants in this study will be asked to provide information about drug use, knowledge of consequences and academic performance. All responses will be kept CONFIDENTIAL and participants must not put their names on the questionnaire. Please answer all questions to the best of your knowledge. However, please be advised that you have the right to refuse to answer any question you do not wish to answer.

**Eligibility:** To participate in this study you must be a registered undergraduate student in either Health Sciences or Social Sciences Program offered at one of the participating universities and being 18 years old and over. Participants must also indicate their voluntary agreement to be a part of this research by signing this consent form.

**Confidentiality:** Please note that your identity will be kept confidential to the full extent provided by law. You are not required to give any information that will make it possible for someone to identify you. In addition, only the research team will have access to the information you provide. Consent forms and numbered questionnaires will be collected and stored separately to ensure that personal information (names) given on the consent form cannot be linked to the
questionnaire. Questionnaires will be kept in locked cabinets accessible to the research team only. The electronic version of the information collected will also be protected through the use of password-protected files to prevent unauthorized access to this information. It will not be possible to identify you or your specific responses, and it will be the overall or aggregated results that will be used for scientific publications and events – no individual responses will be reported. However, as part of the ongoing review of research, the study records can be accessed by the Research Ethics Committee in Canada (CAMH) and the Ethics Committee of your University.

Risks: Although we do not anticipate any significant risks associated with your participation in this study, there is the possibility that you may experience some emotional discomfort related to some questions on this questionnaire. It is for this reason that you will also be provided with a brochure that contains information for counseling services, if you experience such feelings or think that you need help.

Participant Initials: __________

Benefits: There are no direct benefits to you for choosing to be a part of this research. However by participating, you will contribute to the development of knowledge on the relationship that may exist between knowledge of consequences, academic performance and drug use. This knowledge may be useful in the development of support programs for individuals who demonstrate substance use problems.

Voluntary Participation: Your participation in this survey is completely voluntary. You may choose to withdraw from this study at any time. There will be no negative consequences if you decide not to participate or to withdraw after having started. In addition, the researchers responsible for this study, may also, at their discretion, end your participation at any time.

Additional Information: If you have any questions about the study, which has not been answered in this consent form, please ask them at this time. If you have any questions in the future, please feel free to contact the Principal investigator (name here) __________ at (name of university here) __________, at telephone number __________. You also can contact someone who is not directly associated with the study, (name of person and position), at this University if you have any questions about your rights as a participant in this study. Participants in this
research may also contact (Name of Chair of the Research Ethics Board here) __________ of the (name of university here) __________ to discuss their rights. (Name of Chair of the Research Ethics Board here) __________ can be contacted at telephone _______________. The findings of the study will be made available to you.

Participant Initials: ________

AGREEMENT TO PARTICIPATE

I, _______________________________, have read this Informed Consent Form for the study entitled “Knowledge of Consequences, Academic Performance and Drug Consumption among Undergraduate University Students in Nine Universities from Six Latin America and Three Caribbean Countries”. I was given time to ask questions related to my involvement and my questions have been answered to my satisfaction. I acknowledge that I have no personal gain by participating in this study. I also acknowledge that my participation in this survey is completely voluntary and I reserve the right to refuse to participate or to withdraw from this study at any time, with no consequences being associated with this.

I may communicate with ____________ (Name of Chair of the Research Ethics Board of the university here) to discuss my rights. He/she may be contacted by phone at ______________

I (Signature of respondent): _______________________________ Date: ________________ agree to participate.

Research Team Member: (Signature of P.I./R.A./Volunteer): _______________________________ Date: ________________

For participants who choose to take a copy of the consent form.

I have received a copy of this form to keep for myself and have taken responsibility for its safety.

(Signature of respondent): ____________________________ Date: ________________

Participant Initials: ________
13.2 QUESTIONNAIRE (APPENDIX B)

INTERNATIONAL RESEARCH CAPACITY BUILDING PROGRAM
FOR HEALTH RELATED PROFESSIONALS TO STUDY
THE DRUG PHENOMENON IN LATIN AMERICA AND THE CARIBBEAN

Knowledge of Consequences, Academic Performance
and Drug Consumption
Student Survey

THIS IS NOT A TEST. This survey is designed to determine university student’s knowledge of the consequences of alcohol, cannabis and cocaine, as well as the relationship between academic performance and drug consumption.

Please note: There is no assumption that students who answer this questionnaire have ever used alcohol, cannabis or cocaine.

Please DO NOT write your name on this questionnaire. This information you give will be kept completely secret and confidential. Therefore, we ask you to be completely honest and accurate when you answer the questions. If you do not want to answer a question, leave it blank. Also, you may withdraw from the survey at any time.
INSTRUCTIONS FOR COMPLETING THIS QUESTIONNAIRE

Most questions are followed by a list of answers. Please choose the answer that is best to your knowledge and understanding. Indicate your choice in one of the circles of the answer you elected.

FOR EXAMPLE:

<table>
<thead>
<tr>
<th>A. SPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10. Do you practice sports in your university?</td>
</tr>
<tr>
<td>1. ☒ Yes</td>
</tr>
<tr>
<td>2. ○ No</td>
</tr>
<tr>
<td>3. ○ Don’t care</td>
</tr>
</tbody>
</table>

PLEASE DO NOT WRITE YOUR NAME ON THIS QUESTIONNAIRE
**INSTRUCTIONS**
Please read all questions and choose the answer that is right for you. Make the correct response on the left hand side only and please select (X) in the circle that applies.

### A. DEMOGRAPHICS

A1. How old are you?

1. ○ ________ years old

A2. What is your sex?

1. ○ Male
2. ○ Female

A3. In which field are you currently enrolled? (Please, select one only)

1. ○ Health Sciences
2. ○ Social Sciences

A4. Where do you primarily live while attending the University? (Please, select one only)

1. ○ At home
2. ○ On campus (University residence)
3. ○ Off campus (not at home)

A5. With whom do you primarily live while attending the University? (Please, select one only)

1. ○ Relatives or family
2. ○ Friends
3. ○ Roommate
4. ○ Alone

A6. How important are religious beliefs to you? (Please, select one only)

1. ○ Very important
2. ○ Important
3. ○ Somewhat important
4. ○ Not important

A7. Please check your current year of study in your program

5. ○ First year
6. ○ Second year
7. ○ Third year
8. ○ ≥ Fourth year

---

(for researcher use only)

RESEARCHER CODE: ______________________

QUESTIONNAIRE CODE: ____________________
This section measures your knowledge of the consequences that can result from using alcohol, cannabis and cocaine. It is important that you answer all statements/questions by checking either the “true” or “false” circle.

### B. KNOWLEDGE OF CONSEQUENCES

#### USE OF ALCOHOL (Beer, Wine, Spirits, Rum, etc.) CAN RESULT IN:

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1. Deformities and brain damage in babies of pregnant women</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B2. Arthritis</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B3. Vision improvement</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B4. Liver (cirrhosis) and pancreas (pancreatitis) disease</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B5. Addiction / Dependence</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B6. Improved muscular strength</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B7. Aggressive and violent behavior</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B8. Anxiety or depression</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B9. Memory improvement</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B10. Family, relationship and friendship problems</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B11. Difficulty remembering things and solving problems</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B12. Accidents and injury</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B13. Premature hair loss</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B14. Risky behavior</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

#### USE OF CANNABIS (Marijuana/Hashish/Pot/Grass) CAN RESULT IN:

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>B15. Hearing problems</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B16. Risky behavior</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B17. Psychosis</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B18. Expanded mental capacity</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B19. Addiction / Dependence</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B20. Problems with attention and motivation</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B21. Heart attack</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B22. Anxiety, paranoia, panic, depression</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B23. Decreased memory and problem solving ability</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B24. Diabetes</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B25. Accidents and injury</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B26. Financial problems</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B27. Improves car driving ability</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>B28. Legal problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**USE OF COCAINE (Crack/Coca) CAN RESULT IN:**

<table>
<thead>
<tr>
<th>B29. Psychosis after repeated use of high doses</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>B30. Saving more money</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B31. Sudden death from heart problems</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B32. Addiction / Dependence</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B33. Osteoporosis</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B34. Sudden hair loss</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B35. Irrational thoughts</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B36. Mood swings - anxiety, depression, mania</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B37. Aggression and paranoia</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B38. Improved romantic relationship</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B39. Financial problems</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B40. Risky behaviors</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B41. Loss of teeth</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>B42. Legal problems</td>
<td>True</td>
<td>False</td>
</tr>
</tbody>
</table>
This section measures drug consumption (alcohol, cannabis and cocaine). It is important that you answer all statements/questions by checking the circle that is true for you.

### C. DRUG CONSUMPTION

<table>
<thead>
<tr>
<th>C1. In your life, which of the following substances have you ever used (non-medical use only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
</tr>
</tbody>
</table>

If you answered NO to all substances in the preceding question, please skip questions C2-C7 and continue to question D1

If you answered YES to ever using at least one substance (alcohol, cannabis or cocaine) in the preceding question, please continue to question C2

<table>
<thead>
<tr>
<th>C2. In the past three months, how often have you used the substances you mentioned (alcohol, cannabis and cocaine)?</th>
<th>Never</th>
<th>Once or Twice</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or Almost Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
### C3. During the past three months, how often have you had a strong desire or urge to use (alcohol, cannabis and cocaine)?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once or Twice</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or Almost Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>

### C4. During the past three months, how often has your use of (alcohol, cannabis and cocaine) led to health, social, legal or financial problems?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once or Twice</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or Almost Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>

### C5. During the past three months, how often have you failed to do what was normally expected of you because of your use of (alcohol, cannabis and cocaine)?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Once or Twice</th>
<th>Monthly</th>
<th>Weekly</th>
<th>Daily or Almost Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
<td>☐</td>
<td>☐</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
</tr>
</tbody>
</table>
C6. Has a friend or relative or anyone else ever expressed concern about your use of (alcohol, cannabis and cocaine)?

<table>
<thead>
<tr>
<th></th>
<th>No, never</th>
<th>Yes, in the past 3 months</th>
<th>Yes, but not in the past 3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C7. Have you ever tried and failed to control, cut down or stop using (alcohol, cannabis and cocaine)?

<table>
<thead>
<tr>
<th></th>
<th>No, never</th>
<th>Yes, in the past 3 months</th>
<th>Yes, but not in the past 3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alcoholic beverages (beer, wine, spirits, rum, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cannabis (marijuana, pot, grass, hashish, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Cocaine (coca, crack, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. ACADEMIC PERFORMANCE

D1. On a score of 1 (low) to 10 (excellent), please check the number which best represents your academic performance in the current or the most recent semester?

1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10 ○

Very low grades    Average    Excellent grades

THANKS FOR RESPONDING TO THIS SURVEY!!!!!
13.3 ETHICAL APPROVAL FROM THE UNIVERSITY COMMITTEE (APPENDIX C)

APPENDIX C
Ethical Committee Approval (REB)

Knowledge of Consequences, Academic Performance and Drug Consumption among Undergraduate University Students in Nine Universities from Six Latin America and Three Caribbean Countries
Knowledge of Consequences, Academic Performance and Drug Consumption among Undergraduate University Students in Nine Universities from Six Latin America and Three Caribbean Countries

Name of University ...........
City
Country

Dear Sir,

With this letter I would like to introduce the CICAD International Drug Research Capacity-Building Program, of which this University is a participant.

The Inter-American Drug Abuse Control Commission (CICAD), Secretariat of Multidimensional Security of the Organization of American States (OAS), has developed several strategies to help OAS member States strengthen institutional and human resource capabilities related to drug issues, security, money laundering, etc. In its effort to ensure these strategies, ES/CICAD/SMS/OAS partnered initially with the University of Alberta, Edmonton – Canada, and later with the Center for Addiction and Mental health (CAMH), affiliated with the University of Toronto – Canada, to implement the International Drug Research Capacity Building Program for Health related professionals. The program prepares these professionals with scientific knowledge and technical skills to study the drug phenomenon at the level of policy design, decision making, research projects implementation and management, and project evaluation.

The International Drug Research capacity Building Program has been carried out since 2003; it has trained 71 professionals from Latin-America and the Caribbean. Today, it continues to prepare professionals to assist in each country’s drug demand reduction efforts. For the year 2012-2013 following persons have been selected to participate at this program:
1. Ana Carolina Guildorizzi Zanetti from the School of Nursing at the University of Sao Paolo in Brazil
2. Jacqueline de Souza from the School of Nursing at the University of Sao Paolo in Brazil
3. Jacqueline Sepulveda from the University of Conception in Chili
4. Rodrigo Pena from the Universidad Evangelica de El Salvador in El Salvador
5. Fay Williams from the Northern Caribbean University in Jamaica
6. Dulce Ma Flores Olivera from the Universidad Autonoma de Puebla in Mexico
7. Daniel Reyes from the Universidad Nacional Autonoma de Nicaragua in Nicaragua
8. Sherif Abdoelrahman from de Anton de Kom University of Suriname in Suriname
9. Noel Brathwaite from the University Southern Caribbean in Trinidad & Tobago
10. Jaime Fernandez from the University … in Costa Rica

These academic professionals will investigate the relationship between knowledge of consequences, academic performance and drug consumption among university students in six Latin-American and three Caribbean countries. This multicentre study will utilize a cross sectional design and the population will be undergraduate students aged 18 years and above, attending the university during the academic years 2012-2013. A random cluster sample will be taken of approximately 250 students from each participating university for a total of 2,250.

The research will be conducted using ethical guidelines stipulated by the research Ethics Board of the center of Addiction and Mental Health (CAMH), as well as from the Ethical Committee of each participating university.

I hope that the explanations give you a better understanding of the context of the study and I hope that I can count on your support for the execution of this important research project.

If you have any questions concerning the research, please don’t hesitate to contact me.

Sincerely yours,
### 13.5 GANTT CHART (APPENDIX E)

<table>
<thead>
<tr>
<th>Activity</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aug</td>
<td>Sept</td>
</tr>
<tr>
<td>Literature review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design of instrument</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete proposal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethical approval (CAMH)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethical approval (University)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing individual report + poster preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submission + analysis of complete report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final multi-centered report</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14 REFERENCES


http://www.slideshare.net/InstitutoVsAdiccionesImca/ena08-nacional1.


