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Differences between attendance in emergency care of male and female victims of traffic accidents in Porto Alegre, Rio Grande do Sul State, Brazil

Diferenças entre homens e mulheres vítimas de acidente de trânsito atendidos em emergências de Porto Alegre, RS, Brasil

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Abstract *Driving under the influence of alcohol/drugs (DUI) is a well-established risk factor for traffic accidents, and men and women have different consumption patterns. The scope of this paper is to analyze differences in alcohol and drug consumption, as well as on behavior associated with traffic accidents among men and women. A cross-sectional study was conducted with 609 sequential traffic accident victims attended in emergency care from Porto Alegre. Subjects gave a structured interview, were breathalyzed and had a saliva test for alcohol/drug screening. Results showed that women were mainly passengers or pedestrians ($p < 0.001$). There was no significant difference in positive blood alcohol concentration. However, men reported more binge drinking and THC use, while women had more benzodiazepine in their saliva ($p<0.05$). This is the first Brazilian study to compare alcohol and drug use among men and women who were the victims of traffic accidents. Results point to differences in the pattern of substance abuse, as well on risk behavior. Data may be useful for specific prevention strategies that take gender differences into consideration.*

Key words *Traffic accident, Gender differences, Alcohol consumption, Drug abuse, Driving under the influence (DUI)*

Resumo *Dirigir sob a influência de álcool/drogas (DUI) contribui para ocorrência de acidentes de trânsito, sendo que homens e mulheres diferem quanto ao seu consumo. Objetivo: Analisar as diferenças no consumo de álcool/drogas e nos comportamentos de risco para dirigir entre homens e mulheres. Método: Estudo transversal, com amostra consecutiva de 609 vítimas de acidentes de trânsito atendidas nas emergências de Porto Alegre. Realizou-se entrevista estruturada, teste de bafômetro e saliva para screening de álcool e drogas. Resultados: As mulheres acidentaram-se principalmente como passageiras e pedestres, ($p < 0.001$). Não houve diferença na triagem para abuso/dependência ou alcoolemia positiva. Porém, os homens referiram mais "beber pesado" e utilizaram mais THC e cocaína, enquanto as mulheres utilizaram benzodiazepínicos ($p < 0.05$). Conclusão: Este é o primeiro estudo brasileiro a comparar uso de álcool e drogas entre homens e mulheres vítimas de acidentes de trânsito. Os dados podem ser úteis na elaboração de estratégias específicas de prevenção que considerem as diferenças de gênero.*

Palavras-chave *Acidente de trânsito, Diferenças de gênero, Álcool e drogas, Dirigir sob a influência (DUI)*

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Introduction

Traffic accidents (TA) represent a high cost to society, causing more than 1 million deaths worldwide each year, and an even greater number of hospitalizations, physical and psychological sequelae[1]. Literature indicates that most TA involve young men, and they suffer such accidents especially as drivers, while women predominate as passengers and pedestrians[2,3].

Driving under the influence of alcohol (DUI) increases the risk of TA, and data from a study conducted in São Paulo showed a prevalence of 21.9% of positive of Blood alcohol concentration (BAC) readings on weekends in the city of Diadema[4], which is much higher than other countries (usually less than 10%). Some of the DUI-associated factors include: being male, unmarried, binge drinking (five or more drinks on one occasion)[5-7], having been a passenger of a DUI driver, little insight about punishment, low socioeconomic status, and low education[6]. Some studies also show that driving a vehicle alone increases the chance of TA involving alcohol[6,8,9]. This, however, does not apply to young people who usually DUI and have passengers in the car. In addition, drivers who suffer TA involving alcohol tend to drink more in bars, and on weekends[6,7].

Other psychoactive substances also affect driving skills, and may increase TA risk[10]. In a cohort study conducted in New Zealand involving 969 drivers who suffered TA, it was found that 24% of those who had drunk also consumed cannabis and LSD[6].

Consistently, the literature indicates that men have higher risk for both TA, and for DUI. However, there is no Brazilian data comparing risk behaviors associated with the TA between men and women. Thus, the aim of this study was to analyze the differences in alcohol and drugs consumption, as well as risk behaviors among men and women who were attended in emergencies of Porto Alegre after a traffic accident.

Methods

This was a cross-sectional study with consecutive sampling conducted in the two hospitals that attend more than 90% of trauma victims of the city of Porto Alegre, the southernmost state capital of Brazil. All TA victims who were over 18 years of age and who suffered TA either as drivers, pedestrians or riders, between ouctober-november 2009, were approached after initial evaluation. The study was approved by the Ethics Committee in Research of Hospital de Clinicas de Porto Alegre, and methodological details are described elsewhere[11].

Demographic data and data related to risk behaviors were collected through structured interviews. BAC was measured using breath test (model ALCO-SENSOR IV™, *Intoximeters* Inc, Devon, UK) and substance use (cannabis, cocaine and benzodiazepines) through saliva test (Quantisal™, Immunalysis Corporation, Pomona, CA, USA), analyzed by ELISA. Drug abuse and dependence were evaluated using the Mini International Neuropsychiatric Interview (MINI).

Data were analyzed with SPSS.16, chi-square test for categorical variables and Student t test for quantitative variables were used.

Results

The sample comprised 441 men (72.4%) and 168 (27.6%) women with a mean age of 32 and 34 years, respectively. 92.6% of those eligible were approached, and 10.9% refused. Women had higher education, lower proportion of driver's license, and were injured mainly as passengers and pedestrians ($p < 0.001$), as can be seen in Table 1.

There was no statistical difference between gender neither for alcohol abuse/ dependence nor for positive BAC. Men reported more binge drinking and used more cocaine and THC, while women used more benzodiazepines ($p < 0.05$) (Table 2).

Discussion

According to the literature, regardless of the type of accident, the men are always more involved[12]. The larger number of women passengers and pedestrians in our sample is consistent with the literature, and may reflect social norms in which men usually takes the driving[2,3,13,14]. These standards may also be associated with differences in substance use among men and women. Studies have shown that in developing countries, where the social norms are more traditional, women have higher rates of abstinence from alcohol while men drink more and have more binge drinking[15,16]. In communities where women have less conservative atti-

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Table 1. Demographics and risk behavior for traffic accidents among men and women on emergency rooms of Porto Alegre, in 2008.

	N*	Men	Women	P**
Age	609	32.0 (+/ -12.1)	34.9 (+/-15.5)	0.027
Schooling	439			< 0.001
Until 8th grade		167 (38.0)	39 (23.4)	
High school		218 (49.7)	73 (43.7)	
College or more		54 (12.8)	55 (32.9)	
Had driver license	603	345 (78.9)	56 (33.7)	< 0.001
Situation in the Traffic accident	606			< 0.001
Driver		330 (75.2)	31 (18.6)	
Passenger		54 (12.3)	84 (50.3)	
Pedestrian		55 (12.5)	52 (31.1)	
Time of Traffic accident	581			0,107
22h to 8h		112 (23.4)	29 (18.5)	
8h to 16h		159 (37.5)	70 (44.36)	
16h to 22h		153 (36.1)	58 (36.9)	
Weekend	580	193 (45.6)	69 (43.9)	0.790
Coming from	426			0.012
Pub/ Party		20 (6.0)	12 (12.9)	
Home		186 (55.9)	58 (62.4)	
Work		127 (38.1)	23 (24.7)	
Accompanied by under 18	474	28 (7.4)	15 (15.6)	0.021
Had use seat belt	132	47 (67.1)	31 (50)	0.068
Previous Traffic accident	609	176 (40.0)	30 (18.1)	< 0.001
Hospitalization	605	46 (10.5)	16 (9.6)	0.557

* N of men and women analyzed for each variable. **Chi-square for categorical variables and t Student test for continuous variables.

Table 2. Alcohol and other drugs among men and women on emergency rooms of Porto Alegre, in 2008.

	Men N (%)	Women N (%)	P*	RP (CI95%)**
Binge drinking in the last 12 months	163 (38.4)	31 (19.5)	< 0.001	2.0 (1.4-2.8)
Alcohol Abuse/dependence	38 (9.0)	9 (5.7)	0.257	1.6 (0.8-3.2)
Reported drinking in last 24h	95 (29.6)	27 (26)	0.557	1.3 (0.9-2.0)
Positive Blood alcohol concentration	34 (8.8)	10 (7.1)	0.662	1.2 (0.6-2.4)
Cannabis (THC)	38 (11.9)	4 (3.3)	0.010	3.6 (1.3-9.9)
Benzodiazepines	8 (2.8)	9 (8.3)	0.025	0.3 (0.1-0.9)
Cocaine	28 (8.9)	1 (0.8)	0.005	10.7 (1.5-78.0)
Drive under the influence in the last 12 months	55 (16.9)	10 (9.3)	0.083	1.8 (1.0-3,4)

*chi square. **Prevalence rate.

tudes, their drinking patterns are similar to men, as well as the woman's role in society. This difference may also be associated with the lower proportion of women with driver's license in the sample, which is consistent with data from the general population, where 75% of drivers are men[17].

Although most drivers used seat belts, contrary to international studies women in our sample used tended to use less[18]. We do not know

whether these women were in the backseat of the cars - and therefore did not use the device, which is common practice in Brazil. Another explanation would be the high prevalence of substance use, since individuals who drink and drive adopt less safety behaviors even when sober[7].

Alcohol was the most frequent drug used by victims, followed by cannabinoids. Although the prevalence of positive BAC measured by breathalyzer was 7.22%, 27.8% of patients reported drinking within 24 hours prior to the TA. This value is consistent with another Brazilian study, where the prevalence of reported alcohol use was 27.7 %[14]. This difference can be justified by the time between the accident and sample collection. A Brazilian study that aimed to describe the frequency of reports of alcohol consumption among emergency room care (victims of accidents and violence) found the proportion of alcohol consumption among men was three times greater than among women[19].

Consistent with previous studies, women had used more benzodiazepines and men had more cannabis and alcohol[9,20]. Even though Brazilian studies on drug use conducted in emergency departments are scarce, and generally restricted to the use of alcohol, a study in São Paulo found the following prevalence of substance abuse: THC 13.6%, cocaine 3.3% and benzodiazepines 4.2%[21]. Data are similar to those we found, but draw attention to the high prevalence of cocaine use among the men in our sample, which may be associated to the increase in crack use in Brazil[22,23].

This is the first Brazilian study to compare risk behaviors among men and women with traffic accidents, and it must be read under the scope of its limitations: 1) the sample was consecutive and cannot be generalized to all TA victims; 2) individuals under 18 years were excluded, which may have underestimated the use of substances; 3) The time between the TA and the collection of material for analysis may have underestimated drug use prevalence. However, data confirm international studies, and point to the need of specific prevention strategies that consider gender differences in Brazil.

Collaborations

RF Saldanha, R De Boni, F Pechansky, D Benzano e CASM Barros participated equally in all stages of preparation of the article.

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