Evidence-based drinking and driving policies in Brazil: using evidence to guide policy changes

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Abstract

Context
Although Brazil has made important attempts to change drinking and driving legislation over the past few years, with the aim of strengthening the punishment for drunk drivers, the burden of road traffic accidents in the country remains one of the highest in the world. The most notable example was the new traffic law introduced in 2008, which lowered the blood alcohol concentration (BAC) limit for drivers from 0.06% to 0.02%. This law resulted in significant reductions in traffic accident rates but also revealed the limitations of using research-derived evidence to guide policy changes in developing regions.

Objectives
This paper analyses the current situation regarding drinking and driving policies in Brazil based on the most recent research conducted on this topic. Data obtained from peer-reviewed journals and public discussions since the main enactment implemented in 2008 were reviewed and compared to similar strategies that were demonstrated to be effective in reducing alcohol-related traffic accidents in developed countries.

Outcomes
Lowering the BAC limit for drivers, which is a well-known effective evidence-based policy change, reduced the number of traffic accidents and the frequency of driving under the influence (DUI) of alcohol in Brazil. However, policy makers have ignored relevant features concerning the effectiveness of this type of policy, such as the level of enforcement and the perceived risk of DUI sanctioning. Additionally, the lack of evidence able to support the creation and maintenance of drinking and driving policies is considered a great barrier to enhancing the effectiveness of these policies.

Conclusions
Further investigation into the effects of measures derived from high-income countries to control alcohol-impaired driving should be promoted in developing countries. Moreover, searching for the best way to translate evidence into policy should be a priority in these countries, where policies emerging from research may hold the key to improving the effectiveness of actions aimed at reducing alcohol-related traffic accidents.

Introduction
Currently, eighty per cent of all road traffic fatalities occur in middle-income countries such as Brazil, which, more often than not, have lower levels of motorization than high-income countries (World Health Organization, 2013). This uneven distribution of the burden attributed to traffic accidents between developing and developed countries clearly indicates that the risk of being involved in a traffic accident varies according to the socioeconomic level of the population.
The rapid increase in the number of vehicles, together with the lack of adequate traffic safety policies, are considered the main reasons for the growing health and social burden attributed to road traffic injuries globally (Nantulya & Reich, 2002). For instance, only 7% of the world’s population is covered by regulations addressing the main risk factors for traffic accidents (e.g., excessive speed and drunk driving) (World Health Organization, 2013). In this sense, it seems very plausible that enhancing efforts directed towards the implementation of new road safety laws is necessary to control one of the leading causes of death in Latin America, particularly legislation regarding the use of alcohol by drivers, which accounts for 20-50% of traffic accident deaths in the region (Pan American Health Organization, 2007).

However, many questions must still be answered when transposing strategies that have been demonstrated to be effective in reducing alcohol-related traffic accidents from developed countries to developing regions. Over the past few years, Brazil has made notable attempts to change drinking and driving legislation with the main goal of strengthening the punishment for drunk drivers; thus, Brazil serves as a good model for studying the issues involved in using evidence to guide policy changes in social settings where resources for road infrastructure and law enforcement are limited.

Therefore, the objective of the present paper is to present and discuss the main effects of the changes to drinking and driving laws on the reduction of DUI occurrences in Brazil and to identify the best policy approaches for following these enactments. This paper considers the most up-to-date research findings on this topic and the distinct situation involving the control of drinking and driving among Brazilians.

**Outcomes**

*The Brazilian scenario: drinking and driving legislation*

Brazil started to enforce its first drink-drive law based on BAC limits in 1998, when a DUI offense was considered a BAC in excess of 0.06% (Federative Republic of Brazil, 1997). At the time, a pre- and post-law comparison study conducted in a city in southern Brazil demonstrated a reduction in the number of car (-20%) and motorcycle (-9%) accident-injured victims after the law was implemented, including a significant decline in the proportion of alcohol breath odour detected among motorcycle riders (Liberatti et al., 2001).

After a period of a relatively constant rate of traffic fatalities in Brazil since the first enactment of this law (approximately 20 deaths per 100,000 inhabitants) (Bacchieri & Barros, 2011), the federal government introduced a new law in 2008 that reduced the BAC limit for drivers from 0.06% to 0.02%, concurrent with a substantial rise in the penalties based on BAC test results. Drivers caught with a BAC between 0.02-0.06% were subject to a fine of approximately US$475 and the temporary suspension of their driver’s license, while those with a BAC above 0.06% could face a full suspension of their driver’s license and a criminal sanction of up to 36 months of imprisonment (Federative Republic of Brazil, 2008).

Previous studies conducted in Brazil have supported the effectiveness of such enactments, in terms of the reduction of both traffic accidents and the frequency of DUI. These results are in accordance with the findings from the worldwide literature, showing that lowering the BAC limit for drivers is an effective way to diminish alcohol-impaired driving (Mann et al., 2001). In Sao Paulo, the largest city in Brazil, it was estimated that the new traffic law was responsible for a significant reduction in the monthly rates of traffic fatalities (-16%) and
injuries (-2.3%) (Andreuccetti et al., 2011), as well as a 45% decrease in the proportion of positive breathalyser tests among randomly stopped drivers (Campos et al., 2013).

Despite the beneficial effect attributed to the new legislation, a driver’s right to refuse a BAC test was noted as an important barrier to the application of criminal sanctions against drunk drivers (Andreuccetti et al., 2010), given that the sanctions imposed on the 2008 legislation were dependent on the BAC test findings. As a consequence, a new change in the previous law that allowed police officers to use other evidence (e.g., clinical signs, videos or witnesses’ reports) to support a DUI offense - particularly when the driver refused to provide a BAC sample - was approved in December 2012. This law also made it illegal to have any measurable amount of alcohol in the blood and introduced a fine that was twice as high as it had been in 2008 (Federative Republic of Brazil, 2012).

Is the zero tolerance law the best approach?

Although there is strong evidence supporting the beneficial impact of reducing the legal BAC limit to 0.05% or lower (World Health Organization, 2013), the idea that implementing a zero tolerance law will generate a general deterrence effect is still controversial, especially when sanctions and punishment capacities are constrained (Kleiman & Kilmer, 2009).

In fact, there is little support for the argument that countries that have lower BAC limits for drivers also demonstrate smaller proportions of road traffic deaths attributable to alcohol. For example, when the association between BAC limits and alcohol-related traffic deaths was tested among 85 countries for which these data are available, a weak and non-significant correlation was found (Figure 1). Moreover, this association did not vary significantly, even accounting for the countries’ income levels, although it is known that the burden of road traffic fatalities is shared disproportionately by low- to middle-income countries (Nantulya & Reich, 2002).

This finding is of great interest for developing countries such as Brazil, where the main goal of the drastic changes in drinking and driving legislation over the past years was to increase the general deterrence effect of these laws and thus augment the perceived risk of DUI sanctioning, which would result in a decrease in the rate of alcohol-related traffic accidents. However, it has been shown that the decrease in the prevalence of drivers who reported driving after binge drinking in Brazil observed right after the 2008 enactment, which increased the severity of sanctions for drivers who consumed any amount of alcohol, was sustained for less than four months after this law was put into practice (Moura et al., 2009).

Contributing factors to the effectiveness of DUI laws

Another interesting finding from the recent research conducted in Brazil regarding the effectiveness of reducing the driver BAC limit was that a stronger impact of the new traffic law was observed for traffic fatalities than for traffic injuries and in regions with greater DUI enforcement (Andreuccetti et al., 2011; Neves Nunes & Costa Nascimento, 2012). Thus, it seems that both the severity of traffic accidents, which might be related to a different effect of this type of law on drunk-driving populations with diverse drinking patterns (Mann et al., 2003), and the level of police enforcement are relevant to consider when analysing the differential deterrence effect of drinking-driving legislations.
In addition, road traffic accidents influenced by alcohol suffer seasonal variation and depend on a series of social behaviours and mass media strategies, including but not limited to drinking frequency, motor vehicle utilization rates and media coverage (Mann et al., 2001; Moura et al., 2009; Pechansky et al., 2012). Therefore, the full amount of data on the variation of these characteristics must be evaluated before directing efforts towards specific policies that address only one contributing factor, which usually do not consider the whole picture of the drinking and driving behaviour in each locality.

Research gaps and future directions

Although research on drinking and driving in Brazil has advanced over the last decade, one of the major gaps that hampers the establishment of an evidence-based prevention and enforcement law against drunk drivers is the lack of a systematic collection of data on road traffic injuries and fatalities (Pechansky & Chandran, 2012), including information on BAC levels from drivers and victims, at both the national and state levels.

It also should be noted that any public health policy trying to achieve successful outcomes should not ignore the socio-cultural barriers that are specific to each region. Because the public in the Brazilian scenario seems to favour a more severe punishment for convicted drunk drivers rather than a stricter DUI law for everyone (Andreuccetti et al., 2012), the desired general deterrence effect expected of such laws may rely on a higher capacity of putting DUI sanctions into effect and of improving resources for police enforcement, instead of constantly changing laws that are not based on the most informed evidence of the effectiveness of reducing alcohol-related traffic accidents.

Conclusions

Policy makers and traffic safety stakeholders should be aware of the limitations involved in the implementation of zero-tolerance drinking and driving laws, especially in low- to middle-income countries where resources for the enforcement of these laws are scant. In view of the findings from the present review of the effectiveness of the strategies used in Brazil aimed at reducing alcohol-impaired driving, a full assessment of the infrastructure and supporting measures of such laws should be offered before implementing drastic changes in legislation. Furthermore, the combination of different strategies that account for the various factors contributing to the effectiveness of DUI laws, together with the involvement of several government sectors and the support of the public, sounds far more reasonable than appealing to the general deterrence effect of stricter DUI laws.

In conclusion, the idea of implementing traffic safety models from developed countries aimed at reducing alcohol-related traffic accidents should be promoted in developing regions. Nevertheless, the promotion of this idea should be followed by a simultaneous and rigorous gathering of local evidence capable of guiding the creation and maintenance of effective policies against drunk driving.

References

Andreuccetti, G., Carvalho, H.B., Cherpitel, C.J., Ye, Y., Ponce, J.C., Kahn, T., et al. (2011). Reducing the legal blood alcohol concentration limit for driving in developing


Figure 1. Correlation between blood alcohol concentration (BAC) limits and the proportion of road traffic fatalities attributable to alcohol use in 85 different countries. High-income countries are marked in blue, while low- to middle-income countries are in red. Spearman’s correlation coefficient ($r_s=0.11$; $P=0.30$). *Source: World Health Organization (2013). Global status report on road safety 2013: supporting a decade of action. Geneva, Switzerland.