Original Article

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DRUG CONSUMPTION, KNOWLEDGE ON THE CONSEQUENCES OF CONSUMPTION AND ACADEMIC PERFORMANCE AMONG COLLEGE STUDENTS IN SAN SALVADOR, EL SALVADOR

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ABSTRACT

Objective: determine the relationship among drug consumption, knowledge on the consequences of consumption and academic performance, for alcohol cocaine and marijuana, among undergraduate students of social sciences and health of San Salvador, El Salvador.
Method: the used method was a cross-sectional survey, with a convenience sample of 250 university students. A modified version of the combination of two instruments was applied evaluating the variables for the knowledge on the consequences, pursuing the knowledge of a student about the adverse effects of the biological, psychological and social categories related to consumption of the drugs under study. Drug consumption was evaluated by consulting the student whether or not they used drugs at any time or in the last 3 months. Academic performance was evaluated by consulting students on the average in which they are applied on a scale of 1 to 10.
Results: the results showed that 88.1% of the survey participants have a broad knowledge on the consequences of consuming alcoholic beverages; 45.5% on the consequences of marijuana use and 55.7% know the consequences of cocaine consumption. While 28.4% have consumed alcohol in the last year, 6.5% have consumed marijuana and 1.7% cocaine. The relationship of alcohol consumption with the knowledge on each of the consequences reflected a very low influence, while the larger is the knowledge obtained from these consequences caused by the use of the drugs under study, the lower is the consumption.
Conclusion: the use of alcohol, cocaine and marijuana is not related to academic performance, indicating very low positive and negative correlations according to each case.

DESCRIPTORS: Knowledge. Students. Illegal drugs. Alcohol. Marihuana.

HOW CITED: Pena Olano RF, Wright MGM. Drug consumption, knowledge on the consequences of consumption and academic performance among college students in San Salvador, El Salvador. Texto Contexto Enferm [Internet]. 2019 [cited YEAR MONTH DAY]; 28(Spe):e1022. Available from: http://dx.doi.org/10.1590/1980-265X-TCE-CICAD-10-22

CONSUMO DE DROGAS, CONOCIMIENTO DE LAS CONSECUENCIAS DEL CONSUMO Y RENDIMIENTO ACADÉMICO ENTRE ESTUDIANTES UNIVERSITARIOS EN SAN SALVADOR, EL SALVADOR

RESUMEN

Objetivo: determinar la relación entre el consumo de drogas, conocimiento de las consecuencias del consumo y el rendimiento académico, para el alcohol cocaína y marihuana, entre estudiantes de pregrado de ciencias sociales y de la salud de San Salvador, El Salvador.
Método: el método utilizado fue una encuesta de diseño transversal, con una muestra de conveniencia de 250 estudiantes universitarios. Se aplicó una versión modificada de la combinación de dos instrumentos evaluando las variables del conocimiento de las consecuencias, persiguiendo el saber de un estudiante sobre los efectos adversos de las categorías biológicas, psicológicas y sociales del consumo de las drogas en estudio; el consumo de drogas fue evaluado consultando al estudiante si usaron o no drogas alguna vez o en los últimos 3 meses; el rendimiento académico fue evaluado consultando a los estudiantes el promedio en el que se encuentran aplicado en una escala del 1 al 10.
Resultados: os resultados evidenciaron que el 88,1% de participantes de la encuesta posee un conocimiento amplio de las consecuencias del consumo de bebidas alcohólicas; el 45,5% de las consecuencias del consumo de marihuana y el 55,7% conoce las consecuencias del consumo de cocaína. Mientras que el 28,4% ha consumido alcohol en el último año, el 6,5% ha consumido marihuana y el 1,7% cocaína. La relación del consumo de alcohol con el conocimiento de cada una de las consecuencias reflejó una influencia muy baja de que a mayor conocimiento se tenga de estas consecuencias causadas por el uso de las drogas en estudio, menor será el consumo.
Conclusión: el uso de alcohol, cocaína y marihuana no está relacionado con el rendimiento académico, indicando correlaciones positivas y negativas muy bajas según cada caso.

DESCRIPTORES: Conocimiento. Estudiantes. Drogas ilícitas. Alcohol. Marihuana.

USO DE DROGAS, CONHECIMENTO DAS CONSEQUÊNCIAS DO CONSUMO E DESEMPENHO ACADÉMICO ENTRE ESTUDANTES UNIVERSITÁRIOS EM SAN SALVADOR, EL SALVADOR

RESUMO

Objetivo: determinar a relação entre o uso de drogas, o conhecimento das consequências do consumo e o desempenho acadêmico, para o álcool, cocaína e maconha, entre estudantes de graduação em ciências sociais e em saúde de San Salvador, El Salvador.
Método: foi utilizado questionário de modelo transversal, com amostra de conveniência de 250 estudantes universitários. Aplicou-se versão alterada da combinação de dois instrumentos, avaliando as variáveis do conhecimento das consequências, em busca do conhecimento do estudante em relação aos efeitos adversos das categorias biológicas, psicológicas e sociais do uso de drogas pesquisado; o consumo de drogas foi avaliado perguntando ao estudante se usou ou não drogas alguma vez nos últimos 3 meses; o desempenho acadêmico foi avaliado consultando os estudantes sobre a média na qual ele está, aplicando uma escala de 1 a 10.
Resultados: os resultados evidenciaram que 88,1% dos participantes da pesquisa possui conhecimento amplo sobre as consequências do consumo de bebidas alcoólicas;45,5% das consequências do uso de maconha e 55,7% conhecem as consequências do consumo de cocaína. Enquanto 28,4% têm consumido álcool no último ano,6,5% consumiram maconha e 1,7% cocaína. A relação do consumo de álcool com o conhecimento de cada consequência refletiu uma influência muito baixa que quanto maior o conhecimento dessas consequências causadas pelo uso das drogas estudadas, menor será o consumo.
Conclusão: o uso de álcool, cocaína e maconha não tem relação com o desempenho acadêmico, indicando correlações positivas e negativas muito baixas dependendo do caso.

DESCRITORES: Conhecimento. Estudantes. Drogas ilícitas. Álcool. Maconha.

INTRODUCTION

In the international context, alcohol in the Americas has been identified as the most important risk to health in low and middle-income countries (including Argentina, Colombia, and Antigua and Bermuda).[1] For Public Health policies it is important to examine risk behaviors in young people, especially among college students who are increasingly linked to alcohol consumption[2] and other drugs, including marijuana and cocaine.

Some previous researches have suggested this type of relationships, a national alcohol survey related to knowledge and behavior among high school and college students (16-25 years old) in the United Kingdom revealed that knowledge about consumption patterns was poor in general. There are few studies that examine the effects of drug use, mostly focusing on their impact on academic performance[3] Studies on alcohol consumption among college students in most countries in general, show a negative association between academic performance, college students who consume more alcohol tend to have lower averages, Merit Units Quotient (in Spanish CUM) or in English Grade Point Average (GPA) for the effect of alcohol consumption on cognitive ability and study hours.[4]

In the national context, according to the report on the regional situation on alcohol and health in the Americas of the Pan American Health Organization (PAHO) published in 2015,[5] in El Salvador, 13.6% of women older than 15 years have had episodes of excessive alcohol consumption, in the case of men, this percentage is higher, 28.8%. With regard to alcohol consumption in young people aged from 15 to 19 years old, according to the data in the report, in El Salvador, 4.7% of girls and 18.7% of boys have had episodes of excessive alcohol consumption.

As related to the mortality rate attributed to alcohol consumption, a rate of 11.4% of deaths per 100,000 inhabitants in the case of women and 67.6% in the case of men, according to the results of the report, with data from the year 2012. It should be noted that in the case of men, El Salvador is the fourth country with the highest mortality rate due to this cause.

In particular, hypothetically sought to predict that a better or greater knowledge on the consequences is associated with less alcohol, marijuana and cocaine consumption; and that an excellent academic performance is associated with a lower consumption of alcohol, marijuana and cocaine.

The objective of this study was to determine the relationship between drug consumption, knowledge on the consequences from consumption and the academic performance, for cocaine, alcohol and marijuana, among undergraduate students of social sciences and health of San Salvador, El Salvador.

METHOD

A descriptive and correlational cross-sectional study design was used to identify the relationship between the consumption of alcohol, marijuana or cocaine, with knowledge on the consequences from consumption and academic performance.

The target population for the study was comprised of college students enrolled in any of the Schools of Medicine or Social Sciences, registered in the city of San Salvador, El Salvador, with ages between 18-35 years old during the academic year 2013. The type of sampling used is randomized by random conglomerates, in order to ensure that the sample obtained is representative for the specific disciplines (medicine or social sciences). So that it includes 250 students who meet these inclusion criteria, randomly choosing the courses and students who participated in each school; and, students who do not comply are excluded.

250 students of the study sample were evaluated, the three different variables being considered: knowledge on the consequences of consumption, academic performance, use of drugs) considering the psychological, biological and social categories.

The knowledge on the consequences: The questionnaire was developed on the ACSUS platform, which is an instrument of 8 clinical elements, based on the evaluation of helping to identify areas (biological, psychological and social conditions) of functioning for lives affected by substance consumption.

Drug consumption and abuse: this was constructed based on a list of consequences from the Manual of *The Alcohol, Smoking and Substance Involvement Screening Test* (ASSIST) and were classified according to the categories following the theoretical framework, three consequences of each category were selected with a total of nine consequences for each drug, five distractor elements were added for each drug in order to control the random or patterned response.

To identify the knowledge on each of the consequences, the students had the option to mark their answer as true or false. If the student answered "true" in the correct items (no distractors) a point was assigned to the answer, a point was also assigned when the student answered "false" in the distractor items. Otherwise, the score obtained was 0 for each item with an incorrect answer.

Regarding the identification of consumption or "Use" of the substances, the response alternatives were: No, yes but not in the last year and yes, in the last year. And as for the frequency of consumption, the interviewee could answer "never", "once or twice", "monthly", "weekly", "daily or almost daily", and to each answer was assigned a score of 0 to 6 points according to the level of risk determined by ASSIST of each substance, the higher the frequency of consumption, the greater is the risk.

Academic performance was evaluated by asking the students to freely evaluate their performance in the current semester or the most recent on a linear scale that goes from very low "1" to "10" excellent.

The data analysis began with the descriptive statistics in SPSS. The Chi-square test was used to discover if there are significant differences between the knowledge on the consequences and the use of drugs, the difference between the demographic categories (male and female, residential areas and religious beliefs) and the use of drugs. Pearson correlations were used to prove that the main variables are significantly correlated, at 5% significance level. An additional analysis tested the bivariate associations between the independent variables and the dependent variables (alcohol consumption, marijuana (cannabis) and cocaine consumption) through a logistic regression test with 5% significance level.

RESULTS

The demographic characteristics of the college students who participated in the survey made it possible to identify by their majority that seven of every ten students were of the female gender, being predominantly 18 to 21 years old, students from the Health Sciences area, who reside in their home, with their family and currently three out of five of them study the first or second year in the career of one of the two schools.

One obtained as a result that 88.1% of the survey participants have a broad knowledge on the consequences of consuming alcoholic beverages; 45.5% of the consequences from marijuana consumption and 55.7% know the consequences from cocaine use. Consuming alcohol in the last year 28.4%, 6.5% marijuana and 1.7% cocaine.

The relationship of alcohol consumption with the knowledge on each of the consequences, reflected a very low positive influence that the greater is the knowledge on these consequences caused by the use of the drugs under study, the lower alcohol consumption will be, and the Pearson correlation coefficient (pcc) is equal to 0.059, significant at the 0.01 level (pcc=0.059, N=250 $p<0.01$). Likewise, the use of alcohol is not related to academic performance, since the influence according to this coefficient is very low (pcc=0.021, N=250 $p<0.01$). The results obtained for each variable are presented in table 1.

Table 1 – Correlation between alcohol consumption in relation with the knowledge on the consequences and academic performance. El Salvador, 2013 (n=250)

Variables	pcc
Knowledge on the consequences	**0.059**
Problems in interpersonal relationship	-0.022
Anxiety or depression	-0.008
Addiction or dependence	0.154*
Liver disease	0.138*
Conduct and aggressiveness	0.096
Accidents and injuries	0.096
Academic performance	**0.021**

*p<0.01

When analyzing the consumption of cannabis or marijuana and its relation to knowledge and the consequences of consuming it, there are weak negative correlations (pcc=-0.259, N=250 p<0.01, table 2), also with respect to the academic performance (pcc=-0.083, N=250 p<0.01, table 2), which indicates that the influence of these variables on college students is low in order not to consume this type of drug.

Table 2 – Analysis of correlation between cannabis/marijuana consumption with respect to knowledge on the consequences and academic performance. El Salvador, 2013 (n=250)

Variables	pcc
Knowledge on the consequences	**-0.259***
Violent and risky behavior	-0.465*
Accidents and injuries	-0.366*
Addiction/dependency	-0.353*
Psychosis	-0.249*
Financial problems	-0.229*
Decreased memory and ability to solve problems	-0.170*
Anxiety, paranoia, panic, depression	-0.106
Problems with attention and motivation	-0.087
Academic performance	**-0.083**

*p < 0.01

Finally, when evaluating cocaine consumption and knowledge on the consequences of cocaine consumption, very weak negative correlations are presented (pcc=-0.029, N=250 p<0.01, table 3), as well as with respect to academic performance (pcc=-0.050, N=250 p<0.01, table 3), which indicates that the influence of these variables on college students is low in order not to consume this type of drug.

Table 3 – Correlation between cocaine consumption with respect to knowledge on the consequences and academic performance. El Salvador, 2013 (n=250)

Variables	pcc
Knowledge on the consequences	**-0.029**
Sudden death from heart problems	-0.108
Irrational thoughts	-0.108
Financial problems	0.050
Psychosis after high and repeated doses	0.038
Addiction/dependency	0.035
Legal problems	0.033
Risky behaviors	0.032
Aggressiveness and paranoia	0.029
Changes of humor, anxiety, depression, odd habits	0.025
Academic performance	**-0.050**

*p < 0.01

Chi-square tests, in ≤ 0.05 significance level, were carried out with the variables in the analysis of the research (see table 4) to find out if there are significant differences between the use of drugs with the knowledge on the consequences, and the difference between the demographic categories (male and female, residential and religious beliefs), and can verify that there is only a dependency relationship between drug consumption and the related socio-demographic variable to the importance of religious beliefs (sig.=0.001< alpha=0.05), *i.e.* that greater importance to the religious beliefs of college student interviewed greater is the probability that do not take drugs, and hence to lower level of major consumer substances, so religious beliefs influence positively in order to avoid such problematic issues.

The other variable with which this is related, is with the knowledge on the consequences of cannabis/marijuana consumption (sig=0.007<alpha=0.05), so that this has a positive impact, since this discourages the students interviewed to use them.

Regarding the rest of the analyzed variables, one affirms that they do not cause any influence for drug consumption, so the characteristics such as gender, age, area of study, place of residence, people with whom it resides, year of study, knowledge on the consequences of the consumption of alcoholic beverages and cocaine, as well as the academic performance have an independence relationship with the consumption of drugs according to the results of this test.

Table 4 – Analyzing the independence of socio-demographic variables, knowledge on consequences, academic performance with respect to drug consumption. El Salvador. 2013

Pearson's chi-square tests		
Variables		**Drug consumption**
Gender	Chi-Square	1.51
	gl	1
	Sig.	**.219**†
Age	Chi-Square	5.231
	Gl	3
	Sig.	**.156**†
Area studied	Chi-Square	0.201
	Gl	1
	Sig.	**0.654**
Place of residence	Chi-Square	0.582
	Gl	2
	Sig.	**0.748**
People with whom you reside	Chi-Square	1.226
	Gl	3
	Sig.	**0.747**
Importance of religious beliefs	Chi-Square	17.572
	Gl	3
	Sig.	**.001***,‡
Year of study	Chi-Square	4.542
	Gl	3
	Sig.	**0.209**
Knowledge on the consequences from consumption of alcoholic beverages*	Chi-Square	4,679
	Gl	6
	Sig.	**.586**†,‡
Knowledge on the consequences of cannabis/ marihuana consumption*	Chi-Square	24,069
	Gl	10
	Sig.	**.007**†,‡,*
Knowledge on the consequences of cocaine consumption*	Chi-Square	9.203
	gl	6
	Sig.	**.162**†,‡
Academic performance	Chi-Square	0.768
	gl	1
	Sig.	**0.381**

* The chi-square statistic is significant at the .05 level. †More than 20% of the boxes in this sub-table expected box frequencies below 5. ‡ The expected lower box frequencies in this sub-table are less than one.

Table 5 reflects the results obtained with a model where the socio-demographic variables are associated with drug consumption, in which it can be seen that students who use drugs do not have differentiable characteristics in terms of gender, age, area of study, year, place and people with whom they reside with respect to those who do not use drugs.

Table 5 – Logistic regression evaluating drug consumption and socio-demographic variables in college students aged from 18 to 35 years old. El Salvador. 2013

Variables	B*	ET†	Wald‡	gl§	Sig.||	Exp(B) ¶	*IC 95% for EXP(B)	
							Inferior	Superior
18 to 21 years old			1.974	3	0.578			
22 to 25 years old	-0.278	0.619	0.201	1	0.654	0.758	0.225	2.549
26 to 29 years old	0.215	0.67	0.103	1	0.748	1.24	0.334	4.605
30 to 35 years old	-0.219	1.012	0.047	1	0.829	0.803	0.11	5.841
Gender (Male)	-0.002	0.322	0	1	0.996	0.998	0.531	1.879
Study area (Health Sciences)	-0.567	0.401	2.001	1	0.157	0.567	0.259	1.244
Place of residence: Home			0.36	2	0.835			
In the campus	-0.247	0.576	0.184	1	0.668	0.781	0.252	2.416
Outside the campus (not at home)	-0.416	0.699	0.355	1	0.551	0.659	0.168	2.595
Person with whom you reside: family			2.454	3	0.484			
Person with whom you reside: friend	1.081	0.703	2.364	1	0.124	2.946	0.743	11.683
Person with whom you reside: companion	0.714	0.92	0.602	1	0.438	2.042	0.336	12.402
Person with whom you reside: single	0.696	0.94	0.548	1	0.459	2.006	0.318	12.661
Importance of religious beliefs: Very Important			12.089	3	0.007			
Importance of religious beliefs: Important	-21.41	19759.388	0	1	0.999	0	0	.
Importance of religious beliefs: Somewhat important	-20.298	19759.388	0	1	0.999	0	0	.
Importance of religious beliefs: They are not important	-19.913	19759.388	0	1	0.999	0	0	.
Year of study: First year			3.793	3	0.285			
Year of study: Second year	-0.237	0.393	0.365	1	0.546	0.789	0.365	1.704
Year of study: Third year	-0.156	0.413	0.143	1	0.705	0.856	0.381	1.92
Year of study: Equal to or above fourth year	0.6	0.45	1.781	1	0.182	1.823	0.755	4.403
Constant	21.092	19759.388	0	1	0.999	1445452975		

Significance level equal to 0.05. *B=Regression coefficient; †ET=Standard error of the coefficients; ‡Wald=Wald statistic; §gl=degrees of freedom; ||Sig=level of significance; ¶Exp(B)=coefficient exponentials; **CI=Confidence intervals.

However, as demonstrated in the previous analysis tests there is influence according to the level of importance of religious beliefs, as the significance value is very close to 1.

It should be noted that the significance levels obtained are relatively low, which indicates that the explanatory variables used have no influence on the dependent variable, so that the changes that occur in them do not cause a significant impact on the study variable.

When using a new logistic regression model (Table 6), taking into account explanatory variables knowledge on the consequences of using different types of drugs, and the academic performance, the lower statistical power of the model is evidenced, because of the values obtained in terms of significance levels, these are low, since they are higher than alpha 0.05.

Table 6 – Logistic regression evaluating the knowledge on the consequences of the uses of alcoholic beverages, drugs and academic performance in college students from 18 to 35 years old, El Salvador. 2013

Variables	B*	ET†	Wald‡	gl§	Sig‖	Exp(B)¶	**CI 95% for Exp(B)	
							Inferior	Superior
Knowledge on the consequences from consumption of Alcoholic Beverages	0.094	0.119	0.623	1	0.43	1.099	0.87	1.388
Knowledge on the consequences of the use of Cannabis/Marijuana	-0.137	0.088	2.396	1	0.122	0.872	0.734	1.037
Knowledge on the consequences of cocaine consumption*	0.123	0.102	1.448	1	0.229	1.131	0.926	1.382
Academic performance	0.55	0.479	1.32	1	0.251	1.733	0.678	4.43
Constant	-1.528	1.411	1.173	1	0.279	0.217		

Significance level equal to 0.05. *B=Regression coefficient; †ET=Standard error of the coefficients; ‡Wald=Wald statistic; §gl=degrees of freedom; ||Sig=level of significance; ¶Exp(B)=coefficient exponentials; **CI=Confidence intervals.

Therefore, none of the models is statistically significant, indicating that the variables that have been used as predictors, do not superimpose influence on drug consumption in the college students interviewed, so that other variables that affect the probability of drug consumption should be studied.

DISCUSSION

In countries like the US, heavy drinking is the leading cause of injury and death among college students,[6] situation not evaluated in this study, but nonetheless those are results of each day, vehicular accidents related to the consumption of alcoholic beverages in their majority.

A study in Egypt, 14.4% never experimented alcohol and 4.1% showed current consumption, more than half (55.6%) were aware of the dangers of alcohol use and use is more common among students, a similar situation to that found in the results of this study, where 54.4% have used alcohol at some time in their lives.[7]

This study produced results that are similar to those in the study of alcohol and drug habits of 136 second-year medical students (46 men, 90 women) attending the University of Leeds, the results

showed that one third (33.1%) of the students (men 28.3% versus 35.6% women) used illicit drugs. The most commonly used drug was marijuana.[8]

Lower income families reported higher use of marijuana, cocaine and inhalants. Although the use of cocaine in middle and medium-high income strata is always recognized, since the price of cocaine is higher compared to marijuana.[2]

Another study[9] highlights the relationship among the consumption of alcohol, marijuana, cocaine and academic performance, demonstrating that the increase in the frequency of smoking, the use of marijuana, cocaine and alcohol also had a negative impact on academic performance of adolescents.

The influence of alcohol consumption on academic performance can be direct or indirect. This result strongly supports the results found in our study, where other factors or other means of measurement must be found to significantly favor the statistical results found.[10]

It is important to consider that the consequences from using and abusing substances may be different, depending on the patterns of drug consumption and the type of drug[11] Supporting the findings reviewed in this study regarding the differences between alcoholic beverages, marijuana and cocaine in relation to the knowledge on the consequences for those studied. Very few studies have examined the knowledge on consequences and drug consumption among students.

The knowledge about the effects of alcohol and alcohol was generally low among urban college students.[12] This study suggests that differences in knowledge about the effects of alcohol and alcohol may exist based on the configuration of the university (traditional *versus* non-traditional) that reinforce the only relationship of dependence found in this study between the consumption of drugs and the socio-demographic variable related to the importance of religious beliefs, that is, there is less likelihood that one will consume drugs regarding larger importance to religious beliefs of the interviewed college student.[13]

The data obtained by this study will be used for preventing, intervening and developing public policies. These initiatives are especially important for university students, who are under risk - depending on their stage of development as young adults and their social stage - as they begin to be independent.

One of the limitations that were verified in this investigation was the approval time that the ethics committees of both countries took to approve the model (protocol) to be used.

Regarding the selection of the schools, this was made based on the mix of two schools in which the contents of training of individuals is different, one of the main purposes of this project is to be part of a larger multi-center project, and in order to preserve the standards and similar methodology with the other countries, the methodology for this country report or for other journal article environments was maintained. Another factor that affected was the empathy that existed in the interviewed groups, since they are not very positive when participating in answering about a thematic that is surrounded by myths and is legally delicate.

CONCLUSION

According to the results obtained through correlation and independence as chi-square tests, the consumption of alcoholic beverages has no relation with the knowledge on the consequences of consumption or academic performance. However, regarding the consumption of marijuana and cocaine, this is lower while one gets more knowledge on the consequences; but there is a negligible negative correlation with regard to academic performance.

Therefore, the relationship of the knowledge on the consequences and the consumption of drugs (alcohol, marijuana and cocaine) among the students participating in the study proved to be inversely proportional, expressing among some variables that the higher is the knowledge on the consequences, the lower is the consumption of drugs.

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NOTES

CONTRIBUTION OF AUTHORITY

Study design: Pena Olano RF, Wright MGM
Data collect: Pena Olano RF.
Data analysis and interpretation: Pena Olano RF, Wright MGM
Discussion of the results: Pena Olano RF, Wright MGM
Writing and / or critical review of content: Pena Olano RF, Wright MGM
Review and final approval of the final version: Pena Olano RF.

ACKNOWLEDGMENTS

To the Government of Canada / DFAIT, Organization of American States, Inter-American Commission for the Control of Drug Abuse, the Center for Addiction and Mental Health, Toronto, Canada, to the Evangelical University of El Salvador and the students who took part in the study sample and to all the people who were directly or indirectly involved in the study.

ETHICS COMMITTEE IN RESEARCH

Evaluated and approved by both Ethics Committees; CAMH and Ethics Committee for Health Research of the Evangelical College of El Salvador (CEIS UEES), 2012 and 2013 respectively.

CONFLICT OF INTEREST

There is no conflict of interest.

HISTORICAL

Received: 19 de june de 2018.
Approved: 01 de april de 2019.

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