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# PERCEPTION OF RISK AND BEHAVIORS ASSOCIATED WITH DRIVING UNDER THE EFFECTS OF ALCOHOL AND MARIJUANA ON UNIVERSITY STUDENTS OF VENEZUELA

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## ABSTRACT

**Objective:** to evaluate the relationship between risk perception and the behaviors associated with driving under the influence of drugs.
**Method:** quantitative cross-sectional study. The sample is composed by university students (n=383, average age 21.2 years). To evaluate the behaviors, items from Ontario Student Drug Use and Health were adapted, and two other instruments were used to measure alcohol and marijuana consumption.
**Results:** it indicates a low risk perception when driving under the influence of drugs. There are no differences between the risk perception of being stopped by the police or being penalized for driving under effects of alcohol and/or marijuana among the students whose report the behavior called driving-under-influence and those without such behavior. However, there were differences between the perception of the risk of involvement in a vehicle accident and the behaviors called driving-under-influence, showing that those who report driving under the influence of alcohol and/or marijuana perceive a lower risk of accidents due to the effects of alcohol $X^2$ (1, N=292)=7,999, p=.005 and of both substances $X^2$ (1, N=35)=6.386, p=.012. Likewise, a lower perception of the risk of accidents was found among the subjects who board a vehicle driven by someone who uses marijuana $X^2$ (1, N=67)=15,087, p=.000 and those who do not report being a passenger of a driver under influence; as well as when under the simultaneous effect of alcohol and marijuana $X^2$ (1, N=366)=8,849, p=.003.
**Conclusion:** it is concluded that the development of preventive programs in the university environment, as well as public policies that include the component of education and compliance with legal regulations, is important.

**DESCRIPTORS:** Risk perception. Driving under influence. University students. Alcohol. Marihuana. Drugs.

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## PERCEPCIÓN DE RIESGO Y COMPORTAMIENTOS ASOCIADOS A LA CONDUCCIÓN BAJO LOS EFECTOS DEL ALCOHOL Y MARIHUANA EN ESTUDIANTES UNIVERSITARIOS DE VENEZUELA


### RESUMEN

**Objetivo:** evaluar la relación entre percepción de riesgo y los comportamientos asociados a la conducción bajo los efectos de drogas.
**Método:** estudio cuantitativo de corte transversal. La muestra son estudiantes universitarios (n=383, media de edad 21.2 años). Para evaluar los comportamientos fueron adaptados ítems del Ontario *Student Drug Use and Health Survey*, además se utilizó otros dos instrumentos, para medir consumo de alcohol y marihuana.
**Resultados:** indican una baja percepción de riesgo al manejar bajo los efectos de drogas, no existen diferencias entre la percepción de riesgo de ser detenido por la policía ni de ser sancionado por conducir bajo los efectos de alcohol y/o marihuana, entre los estudiantes que reportan comportamientos llamado conducir bajo influencia y los que no tienen esos comportamientos. Sin embargo, sí se encontraron diferencias entre la percepción de riesgo de verse involucrado en un accidente de vehículo y los comportamientos llamado conducir bajo influencia, evidenciándose que quienes reportan conducción bajo los efectos de alcohol y/o marihuana, perciben un menor riesgo de accidentes bajo los efectos de alcohol $X^2(1, N=292)=7.999$, p=.005 y de ambas sustancias $X^2(1, N=35)=6.386$, p=.012. Igualmente se encontró una menor percepción de riesgo de accidentes, entre los sujetos que se suben a un vehículo conducido por alguien que usa marihuana $X^2(1, N=67)=15.087$, p=.000 y los que no reportan ser pasajero de un conductor bajo influencia; así como también cuando están bajo el efecto simultáneo de alcohol y marihuana $X^2(1, N=366)=8.849$, p=.003.
**Conclusión:** se concluye que es importante desarrollar programas preventivos en el ámbito universitario, así como políticas públicas que incluyan el componente educativo y el cumplimiento de las normativas legales.



**DESCRIPTORES:** Percepción de riesgo. Conducir bajo influencia. Estudiantes universitarios. Alcohol. Marihuana. Drogas.


## PERCEPÇÃO DE RISCOS E COMPORTAMENTOS ASSOCIADOS À CONDUÇÃO SOB OS EFEITOS DO ÁLCOOL E DA MACONHA EM ESTUDANTES UNIVERSITÁRIOS DA VENEZUELA


### RESUMO

**Objetivo:** avaliar a relação entre a percepção de risco e os comportamentos associados à condução sob os efeitos de drogas.
**Método:** estudo quantitativo de corte transversal. A amostra foi com estudantes universitários (n=383, com média de idade de 21,2 anos). Para avaliar os comportamentos foram adaptados os instrumentos Ontario *Student Drug Use* e *Health Survey*. Além disso, também foram utilizados outros dois para medir o consumo de álcool e maconha.
**Resultados:** há uma baixa percepção de risco ao dirigir sob os efeitos de drogas. Não há diferenças entre a percepção de risco de ser parado pela polícia nem de ser punido por dirigir sob a influência de álcool e/ou maconha, entre estudantes que relatam comportamentos relacionados à condução sob influência, e aqueles que não têm esses comportamentos. No entanto, foram encontradas diferenças entre a percepção de risco de estar envolvido em um acidente veicular e os comportamentos relacionados com a condução sob influência, mostrando que aqueles que relatam dirigir sob a influência de álcool e/ou maconha, percebem um menor risco de acidentes sob os efeitos do álcool $X^2$ (1, N=292)=7.999, p=0,005, e de ambas as substâncias $X^2$ (1, N=35)=6,386, p=0,012. Da mesma forma, uma menor percepção de risco de acidentes foi encontrada entre os sujeitos que embarcam em um veículo dirigido por alguém que usa maconha $X^2$ (1, N=67)=15.087, p=,000 e aqueles que não relatam ser passageiro de um carro com motorista sob influência; bem como quando eles estão sob o efeito simultâneo de álcool e maconha $X^2$ (1, N=366)=8.849, p=0,003.
**Conclusão:** é importante desenvolver programas preventivos no ambiente universitário, bem como políticas públicas que incluam o componente educacional e o cumprimento das normas legais.



**DESCRITORES:** Percepção de risco. Condução sob influência. Estudantes universitários. Álcool. Maconha. Drogas.

## INTRODUCTION

The drug problem in the world poses a threat to health, public safety and well-being of human kind. It is one of the top twenty risk factors for health worldwide and is one of the top ten problems in developed countries, according to the World Health Organization.[1] Data from 1994-2013 of the Inter-American Commission Against Drug Abuse (CICAD-OAS) show that current alcohol consumption in Latin America general population has remained stable, with some fluctuations (30-55%), but that of marijuana is increasing among the general population from 0.7% in 1994 to 8.3% in 2012.[2]

In university students, there is a large percentage variation between countries, with a range between 3.1% and 15%. With regard to the prevalence of marijuana use in the last year, this population also increased in the period from 2009 to 2012.[2] In Venezuelan university students, the National Antidrug Office (ONA) reports a life prevalence of 73.9 in licit drugs, 6.13 in illicit drugs and 62.7% of alcohol.[3] Another study with Venezuelan students, reported an alcohol prevalence in the last year of 70%, of which 37% present harmful consumption.[4]

The aforementioned, refers to a high alcohol consumption in the Venezuelan population and an increase in the marijuana consumption. The Pan-American Health Office, points out that there are deep-rooted customs in Venezuela that encourage early contact of young people with alcoholic beverages, as well as an average intake of 107 liters per capita in 2007, so in this country consumption is perceived as normal and its excess is not seen as a dangerous behavior.[5]

One of the main points of attention from the perspective of public health in relation to the use of its substances, is driving under influence of drugs (driving under influence - DUI), especially taking in account that at international level, the main cause of death among the group of 15 and 29 years of age are the injuries caused by traffic accidents. By the other hand, driving when drunk increases the risk of an accident and the probability of death or serious injury.[6] There are evidences that young people between ages of 18 and 35 are at higher risk of death from traffic accidents, as well as more likely to engage in DUI behaviors.[7]

In the countries of Latin America and the Caribbean, the literature on the problem of DUI with alcohol, marijuana or both substances is limited, although it is recognized as one of the main causes of injuries due to traffic accidents and deaths.[8] However, few studies on driving under the influence of alcohol have been conducted in the Americas.[9–10]

The university students' proportion who report driving after consuming alcohol is between 15-43% and for marijuana in 13-53%.[11–12] Data on university students from Brazil indicate that 47.5% report that they have been driving under the influence of alcohol.[13] In some cases, driving rates after marijuana use are equal to or higher than driving after drinking alcohol.[14–16]

Marijuana use and driving is strongly associated with frequent use of this substance.[17] The evidence indicates that DUI is increased by the decrease in the perception of the risk of being punished for this behavior.[18]

Regarding the perception of marijuana-related harms, many young adults claim that smoking marijuana before driving does not affect their ability to operate a vehicle.[19–20] This is how research has shown that people with lower levels of risk perception are more likely to drive under the influence of marijuana.[17]

Recent evidence has shown that marijuana users do not consider DUI behavior dangerous under the effect of this substance.[21] Another study reports that driving within one hour of having used marijuana is strongly associated with a higher probability of accidents, due to alterations in cognitive abilities.[22]

DUI behavior is more worrying when drivers use alcohol and marijuana simultaneously. Because they have similar psychophysiological effects on the ability to drive, which affects more when combined.[22–24] The estimated risk of an accident is higher than any of these substances separately, which may suggest a synergistic effect.[25] The combined use of these substances seems to be quite common, although more research is needed in this area.

A person who uses alcohol and/or marijuana and DUI is more likely to risky board a vehicle driven by a drunk person.[26] Likewise, driving after consumption of psychoactive substances is associated with an increase in at least twice the risk of being a passenger with another consumer.[12]

According to the Theory of Social Learning, behavior is a subjective value function of a result and the action expectation that it will produce as result.[27] Evidence indicates that behavior is determined by expectations and incentives, so that behavior is regulated by its consequences (reinforcements), but only if they are interpreted and understood by the individual. Thus, punishment is a negative consequence, which follows a behavior and reduces the probability of repeating the same behavior.[28]

Based on this theory, it is suggested that group norms are a basis for the degree of reinforcement, which may affect if DUI behavior continues.[29] Another posture suggests that reinforcing perceptions, experiences of punishment and avoidance contribute to the decision to perform DUI behavior. As well, the driver's perception of his likelihood of being caught driving under the influence of alcohol will have an impact on whether he is involved in this behavior.[30]

In relation to legal sanctions, evidence has shown that young adults who drive after the use of marijuana believe that they are less likely to experience such negative consequences, for example, being caught by the police, and compared to driving under the influence of alcohol.[20]

In Venezuela, article 139 of the Organic Law of Drugs (LOD) and the 169 the Organic Law of Traffic, establish sanctions for driving vehicles under the influence of alcoholic beverages or other substances.[31–32] However, there are no education programs in this regard, nor the application of this legal regulation permanently. Taking into account the above, this study investigates the Perception of Risk (PR) of students and DUI behaviors under the influence of alcohol and / or marijuana.

## METHOD

This is a cross-sectional quantitative study; it is part of a multicenter research conducted at ten Latin American and Caribbean universities. The population of this study is 34,946 students of the *Universidad Rafael Belloso Chacín*, attending the second quarter of 2016. The sample consisted of 383 subjects, calculated using a confidence interval of 95% and a 5% margin of error, in ages between 18 and 29 years. Randomly selecting both the faculty and the classroom.

A self-administered questionnaire consisting of 6 sections and 59 items was used to collect the data. To evaluate the dependent variable, that is, the behaviors related to driving under the influence of alcohol and marijuana (DUI), the items were adapted from the Ontario Student Drug Use and Health Survey.[33] With these items, the frequency of alcohol and marijuana use during the last year and DUI behaviors are evaluated.

The variable DUI Behaviors, is related to two conditions: the first of them, be a DUI Driver that refers to driving a vehicle within two hours of having consumed alcohol and/or marijuana, as the case may be; the other behavior, being DUI Passenger, defined as getting on a vehicle driven by someone under the influence of alcohol and/or marijuana.

A series of questions were developed to assess the independent variable, perception of risk, divided into detection, sanctions and accidents risk categories. E Each item requires participants to rate their perception level of occurrence probability using a Likert scale where a higher probability is associated with a higher perception of risk.

To estimate the use of alcohol and marijuana during the last year and month, the items of the CICAD/OAS surveys were adapted, which have been used in studies in Latin America and the Caribbean. They are dichotomous items, with "Yes/No" answer options.[34] The general items of drug use are followed by the Alcohol Use Disorders Identification Test (AUDIT)[35] and the Cannabis Abuse Screening Test (CAST).[36] With these scales, the variable use of alcohol and marijuana is operationalized. The questionnaire also includes items related to demographic information such as age, gender and driver status.

The subjects were included in the sample, after explaining the objectives of the study and signing an informed consent. The participation was voluntary and they had the right to interrupt it at any time. The statistical package SPSS was used to analyze the data.

## RESULTS

From the 383 participants, 53.2% are men; with an age range of 18 to 29 years (M=21.2, SD=2.7), half is between 18 and 21 years old (63.7%), followed by 27.9% that is in the group of 22 to 25 years old. Nearly half (46.5%) report that they drive some type of motor vehicle and a similar percentage (41.8%) has a driver's license**.**

In the sample surveyed, 86.4% reported alcohol consumption in the last year (2016), of which, one in five students qualified for problematic use in accordance with the AUDIT criteria, reaching one in four students who confirmed alcohol consumption in the previous year, as well as 70% referring consumption in the last month.

Regarding marijuana, a prevalence was found in the last year of 18.3% and 7.6% in the last month (March 2016); of which one out of every 12 students surveyed (8.4%) qualifies according to the CAST of problematic use with this substance, reaching this figure at 45.7% among those who report the use of marijuana in the last year. It is important to mention that in the last year one in ten students (9.7%) admitted alcohol and marijuana consumption simultaneously.

In relation to the three dimensions of the variable perception of risk (PR) of driving under the influence of drugs, students report a higher probability of risk of accident involvement, given that high percentages are evident in the case of alcohol (93.7%), followed by the use of both substances simultaneously (91%) and a lower percentage in the case of marijuana (77%).

Regarding the risk of being detained, the students report that it is more likely when they are under the effects of both substances than that of a single one, being in the case of both substances half of the students consider the risk of detention (50.3%) and 45.1% the risk of sanctions; in comparison to one third that reports a risk of detention under the influence of a single drug, alcohol (33.8%) and marijuana (31.2%). (Table 1)

On the other hand, there is a low Perception of Risk related to penalties for drivers who drive under the effects of drugs, evidencing that seven out of ten students see it unlikely in the case of alcohol (74.7%) and marijuana (66.5), deceasing this proportion to five out of 10 in the case of simultaneous consumption of alcohol and marijuana (54.9) (Table 1).

**Table 1** – Perception of risk of behavior associated with driving under the effects of Alcohol and Marijuana, Venezuela, 2016

| Variable | Probable | | Unlikely | |
|---|---|---|---|---|
| | f | % | f | % |
| Alcohol | | | | |
| Detention risk | 129 | 33.8 | 253 | 66.2 |
| Sanctions risk | 97 | 25.3 | 286 | 74.7 |
| Accident risk | 356 | 93.7 | 24 | 6.3 |
| Marijuana | | | | |
| Detention risk | 119 | 31.2 | 263 | 68.8 |
| Sanctions risk | 128 | 33.5 | 254 | 66.5 |
| Accident risk | 294 | 77 | 88 | 23 |
| Both substances | | | | |
| Detention risk | 191 | 50.3 | 189 | 49.7 |
| Sanctions risk | 172 | 45.1 | 209 | 54.9 |
| Accident risk | 343 | 91 | 34 | 9 |

In terms of DUI behavior, it is evident that one in five of the students surveyed (19.6%) report that they drove a car within two hours of consuming alcohol at least once in the last year, reducing this figure to 2.9% in the case of marijuana and both drugs simultaneously. When analyzing these proportions among students who reported consumption in the last year, it is found that one in four students (25.4 %) was driving under the influence of alcohol, one third (31.4 %) driving under the influence of simultaneous alcohol and marijuana, compared to one in six (16 %) who reported driving under the influence of marijuana (Table 2).

**Table 2** – Behaviors associated with driving under the effects of Drugs, Venezuela, 2016

| Variable | Alcohol | | | | Marijuana | | | | Alcohol and Marijuana | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | Yes | | No | | Yes | | No | |
| | f | % | f | % | f | % | f | % | f | % | f | % |
| Driver* | 75 | 19.6 | 308 | 80.4 | 11 | 2.9 | 382 | 97.1 | 11 | 2.9 | 382 | 97.1 |
| Driver† | 75 | 25.4 | 220 | 74.6 | 11 | 16.2 | 57 | 83.8 | 11 | 31.4 | 24 | 68.6 |
| Passenger‡ | 276 | 73.4 | 100 | 26.6 | 79 | 21.5 | 289 | 78.5 | 71 | 19.1 | 301 | 80.9 |

*driver (complete sample, n=383); †driver (sample containing students who report alcohol consumption in the past year, marijuana or both, ‡Passenger (full sample, n=383), boarding a motor vehicle driven by someone who consumed alcohol, marijuana or both in the last two hours.

With respect to the other DUI (passenger) behavior and referred to last year, it is evident that seven out of ten students (73.4 %) report having boarded into a vehicle driven by the guide who consumed alcoholic beverages in the last two hours, a proportion that decreases to two out of ten students (19.1 %) when the driver is under the simultaneous effects of alcohol and marijuana or marijuana alone (21.5%).

In this section, the relationship between risk perception and DUI behaviors is analyzed. The results indicate that there are no statistically significant differences in the perception of risk of being stopped by the police or of being punished for driving under the influence of alcohol and/or marijuana among students who report behaviors of driving a vehicle within two hours of having consumed alcohol/or marijuana and those who do not have those behaviors. As well as there are no differences

between those who get into a vehicle driven by someone under the effects of these substances and those who do not take this risk (Table 3).

**Table 3** – Perception of risk and Behavior associated to Driving under the effects of drugs, Venezuela, 2016

| Risk perception | Driving under influence behavior | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Alcohol | | | Marihuana | | | Both | | |
| | Yes | No | $X^2$ | Yes | No | $X^2$ | Yes | No | $X^2$ |
| Driver | | | | | | | | | |
| Detention risk | | | | | | | | | |
| Probable | 28.7 | 71.3 | 0.751 | 18.8 | 81.2 | 0,102 | 20.0 | 80.0 | 2,828 |
| Unlikely | 24.0 | 76.0 | | 15.4 | 84.6 | | 46.7 | 53.3 | |
| Sanctions risk | | | | | | | | | |
| Probable | 30.3 | 69.7 | 1,265 | 17.6 | 82.4 | 0.036 | 21.4 | 78.6 | 1,083 |
| Unlikely | 23.7 | 76.3 | | 15.7 | 84.3 | | 38.1 | 61.9 | |
| Accident risk | | | | | | | | | |
| Probable | 23.4 | 76.6 | 7.999* | 14.3 | 85.7 | 0,190 | 23.3 | 76.7 | 6.386‡ |
| Unlikely | 52.6 | 47.4 | | 18.2 | 81.8 | | 80.0 | 20 | |
| Passenger | | | | | | | | | |
| Detention risk | | | | | | | | | |
| Probable | 71.4 | 28.6 | 0.352 | 18.6 | 81.4 | 0,836 | 18.3 | 81.7 | 0.116 |
| Unlikely | 74.3 | 25.7 | | 22.8 | 77.2 | | 19.7 | 80.3 | |
| Sanctions risk | | | | | | | | | |
| Probable | 73.2 | 26.8 | 0.003 | 20.7 | 79.3 | 0.080 | 16.9 | 83.1 | 0.826 |
| Unlikely | 73.5 | 26.5 | | 22.0 | 78.0 | | 20.6 | 79.4 | |
| Accident risk | | | | | | | | | |
| Probable | 83.7 | 12.5 | 2,594 | 16.8 | 83.2 | 15,087† | 17.2 | 82.8 | 8.849* |
| Unlikely | 72.5 | 27.5 | | 36.4 | 63.6 | | 38.2 | 61.8 | |

*p<.005; †p<.001; ‡p<.01

However, significant differences were found in relation to the perception of risk of being involved in a vehicle accident and DUI behaviors, evidencing that students who report driving under the influence of alcohol and/or marijuana perceive a lower risk of accidents under the influence of alcohol $X^2$ (1, N=292)=7,999, p=.005 and of both substances $X^2$ (1, N=35)=6.386, p=.012, when compared to students who report that they do not drive under the influence of these drugs.

It is also found a lower accidents' PR among the subjects (passenger) that board in a vehicle driven by someone who used marijuana in the last two hours $X^2$ (1, N=67)=15,087, p=.000 and those who do not report being a passenger of a DUI driver; as well as when they are under the simultaneous effect of alcohol and marijuana $X^2$ (1, N=366)=8,849, p=.003 (Table 3).

## DISCUSSION

The results of this study coincide with other studies in relation to DUI behaviors under the influence of alcohol (19.4%) in Venezuelan university students.[11–13] The aforementioned percentage is within the range found in other countries, but not with marijuana where the proportion found is lower than that reported by these authors (2.9%). However, when this figure is analyzed within the students

who report marijuana use in the last year, it rises to 16% and both substances to 31.4%, coinciding with the results in these investigations.

Regarding the Perception of Risk (PR) of driving under the effects of drugs (DUI), there is a high PR of harm, because nine out of ten students consider that there are accidents risks both under the effects of alcohol as well as both substances, this figure drops to seven out of ten when it comes to marijuana use. However, there is a very low PR to be sanctioned and stopped driving under the influence of alcohol or marijuana, probably due to the limited application of the legal regulations in the country. Although Venezuela's Transit Law and Organic Drug Law provide penalties for such behaviors, there are very few mechanisms for monitoring or penalizing drivers that violate these regulations.[31–33]

According to the above, these results could indicate that although students have knowledge of how drugs reduce the psychomotor functions in driving vehicles, programs that establish the consequences to achieve the PR increasing are required.[16] Thus, the DUI is increased by the decrease in the perception of the risk of being sanctioned by this behavior.

In this line of thinking, it is important to mention that the PR of being sanctioned or detained has no relationship with the behaviors of the DUI, that is, the perception of the students that the behaviors of driving a vehicle within two hours of alcohol/marijuana consumption are similar to those that do not. As well as there are no differences in the DUI behavior of getting on a vehicle driven by someone under the effects of those substances and those who do not take this risk.

This low PR is probably due to what has been mentioned above about the lack of consequences and sanctions for this behavior, as well as considering that the prevalence in the last year of alcohol consumption among the students surveyed is very high (86.4). As stated by OPS, the consumption of this substance among Venezuelans is part of its culture, the intake is normalized, and can even be a source of social approval. In Venezuela, alcohol consumption is high, showing a high social acceptance of its use, as it is considered essential in meetings and recreational activities.[5]

It is interesting to mention the relationship between the perception of risk of being involved in a vehicle accident and DUI behaviors, indicating that PR is lower among students who drive under the effects of alcohol and this substance combined with marijuana. As well as, the PR is lower in those who take the risk of being a passenger in a vehicle driven by a DUI driver under the influence of marijuana, or the combination of both drugs. These findings coincide with what was proposed by other authors, where people with lower PR levels are more likely to drive under the influence of marijuana.[17] As well as other researchers' findings, who argue that marijuana users do not consider this substance to affect the ability to drive a vehicle.[18,20–21]

On the other hand it is to be noted that the DUI passenger behavior, referred to take the risk of getting into a vehicle driven by a DUI driver, was not significant when the driver's substance is only alcohol, corroborating this previously raised about the high consumption or of this drug in the student population, as well as the high social permissiveness of its use. Conversely there are differences in PR between those who take the risk of being a DUI passenger and those who do not when the passenger is in a vehicle with a DUI driver under the influence of marijuana or combined with alcohol, which seems to indicate that Venezuelan students consider marijuana a greater risk in driving than alcohol.

## CONCLUSION

The evidences shown indicate the importance of drug consumption study, as well as the perception of risk towards the behaviors of driving under its effects in university students. 86.4% of the studied sample reports alcohol consumption in the last year, of which one in five students qualify for problematic use according to the AUDIT criteria. In relation to marijuana, a prevalence of the last year of 18.3% was found; of which 45.7% qualify of problematic use with this substance according to the CAST.

In the sample studied, the greatest perceived risk is related to being involved in an accident when driving under effects of alcohol (93.7%), when combined with marijuana (91%) and 77% when using marijuana alone. The perception of the risk of students for being arrested and punished for driving under drug influence is lower than the perception of an accident.

The students report that one in four drove under the influence of alcohol, one-third under the influence of alcohol and marijuana, which indicates a low perception of the risk of driving under the influence of drugs. Similarly, there is a low perception of risk in relation to the behavior of being a passenger. The results indicate that seven out of ten students report having boarded into a vehicle driven by someone who consumed alcoholic beverages in the last two hours, a proportion that drops to two out of ten students when the driver is under the simultaneous effects of alcohol and marijuana.

It is interesting to conclude that there are no statistically significant differences in the perception of the risk of being held by the police or being punished for driving under the influence of alcohol and/or marijuana among students who report driving a vehicle two hours after consuming alcohol or marijuana and those who do not. Nor are there differences between those who board a vehicle driven by someone under these substances' effects and those who do not take this risk. However, significant differences were found in the perception of accident risk among students reporting driving under the influence of alcohol and / or marijuana when compared to students who report that they do not drive under the influence of these drugs, in this group Risk Perception is higher.

It is suggested that educational programs to raise awareness of the risks of alcohol and/or marijuana use in DUI behaviors be developed in the university area. In addition to incorporating the topic of drug use prevention and its consequences, emphasizing DUI behaviors in a human development-related introductory course. Additionally, the Office of Student Affairs can incorporate these topics in the extra-academic activities that are carried out with the student population, such as video forums, conversations, activities framed within the world day against drugs or mental health day, between others. As well as in the informative campaigns, that are developed in the social networks and media of the university. On the other hand, it is important to promote actions at the municipal, state and national levels within public policies in order to promote a program with a multi-level intervention approach that allows strategies to educate security and prevention bodies in the first place. For complying with the regulations on the legal consequences of DUI behavior. And in turn, as the case may be, the consequences go from education to advancement to criminal consequences. In the same way, it is necessary to contribute with this information to support the revision that is being made to the Traffic Law, in relation to lowering the maximum concentration of alcohol in the blood (BAC) allowed to drive a vehicle, of 0.8 g / dl at 0.05 g / dl or less. Likewise, it is proposed to carry out an awareness social media campaign, so that educational programs are developed in which alternative behaviors could be modeled to avoid using this substances and driving, such as the designated driver, which has given results in other countries, generating safer behavior for young drivers.

## REFERENCES


1. United Nations Office on Drugs, Crime. World Drug Report 2012. Washington(US): United Nations Publications; 2012. [cited 15 May 2016]. Available from: https://www.unodc.org/documents/datandanalysis/WDR2014/World_Drug_Report_2014_web.pdf
2. Organization of American State.Inter- American Drug Commision. Report on Drug Use in the Americas. Washington(US): OAS; 2015.
3. Oficina Nacional Antidrogas. Observatorio Venezolano de Drogas. Estudio nacional de drogas en estudiantes universitarios. Caracas(VE): Publicaciones Observatorio Venezolano de Drogas; 2014.
4. Amesty, E. Temática Consumo de Alcohol y Cigarrillo en Estudiantes Universitarios y sus implicaciones para la Prevención, Conferencia en II Jornadas Latinoamericana de Psicología de la Salud, ALAPSA. Universidad Rafael Urdaneta; 2011.
5. Organización Panamericana de la Salud. El Alcohol y las políticas públicas en Venezuela: dos estudios. 2009 [cited 6 May 2016]. Available from: http:www.paho.org/ven/index.php?option=com_docman&task.
6. World Health Organization. World health statistics 2015. Geneva(CH): World Health Organization; 2015 [cited 8 Mar 2016]. Available from: http://who.int/gho/mortality_burden_disease/en
7. OMS. Informe sobre la situación mundial de la seguridad vial 2013. [cited 5 May 2016]. Available from: http://www.who.int/violence_injury_prevention/road_safety_status/2013/report/summary_es.pdf
8. Davis A, Quimby A, Odero W, Gururaj G, Hijar M. Improving road safety by reducing impaired driving in developing countries: A scoping study. Transport Research Foundation Group of Companies; 2003 May. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.454.7794&rep=rep1&type=pdf
9. Bedendo A, Andrade LM, Opaleye ES, Noto AR. Binge drinking: a pattern associated with a risk of problems of alcohol use among university students. Rev Latino-am Enfermagem [Internet]. 2017 [cited 2018 Sept 11];25:e2925. Available from: https://dx.doi.org/10.1590/1518-8345.1891.2925
10. Morera JAC, et al . The role of family relations, spirituality and entertainment in moderating peer influence and drug use among students of eight universities from five countries in Latin America and three from the Caribbean. Texto contexto enferm [Internet]. 2015 [cited 2018 Sept 11];24(Spe):106-16. Available from: https://dx.doi.org/10.1590/0104-07072015001130014
11. Whitehill JM, Rivara FP, Moreno M. A. Marijuana-using drivers, alcohol-using drivers, and their passengers: prevalence and risk factors among underage college students. JAMA pediatrics. 2014;168(7):618-24.
12. Whitehill JM, Rivara FP, Moreno MA. Marijuana-using drivers, alcohol-using drivers, and their passengers: prevalence and risk factors among underage college students. JAMA pediatrics. 2014 July 1;168(7):618-24.
13. Pillon SC, O'Brien B, Piedra Chavez KA. A relação entre o uso de drogas e comportamentos de risco entre universitários brasileiros. Rev Latino-Am Enfermagem. 2005; 13(Spe2):1169-76.
14. Fergusson DM, Horwood LJ, Boden JM. Is driving under the influence of cannabis becoming a greater risk to driver safety than drink driving? Findings from a longitudinal study. Accident Analysis & Prevention. 2008 July 31;40(4):1345-50.
15. McGuire F, Dawe M, Shield KD, Rehm J, Fischer B. Driving under the influence of cannabis or alcohol in a cohort of high-frequency cannabis users: Prevalence and reflections on current interventions 1. Canadian Journal of Criminology and Criminal Justice. 2011 Apr;53(2):247-59.

16. Asbridge M. Driving after marijuana use: the changing face of “impaired” driving. JAMA pediatrics. 2014 July 1;168(7):602-4.

17. Fischer B, Ivsins A, Rehm J, Webster C, Rudzinski K, Rodopoulos J, Patra J. Factors associated with high-frequency cannabis use and driving among a multi-site sample of university students in Ontario. Canadian journal of criminology and criminal justice. 2014 Feb;56(2):185-200.

18. Alonso F, Pastor JC, Montoro L, Esteban C. Driving under the influence of alcohol: frequency, reasons, perceived risk and punishment. Substance abuse treatment, prevention, and policy. 2015;10(1):11.

19. Fischer B, Rehm J, Tyndall M. Effective Canadian policy to reduce harms from prescription opioids: learning from past failures. CMAJ: Canadian Medical Association Journal. 2016;188(17-18):1240-44.

20. Arterberry BJ, Treloar HR, Smith AE, Martens MP, Mccarthy DM. Marijuana Use, Driving, and Related Cognitions. Alcoholism: Clinical & Experimental Research. 2012 June 1;36:288A.

21. Bergeron J, Langlois J, Cheang HS. An examination of the relationships between cannabis use, driving under the influence of cannabis and risk-taking on the road. Eur Rev Appl Psychol. 2014 May 31;64(3):101-9.

22. Hartman RL, Huestis MA. Cannabis effects on driving skills. Clinical chemistry. 2013 Mar 1;59(3):478-92.

23. Wright K, Terry P. Without Title. Psychopharmacology. 2002 Mar 18;160(2):213-9.

24. Yurasek AM, Aston ER, Metrik J. Co-use of alcohol and cannabis: A review. Current Addiction Reports, 2017;4(2):184-93.

25. Dubois S, Mullen N, Weaver B, Bédard M. The combined effects of alcohol and cannabis on driving: impact on crash risk. Forensic science international. 2015 Mar 31;248:94-100.

26. Steptoe A, Wardle J, Bages N, Sallis JF, Sanabria-Ferrand PA, Sanchez M. Drinking and driving in university students: an international study of 23 countries. Psychology & Health. 2004 Aug 1;19(4):527-40.

27. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the health belief model. Health education quarterly. 1988 June;15(2):175-83.

28. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. Psychological review. 1977 Mar;84(2):191.

29. Wanberg KW, Timken DS, Milkman HB. Driving with care: education and treatment of the underage impaired driving offender - an adjunct provider’s guide to driving with care: education and treatment of the impaired driving offender-strategies for responsible living and change. Thousand Oaks(US): Sage; 2010.

30. Livingstone KA. A comparison of the psychological, social, and legal factors contributing to speeding and drink driving behaviour (Doctoral dissertation, Queensland University of Technology). 2011 [cited 06 Feb 2016]. Available from: http://eprints.qut.edu.au/48913/

31. Ley Organica de Drogas G.O.(37510). República Bolivariana de Venezuela, Asamblea Nacional; 2010.

32. Ley Organica de Transporte Terreste G.O.(38985). República Bolivariana de Venezuela, Asamblea Nacional; 2008.

33. Paglia-Boak A. The Mental Health and Well-being of Ontario Students, 1991-2013: Detailed OSDUHS Findings. Centre for Addiction and Mental Health. [Internet] 2015 [cited 10 May 2016]. Available from: https://www.camh.ca/en/research/news_and_publications/ontario-student-drug-use-andhealthsurvey/Documents/2015%20OSDUHS%20Documents/2015OSDUHS_Highlights_DrugUseReport.pdf.

34. Observatorio Interamericano de Drogas (2011). Sistema Interamericano de datos uniformes. Protocolo de la encuesta sobre drogas en hogares. Instrumentos para la realización de los estudios nacionales de drogas en población general. Washington(US): OEA. [cited 05 May 2016]. Available from: http://www.cicad.oas.org/oid/protocols/1_PROTOCOLO_Encuesta_Hogares_Julio_2011.pdf

35. Babor TF, et al. AUDIT: the alcohol use disorders identification test: guidelines for use in primary health care. [Internet] 2001. [cited 8 May 2016]. Available from: http://apps.who.int/iris/bitstream/handle/10665/67205/WHO_MSD_?sequence=1

36. Legleye S, Karila L, Beck F, Reynaud M. Validation of the CAST, a general population Cannabis Abuse Screening Test. Journal of substance use. 2007 Jan 1;12(4):233-42.

## NOTES

### CONTRIBUTION OF AUTHORITY

Study design: Amesty E, Agic B, Hamilton H.
Data collect: Amesty E.
Data analysis and interpretation: Amesty E, Agic B, Hamilton H.
Discussion of the results: Amesty E, Agic B, Hamilton H.
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Review and final approval of the final version: Amesty E.

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### ETHICS COMMITTEE IN RESEARCH

The approval of the project was granted by the Research Ethics Committee of the Center for Addictions and Mental Health, as well as by the Ethics Committee of the *Universidad Rafael Belloso Chacín*.

### CONFLICT OF INTEREST

There is no conflict of interest.

### HISTORICAL

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