

Sérgio Duailibi

Ilana Pinsky

Ronaldo Laranjeira

Prevalence of drinking and driving in a city of Southeastern Brazil

ABSTRACT

Problems due to alcohol use among drivers have been assessed worldwide and studies indicate high morbidity and mortality rates related to drinking and driving. There are few national studies about this subject. Thus, this study was conducted aiming at estimating the prevalence of drinking and driving and testing the acceptability of passive and active breathalyzers. A total of 908 drivers were tested in the main streets of a city in the state of São Paulo, from February 2005 to March 2006. The methodology adopted was sobriety checkpoints. In 23.7% of the drivers some level of alcohol was found in the exhaled air; in 19.4% alcohol level was equal to or higher than the legal limit. The passive breathalyzer was reliable and presented results comparable to the active one. These findings were six times higher than those found in similar surveys carried out in other countries, indicating the relevance of this problem. Specific public policies to fight the problem and more national studies are needed.

KEY WORDS: Alcohol drinking, prevention & control. Accidents, Traffic, prevention & control. Toxicity tests, utilization.

INTRODUCTION

Alcohol intake problems among drivers have been widely studied internationally and considered as a public health problem, especially in developing countries. Its relevance is confirmed by the high social costs of alcohol and its consequences for injured people leading to a high economic and social burden due to the material loss, medical costs, and the loss in productivity.⁴

Alcoholic beverages give the drivers a fake sense of confidence, hindering activities such as attention, coordination, and reaction.⁴ Even small amounts of alcohol, below legal limits, increase the chance of accidents.⁴ Studies show that 24% of accidents with drivers who had blood alcohol concentration (BAC) from 0.01 to 0.07 g/dl were directly attributed to alcohol. This proportion increases to 43.5% in drivers with BAC from 0.08 to 0.09 g/dl, and to 91% in those with BAC equal to or higher than 0.10g/dl.⁴

The World Health Organization (WHO) recommends four actions to control problems related to drinking and driving: to reduce the limit of alcohol intake allowed for driving, drivers' license suspension of intoxicated drivers, surveillance with breathalyzers and a level of licensing for new drivers.¹

Article 165 of the Brazilian Traffic Code considers impaired driving as a severe offense, with blood alcohol content above 0.06 g/dl. Drivers may receive a fine, lose the license, the vehicle may be retained until another enable driver comes, and the license is retained.

Unidade de Pesquisa em Álcool e outras Drogas (UNIAD). Departamento de Psiquiatria. Universidade Federal de São Paulo. São Paulo, SP, Brasil

Correspondence:

Sérgio Duailibi
Unidade de Pesquisa em Álcool e outras Drogas (UNIAD)
Universidade Federal de São Paulo
R. Machado Bitencourt nº 300 apto113, Vila Clementino.
04044-000 São Paulo, SP, Brasil
E-mail: duailibi@uol.com.br

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The few studies present in Brazil show that drinking and driving is a relevant problem. Public services responsible for surveillance need control actions and measures to decrease these effects, maybe this is because there are no consistent data on the real rates of this problem.

The present article aimed at estimating the prevalence of alcohol use by drivers, considering the applicability and acceptability of breathalyzers as a device to collect data.

METHODS

The study was based on the methodology of surveys on traffic data, known as sobriety checkpoints, used in surveys conducted in the USA, Australia, European countries and reproduced in other countries.⁵

This survey was conducted on the streets of Diadema, a city in the state of São Paulo, in its' major roads, on Friday and Saturday evenings, and Sunday afternoons, with the participation of the Military Police and the interviewers. Fifteen assessments were performed in one year, from February 2005 to March 2006. In each assessment 60 to 70 drivers were surveyed, totaling 1000 drivers. Refusal to take part was 9.2%, and 908 drivers took part in the survey in at least one of the two phases of the survey: questionnaire application and passive and active breathalyzers.

Vehicles were randomly selected and stopped to observe safety measures for the drivers. The interviewer explained the reason for stopping and those who agreed to take part gave their written consent and filled in an anonymous questionnaire with questions regarding their socioeconomic and geographical status, pattern of alcohol use and behavior towards drinking and driving. Next, the car was taken to the sobriety checkpoint, far from the police officers, for application of active breathalyzers (the driver needs to blow a mouthpiece) and passive (similar to a flashlight, drivers do not have to blow the air is captured through a suction pump triggered by a button). The drivers were assured confidentiality of the outcomes obtained.

Breathalyzers were similar to those used in international research and were suitably calibrated, and were applied by researchers who did not know the outcomes of interviews. Both instruments indicate the values of blood alcohol contents.

Drivers with high alcoholic levels were recommended to change drivers, and were offered water and food, and depending on the case another person was asked to come to the place and take the vehicle.

Data were assessed using SPSS application. Survey was conducted within the standards of the Declaration of Helsinki and approved by the ethical committee at

Universidade Federal de São Paulo/Escola Paulista de Medicina.

RESULTS

Of the 908 drivers surveyed, 747 drove cars, 141 motorcycles, and 20 trucks.

Male gender was prevalent in our sample (77%), and 35.2% of participants were from 21 to 30 years old, and 29.8% from 31 to 40 years old. Most people surveyed were married (49.3%). In the sample, 31.2% had finished primary school, 49.2% had finished secondary school, 8.6% had not complete university, and 9.3% had finished university. Among those surveyed, 54.6% had formal jobs. Regarding family income, most of them (37.2%) reported income from three to six minimum wages, whereas 34.1% received from one to three minimum wages.

Regarding driving after leaving an event where they had drunk: this has never occurred for 37.2% of the sample; for 33.9% the best practice would be to hand the vehicle to someone who had not drunk; 10% would use another way to get home; and for 3.4% the behavior would be to drive very slowly, and 15.5% considered that they drove better after they had drunk. Among the surveyed people, 26.9% reported previous involvement in motor vehicle crashes.

Only 22% said they had drunk on the day of the survey. Regarding frequency on alcohol use: 4.4% reported daily use, 33.5% reported weekly use, 15.4% monthly use, and 14% random use; 32.7% said they did not drink.

Only 58 participants (6.4%) refused to undergo passive breathalyzer, and 63 (6.9%) refused to undergo active breathalyzer. These people took part in the survey only by answering the questionnaire. Outcomes obtained from breathalyzers presented easy applicability and

Table. Distribution of drivers according to alcohol values (in g/dl) obtained with passive and active breathalyzers. Diadema, Southeastern Brazil, 2005-2006.

Values (g/dl)	Passive breathalyzer		Active Breathalyzer	
	N	%	N	%
0	649	76.4	655	77.5
0.01 to 0.02	12	1.4	19	2.3
0.03 to 0.05	24	2.8	21	2.5
0.06 to 0.07	17	2	40	4.7
0.08 to 0.09	44	5.2	35	4.1
0.10 to 0.11	24	2.8	14	1.7
0.12 or higher	74	8.7	56	6.6
Lost data	6	0.7	5	0.6
Total	850	100.0	845	100.0

confidence, with no bias, with similar outcomes in both instruments, and are shown in the Table. Regarding the distribution of positive cases by age group, the highest prevalence of positive alcohol higher than the legal limit was observed among males (95.4%), from 21 to 30 years old (45.6%), and in the single population (63.4%) with statistically significant difference in all these categories ($p < 0.001$). According to the previous impression of researchers, drivers with positive alcohol in breathalyzers did not present any visible signs of alcohol impairment in 92% of cases.

DISCUSSION

The outcomes showed drivers with some content of alcohol in the air exhaled at breathalyzer, 22.9% in passive breathalyzer, and 21.9% in the active. Among them, 18.7% in the passive and 17.1% in the active were driving at alcohol levels equal to or higher than those allowed by the law. In a similar survey in the USA, the prevalence rate of drinking and driving in 1991-1992 obtained was 3.7% and in 2001-2002 it was 2.9% of drivers (levels higher than 0.06g/dl, passive breathalyzer).⁴ Our greatest prevalence among single men from 21 to 30 is similar to that of international studies.^{2,5}

However, data obtained in the present sample were, on average, up to six times greater than those obtained in international surveys.^{2,5} A national study in emergency services and institutes of forensic medicine in Brasília, Curitiba, Recife and Salvador, found that of 831 victims of non-fatal motor vehicle related crashes, there was a positivity of blood alcohol content in 61.4% of cases. Among the 34 fatal victims, positivity was found in 52.9%. Regarding blood alcohol content found, 27.2% of the total of cases presented values higher than or equal to 0.06 g/dl.³

This behavior of drinking and driving is only accepted when it is in agreement with the cultural behavior of

a community. The explanation of the high values obtained in the present study is the poor surveillance and the inefficient educational aspects to change behavior in the traffic. Studies point out that, with intensified surveillance with breathing tests, the number of accidents involving drunk drivers decrease proportionally.^{1,4} This approach consists on a regulatory measure regarding alcohol intake (environmental strategy), which would secondly influence the individual behavior regarding drinking and driving.^{1,4} In cities where sobriety checkpoints are weekly conducted, there is a 20% reduction in fatal accidents related to alcohol,^{1,2,4} and it is one of the efficient measures to decrease this type of occurrence according to the WHO.²

The main limitation of the study was that breathalyzers were not mandatory, which may have underestimated the outcome, although refusal rates were small.

As observed that most drunk drivers were not visibly intoxicated in accordance with the international literature,^{1,2,4} surveillance for breathing tests is essential to decrease the prevalence of impaired driving.

The outcomes presented cannot be generalized. Similar studies must be conducted in other regions; however, there is no factor that suggests the outcomes are abnormally higher compared to the national reality. In Brazil, the losses associated to alcohol-related motor vehicle crashes are extremely relevant and their social costs have yet to be suitably measured.

However, there are relatively simple solutions to substantially reduce this problem.¹ These outcomes point out the need for environmental action on surveillance and education, to reduce these rates and the consequences of drinking and driving: disobedience of the law by the population, lack of surveillance by the authorities, and the silence of society that should demand compliance and surveillance.

REFERENCES

1. Babor T, Caetano R, Casswell S, Edwards G, Giesbrecht N, Graham K, et al. Alcohol: no ordinary commodity: research and public policy. Oxford: Oxford University Press; 2003.
2. Chou SP, Grant BF, Dawson DA, Stinson FS, Saha T, Pickering RP. Twelve-month prevalence and changes in driving after drinking: United States, 1991-1992 and 2001-2002. *Drug Alcohol Depend.* 2005;80(2):223-30.
3. Nery Filho A, Medina MG, Melcop AG, Oliveira EM, editores. Impacto do uso de álcool e outras drogas em vítimas de acidentes de trânsito. Brasília (DF): Associação Brasileira dos Departamentos Estaduais de Trânsito; 1997.
4. Shults R A, Elder W R, Sleet DA, Nichols JL, Alao MO, Carande-Kulis VG, et al. Reviews of evidence regarding interventions to reduce alcohol-impaired driving. *Am J Prev Med.* 2001;21(4 suppl):66-88.
5. Voas RB, Wells J, Lestina D, Williams A, Greene M. Drinking and driving in the United States: the 1996 national roadside survey. *Accid Anal Prev.* 1998;30(2):267-75.