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Young people, drug use and drugged-driving

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ABSTRACT: *According to World Health Organization (WHO) road traffic injuries are a leading cause of death globally, leading to the death of 1.2 million people each year. Data from National Authority for Road Safety (ANSR-Portugal) points to age group between 18 and 24 years old as the most vulnerable facing road dangers. In the last 10 years 15% of fatalities, 18% of serious injuries and minor injuries happened in this age group. It is also in this younger group that most accidents occur during weekend nights compared to the other days of the week. This article aims to present the results of a preliminary study about drug use and drugged-driving, through the application of the DDYP-Scale Questionnaire to 140 young people. For data analysis, descriptive and inferential statistical analyses were applied.*
Results presented here, although somewhat different from American and European studies, indicate a clear tendency to the recreational use of marijuana and drugged-driving, among younger populations.

KEYWORDS: *Young people; Drug Use; Drugged-Driving; Road Traffic; Road Safety.*

1. INTRODUCTION

Driving is a complex activity present in our daily day lives that requires alertness, attention, concentration, eye-hand-foot coordination and ability to process visual, auditory and kinesthetic information quickly (Larkin, 2015). It is well established that alcohol impairs driving, but less is yet known about the effects of psychotropic substances consumption and how drugs affect driving behaviors (Robertson, Hing, Pashley, Brown and Vanlaar, 2017).

Until recently, society did not focus on problems related with drugged driving. However, the governmental law changes and the existence of a commercially regulated cannabis market opened the discussion and analysis about the possible change in consumption patterns, high lightening the importance of regulation and evaluation of consumption behaviors and consequences, being road safety and drugged driving one of them. Although its known that drugs impair driving, less is yet known on how and in what degree this happens and there are many misperceptions about drugged driving, such as: drugged driving is not a serious problem, some drug use does not adversely affect driving, some drugs improve driving ability and even that drugged-driving isn't illegal (Holmes, 2017). A Gallup poll made in the U.S. (2016) found that most Americans consider that driving under the effects of alcohol is a very serious problem (79%), but only 29% considered that driving while impaired by marijuana is a "serious problem". Poor attention to tasks, distortion of time and distance perception, impact on reaction time with slower braking, poor perception of speed and its maintenance, poor lane tracking and more steering corrections and slower driving are some of the effects of marijuana in driving (Holmes, 2017; WHO, 2016).

The European Report of Drugs (2017b) found that in the last year 18,7 million young adults (15-34 years) consumed drugs and more that 93 million people already experimented illicit drugs, being cannabis the most common followed by cocaine. In Portugal, the use of illicit substances seems to have been decreasing over the past decade and cannabis remains the most frequently used drug (EMCDDA, 2017b). The 2015 European School Survey Project on Alcohol and Other Drugs found that 5,1 % of young adults reported using cannabis in the last year.

The data also shows that males are more likely to report drug use than females.

European Monitoring Center for Drugs and Drug Addiction (EMCDDA) found that, in 2017, 21% of young people reported to drive after using illicit drugs. The report also highlights that the risk of road traffic accident increases 1-3 times with the use of cannabis, 2-10 times with the use of cocaine and 5-30 times with the use of amphetamines. The DRUID Project (Driving under the influence of drugs, alcohol and medicines) created by the European Union to analyze the relation between traffic safety and the use of psychoactive drugs investigated the presence of alcohol and drugs in killed drivers and found that drugs were frequently detected (ranging between 2.3% and 12.6%), especially in combination with alcohol (2.3% - 13.2%) and cannabis was the most commonly detected drug (Albrecht, 2008). In Portugal the most prevalent drug was opioids (EMCDDA, 2017b). The World Health Organization (WHO, 2016) reported that of the 1 252 071 road traffic deaths, in 2013, 39 625 were relates to drug use (51% related with amphetamines, 22% with cannabis, 14% with cocaine and 13% with opioids use). Robertson et al., in 2017, also found that male drivers were more expected to report using marijuana and other illegal drugs before driving. Among fatally injured drivers, males were also more likely to test positive for any drug, cocaine or marijuana while females were more likely to test positive for CNS-depressants.

Given this data, EU countries are making efforts and creating task forces to address drugged driving through the creation of legislation and its reinforcement, but due to numerous factors the situation is complex: "drugs" encompasses a wide variety of substances (some prescribed, other illegal); detecting and measuring levels of psychoactive substances is more complicated than detecting alcohol in breath, since requires samples of blood, urine or saliva, the crash risk for drugs is more complicated to ascertains because different types of drugs stay in the bloodstream for different lengths of time and lack of scientific evidence in the links between drug levels, impairment and crash risks, making difficult to set threshold limits for each substance (WHO, 2016). Nevertheless, the effort is being made. Some commonly used strategies by policymakers are: creation of legal limits, impairment legislation and zero tolerance laws. Drugged driving needs to start being treated as a risk factor for road safety and the creation campaigns is one way to address this issue. People need to know that drugged driving is illegal but also what are the associated risks and the specific ways drug use impairs driving. The creation of training programs for police focused on professional skills for detection and recognition of external symptoms of illegal substance use, the creation of easy and quick devices for roadside tests, the establishment of threshold limits to substance use, similar to BAC levels for alcohol and the creation of international research programs focused on drug-driving are some of the pinpoint governmental and social actions for the fight against drugged-driving (Holmes, 2017; ETSC, 2017; Flieger, 2017).

Portugal is one of the countries committed the elimination and reduction of drug use, through the adoption of a national plan for the reduction of addictive behaviors and dependencies (2013-2020) that recognizes the need for specific prevention, given the context, being road safety one of them (SICAD, 2014). In 2017, Portugal held the Third International symposium on drug-impaired driving aiming to bring together key stakeholders to share their experience and lessons learned and to develop next steps to effectively address drug-impaired driving (EMCDDA, 2017a).

2. AIMS OF THE STUDIES

Coimbra is a city in the center of Portugal, which is characterized primarily for being a university town. The academic festivities with its 30.000 students are known worldwide. The academic traditions are associated with the academic festivities: The "Receção ao Caloiro" (Freshmen Welcome Party) and the "Queima das Fitas" (Burning of the Ribbons Party). For a week the city is dressed in tradition, with thousands of people (national and international students). Associated with these moments are the abuse of alcohol and drugs. This study results from a joint initiative led by InOutCister, in a partnership with the Applied Research Institute (IIA) – Robocorp - School of Higher Education of the Polytechnic Institute of Coimbra, counting as partners other public and private entities (Academic Association of Coimbra; National Authority for Road Safety, and others).

We aim to contribute to the expansion of knowledge on drugged driving, through the analysis and characterization of drug usage patterns and drugged-driving practices in young people, in Portugal.

3. MATERIALS AND PROCEDURE

The data was collected through the application of the Drugs, Driving and Young People- DDY-P (Silva; Mendes; Girão & Diogo, 2017) questionnaire to young drivers, living in Coimbra. This questionnaire was created by a Traffic Psychology International (TPI) member, in collaboration with other experts in the field. Its aim was to characterize and map the main patterns of psychoactive substances' consumption, in young people and its relation to driving and thus road safety. It has three mains topics: (a) sociodemographic data, such as genre, age, professional status, academic habilitations, regular way of transportation and if the subject owns a vehicle and have's driver's license; (b) drugs and behavior as a driver, which included a question about the most frequent road used by the subjects: road city, rural, urban, highway, or fast track road and (c) behavior, drugs and driving, with several questions related to the consumption of psychoactive substances, the frequency of the consumption, ranging from "Just tried once" to "daily" (with the following options: "rarely", "monthly", "weekly" and "more than twice a week"), items related to drugged driving and items that, through Yes/no" answers, characterized subjects perceptions about the relation between drugged-driving and road traffic safety. The DDY-P was randomly distributed among young adults in paper format between March and May of 2017. Quantitative statistical analyzes of the data were carried out using SPSS Statistics (v. 22.0). The results are presented in the next section.

4. RESULTS

4.1. DRUGS, DRIVING AND YOUNG PEOPLE

4.1.1. SAMPLE DESCRIPTION

140 subjects, 57.9% women and 42.1% men comprise the sample. Their ages range from 18 to 27 years old, but more than half of the subjects (56.5%) are between 20 and 23 years old (M=21.12; SD= 2.10). The majority are students (72.9%), others being workers (14.3%), working students (3.6%) and unemployed (9.3%). Regarding their academic qualifications, 64.3% have completed the 12th grade (High School), 23.6% are graduated and 3.6% have a master degree (See Table 1).

Almost half of the subjects (47.9%) reported that they usually move by driving a car, while the others reported that they typically move by walking (29.3%), by public transports (17.9%) or by a car driven by others (2.9%). More than half (71%) have a driving license for 36 months or less than this period. Also, more than half of the subjects (50.7%) own a car. Regarding the type of routes where the subjects drive, 57.1% reported that they are used to drive in mixed routes (urban and rural). 33.6% reported driving usually in urban routes. In Table 5, 6 and 7 we can see the representation of these values (See Table 2).

Table 1: Demographic characteristic of the participants (n=140)

	Total	%
Gender		
Male	59	42.1
Female	81	57.9
Age of the participants		
18-19	38	27.4
20-23	79	56.5
24-27	22	15.7
Missing	1	0.7
Occupation		
Students	102	72.9
Workers	20	14.3
Working-students	5	3.6
Unemployed	13	9.3
Academic Qualifications		
9th grade	7	5.0
12th grade	90	64.3
Bachelor	3	2.1
Graduations	33	23.6
Master	5	3.6
Missing	2	1.4

Table 2: Participant's transportation method, Car-ownership and most common route used (n=140)

	Total	%
Transportation Method		
Car driving	67	47.9
Walking	41	29.3

Public Transports	25	17.9
Carpool	4	2.9
Missing	3	2.1
Car owner		
Yes	71	50.7
No	60	42.9
Most Common Routes		
Urban	47	33.6
Rural	18	12.9
Mixed	80	57.1
Freeway	6	4.3
Highway	13	9.3

4.1.2. RESULTS

Less than a third of the participants (26.4%) reported that had already tried psychotropic substances, being cannabis the most frequently used substance (81.1%). Only 3 subjects reported having tried ecstasy, 6 reported the usage of other substances and there were no reports of cocaine use. Subjects could indicate more than one substance use and four subjects reported so. Regarding the frequency of the use of cannabis, 25.9% reported that they only tried once, 25.9% reported having rarely used it and only 14.8% mentioned its daily use. All participants that mentioned using ecstasy reported that only did it once. For other substances, half of the subjects that reported having tried them indicated having tried them only once. These values are summarized in Tables 3, 4 and 5.

Among the subjects who reported having already used psychotropic substances, 16 subjects (44.4%) stated that they had already driven a car after having used any of these substances (See Table 6). Regarding the frequency of this behavior, 7 subjects (46.7%) reported that made it rarely and 3 subjects (20%) reported having done it only when they tried the substance (See Table 7). When asked if they had already driven a car while using simultaneously a drug, 7 subjects (19.4%) gave a positive answer and all of them mentioned cannabis as the drug that they used while driving.

Table 3: Psychotropic substances ever tried

	Yes	%	No	%	Total	%
Substance use	37	26.4	103	73.6	140	100

Table 4: Substances used by subjects who reported having already tried them

	Cannabis		Ecstasy		Cocaine		Others	
	n	%	n	%	n	%	n	%
Yes	30	81.1	3	8.6	-	-	6	17.1
No	7	18.9	32	91.4	35	100	29	82.9

Table 5: Frequency of the substance use

		One Time	Rarely	Monthly	Weekly	+2x Week	Daily
Cannabis	**n**	7	7	2	5	2	4
	%	25.9	25.9	7.4	18.5	7.4	14.8
Ecstasy	**n**	3	-	-	-	-	-
	%	100	-	-	-	-	-
Other	**n**	3	1	1	1	1	-
	%	50.0	16.7	16.7	16.7	16.7	-

We also analyzed the pattern of consumption of psychoactive drugs and its difference in subjects' academic qualification. Although it is not completely clear neither representative, the results show that most subjects that already tried psychoactive substances only have 12th Grade of education (See Table 8).

Concerning the attitudes towards drugs and driving, most of the subjects (92.9%) considered that the use of psychotropic substances is illegal in car driving, while 5.7% answered that it is legal. Moreover, most of them (92.1%) considered that psychotropic substances impair driving a car, while 6.4% did not consider it. Regarding the liberalization of the use of psychotrop-

Table 6: Car driving after using substances

	Yes	No	Total
N	16	20	36
%	44.4	55.6	100

Table 7: Frequency of car driving after having used substances

	One time	Rarely	Monthly	Weekly	+2x Week	Daily	Missing
N	3	7	3	-	2	-	1
%	20.0	46.7	20.0	-	13.3	-	0.7

Table 8: Relationship between drug consumption and subjects' academic qualifications

Have you ever tried drugs?	Academic Qualification					Total
	9th Grade	12th Grade	5th Bachelor degree	Graduation	Master	
Yes	1	25	1	9	1	37
No	6	67	2	23	5	103

Table 9: Quantification of participants' answers to the following to the questions: Is drugged-driving illegal? Do psychotropic substances impair driving? and Should Psychotropic substance be liberalized?

	Total	%
Is drug driving illegal		
Yes	130	92.9
No	8	5.7
Missing	2	1.4
Does drugs impair driving?		
Yes	129	92.1
No	9	6.4
Missing	2	1.4
Should psychotropic substances be liberalized?		
Yes	42	30.0
No	96	68.6
Missing	2	1.4

ic substances, most of the subjects (68.6%) answered negatively. Only 30% agreed with the liberalization. The results are summarized in Table 9.

Of those who stated having consumed psychoactive drugs more than once (20), sixteen consider that drugs are a problem in traffic and four consider that are not and of those who reported having consumed drugs only once (N=7), six said that that drugs are a problem in traffic and impair driving and only one said it wasn't (See table 10).

4.1.3. ANALYSIS

In order to measure the existence of sex differences regarding the use of drugs (if they had ever tried psychotropic substances) and driving after substance use, chi-squared test was conducted. As the results show there are no significant differences between men and women in the previous use of drugs and in driving behavior after the substance use (See Table 11).

Next, we aimed to analyze the existence of age differences regarding the use of drugs (if they had ever tried psychotropic substances) and driving after substance use. For this purpose, t-student tests were carried out (See Table 12). The results show that participants whom already tried drugs are older that the ones that didn't and this difference is significant [$t(137) = 2.177$, $p < .05$].

No significant differences were found between age and drugged-driving (See Table 13).

Table 10: Relation between psychoactive consumption and subject's perception on drugged driving and drug impairment of driving

		Do you think drugs impair driving and affect traffic safety?	
		Yes	**No**
Consumed psychoactive substances	**No**	107	4
	Only one	6	1
	More than one	16	4

Table 11: Chi-squared tests measuring sex differences regarding substances use and driving after substance use

		Male	**Female**	**Total**	χ^2	**p**
Substance use	**Yes**	19	18	37	1.749	.130
	No	40	63	7		
Driving after consuming	**Yes**	8	8	16	.089	.515
	No	11	9	20		

Table 12: T-student measuring age differences regarding the use of drugs (if subjects ever tried psychotropic substances)

	Yes (N=37)		**No** (N=102)			
	M	**SD**	**M**	**SD**	**t**	**p**
Age	21.76	2.11	20.89	2.05	2.177	.031

Table 13: T-student measuring age differences regarding driving after substance use

	Yes (N=16)		**No** (N=20)			
	M	**SD**	**M**	**SD**	**t**	**p**
Age	21.56	1.86	22.0	2.34	-.609	.547

5. DISCUSSIONS AND CONCLUSION

The results confirm national and European reports on drug use and addictive behaviors, showing that in Portugal, 26.4% of the inquired subjects have already tried psychotropic substances, and cannabis was the most commonly mentioned. A smaller number of participants reported having tried ecstasy and a residual number reported having tried other substances, but no reports of cocaine were mentioned. Older subjects reported to have consumed more drugs that younger subjects and among those who tried drugs, most reported having used them once, although in the case of cannabis a minority admitted making a daily use of this substance. When inquired about drugged-driving, the majority of the subjects that reported having already consumed some type of drugs also admitted having already driven after its consumption. The results presented here are somewhat contradictory to the American answers to the Gallup poll, since most inquired subjects considered that drugged-driving is illegal and that drugs impair driving. This can be due to cultural differences and to a smaller sample.

Results also show that there are no significant differences between men and women in the previous use of drugs and in driving behavior after the substance use. These data are not in accordance with the European Drug Report of 2016, which revealed that men tend to consume more than women, but this can be due to a small sample.

The results previously discussed have some limitations. The sample is not representative and does not allow generalization of results. Despite of the fact that this is only a preliminary study that needs further development to consolidate the findings, our aim to map the young people perception on drug use and drugged-driving was reached. Another limitation of our study is the solely focus on quantitative analysis. We propose further investigation, with a qualitative approach. This could lead to other results and interpretations, such as the explanation if youngsters' reporting that drugs consumption impairs driving were the ones that already drugged-drove and in which ways they felt that drugs impair driving. This methodological approach could also allow understanding many "whys" still answered, such as: Why does youngster drugged-drive? Why do youngsters consume psychoactive drugs?

Despite these limitations, our study alerts us to the need to define new investigations on the field with the main goal on the creation of strategies and public policies to prevent excessive consumption of drugs and drugged-driving.

In the future we can study the behaviors concerning alcohol, drugs and driving habits of adults in context parties and compare them with the same behaviors of young people. This type of investigation would also be interesting to carry out in the workplace, in different organizations, in order to understand what the knowledge and behavior of employees is and the existence of good practices of awareness implemented by organizations.

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