Application of 0.05% legal blood alcohol limits to traffic injury control in Bangkok

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Introduction
Traffic crashes are the leading cause of death for persons between the ages of 15 and 59 in Thailand1. Traffic injuries and deaths cost the nation over 213 million USD in lost economic productivity, hospital and property costs2. 44% of traffic injury cases seeking emergency services in public hospitals had blood alcohol concentration (BAC) of 0.1% or more3. To reduce alcohol related traffic injuries and deaths, a law was enacted setting criminal per se legal blood alcohol limit at 0.05% in 19944. Penalty includes a fine of up to 250 USD or 3-month jail term or both. Apart from the legal BAC law, there are a few laws restricting alcohol availability i.e., prohibition of sales 24 hours before the end of election day and closure of bars and nightclubs before 2 am.

However, not until 1997, an active public education program has been undertaken at national scale to raise awareness against drink driving and to support law enforcement. This includes dissemination of knowledge through multiple channels e.g., roadside posters; stickers on the back of vehicles; sporadic radio and TV programs or spots; public announcements; the press reports. In 1998, highly visible sobriety check points consisting of 17 police officers have been set up as a measure for law enforcement on a rotating spot on the road network in Bangkok at night time from 1-4 a.m. (initially from 10 p.m. to 1 a.m.) 3 times a week. The road network covered a total area of 1,565 square kilometers of Bangkok Metropolis with 3.8 million registered motor vehicles5. The public education program and the law enforcement activity (considered together as drink driving campaign in this report) were a joint initiative of tripartite partners i.e., public sector, business sector and the third sector. Ministry of Public Health (MOPH) and Police Department represented the public sector and were responsible for implementing the activities with some supports both in cash and in kind from the business sector. The Club Against Drunk Driving, an NGO headed by a medical doctor, played a pivotal role in coordinating and monitoring. While another NGO, the National Health Foundation, was responsible for outcome evaluation sponsored by Thailand Research Fund, a quasi-governmental- research funding agency.

In order to systematically assess the campaign, multiple methods were used to collect relevant data i.e., hospital surveillance of alcohol-related injuries and deaths from traffic accident at emergency rooms (ER) in public hospitals; surveys of attitudes, perceptions and practices pertinent to the campaign among road users. This report focused on the outcomes of the campaign based on the hospital surveillance data during March 2000 to November 2001.

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Methods
Out of 21 public hospitals in Bangkok, 4 hospitals volunteered to take part in the study. These had been among the top 5 public hospitals with the highest records of trauma cases. The total number of traffic injury cases among the 4 hospitals accounted for 44% and 47% of all reported cases by public hospitals in Bangkok in 1998 (45,341 injured) and 1999 (43,310 injured), respectively. Given the facts that sobriety check points have been set up at night time only and a prior report of high prevalence of drink driving at night time, this study chose to monitor injury cases accordingly. All traffic injury cases seeking care at the ER’s during 6p.m. to 6a.m. was interviewed by a nurse using a standard questionnaire and tested for BAC using a breathalyzer (Lion Alcometer SL400) after giving an informed consent. A proxy interviewer was used if patients could not participate due to severe medical conditions e.g., coma, drunkenness, hypovolemic shock. A blood sample was obtained for BAC if a breathalyzer could not be used in cases with impaired consciousness or in dead cases. The interview included demographic profile, road user status (driver, pedestrian, passenger), mode of travel, time of crashes and of arrival at ER. Medical record of each case was reviewed by a nurse to provide information about the nature of injuries and discharge status from ER. Data collection at ER’s were undertaken during the second week of each month (Monday till Sunday) on alternate month starting from March 2000 till November 2001.

Data were entered and processed using the program Epi Info, version 6.0. Descriptive statistics, ANOVA test and Chi-square test were undertaken where appropriate. A statistically significant level was considered at p <0.05.

Results
During the specified period, 1853 traffic injury cases (92%) out of a total of 2014 cases participated in the study. The majority (80%) of subjects were male and 83% were 15-44 years of age. 64% were drivers. 70% traveled on motorcycles, the most common modes of transportation in the city. 40% of the victims had alcohol in their blood. The majority of those with blood alcohol had alcohol level in excess of the legal limit. With regard to injury severity, most of the subjects (74%) suffered from a minor injury not requiring hospitalization. Yet over one fourth could be considered severely injured and 1% loss their lives.

During the study period, BAC among the victims varied from nearly 40 mg/dl to 60 mg/dl without statistical significant difference.

Discussion
Findings from this study clearly indicated that alcohol-related traffic injury had the lion’s share of traffic injury (49.9%) among ER cases in Bangkok. Yet, this claim could be biased toward public hospital setting since private hospitals were not included. Actively working-age men were the most affected group of population (83% of the cases whereas this age group constituted only 36.8% of general population). They were relatively under privileged. Given the fact that 43% of 3.7 million registered motor vehicles in Bangkok was motorcycles, motorcycling disproportionately constituted the biggest mode of travel used by the victims. Nighttime traveling on Bangkok roads could be regarded as an increased risk of traffic injury since the proportion of nighttime victims in this study was out of proportion to the number of nighttime road users.
After 24 months of law enforcement and over 2 years of public information campaign against drink driving, evidence from this study failed to support the effectiveness of the campaign in terms of reducing alcohol-related injuries. In the opposite, it might suggest a rising trend of alcohol-related injuries.

From the deterrence theory’s point of view, law enforcement in combination with publicity has to reach a certain scope and intensity in order to raise driver awareness to an extent that they do not want to take risk of being detected and penalized for drink driving. In Australia and Canada, for instance, 82% to 63% of motorists reported having been stopped and tested for alcohol at some point and 47% to 28% reported having been stopped and tested three or more times. During the decade of 1980s Australia enjoyed a decline of drinking and driving by 32% while the figure for Canada was 28%.

In comparison to successful campaigns against drink driving in the West, the law enforcement activity in Bangkok was much more limited in scope and intensity. The sobriety checkpoints covered a tiny fraction of the road network with a very low frequency of operation (3 times weekly) hence reaching a small number of drivers. 5 months after commencement of the checkpoints, a survey of 1027 drivers, mostly (38%) motorcyclists, in 10 randomly selected gas stations revealed that only 10.4% of respondents reported being stopped by a police for BAC testing during the past 2 months. 1000 drivers interviewed on the telephone survey in the same month reported a similar figure (9.2%). 82% and 94% of subjects in the former and the latter studies, respectively, perceived a very low chance of being stopped by a police for BAC testing even though over 90% accepted the benefit of law enforcement.

What is the explanation for too limited law enforcement activity? Circumstantial evidence suggested that low policy commitment in terms of clear instruction and effective resource allocation to police force played a key role. The first piece of evidence came from the investigators’ attempt to persuade police force to set up an independent test of BAC on drivers. This aimed for systematic feedback to the campaign in terms of changes of drink driving behavior. Regrettably, the attempt was denied by police officers of all stations in Bangkok citing a reason that there had not been any instructions and instrumental support to do so. This finding coincided with another piece of evidence from documentary review by the investigators. The review on the annual plan of Police Department for the fiscal year 2000 revealed a law enforcement project against drink driving without a target or measurable objective and without clearly specified amount of budget.

Personal interview with a few police officers revealed that cumbersome prosecution procedure could also hampered apprehension and charging drinking drivers. In Thai system, a detected drinking driver has to be transferred from the checkpoint on road site to police station in order to be prosecuted. Decision on penalty has to be finalized in court. These steps clearly create additional burden on over-burdened police force.

This report concludes that if legislative measure, a policy instrument, would be effective in road safety improvement in developing countries, it seems to be a need for strong policy commitment. This has to be translated into workable plan of actions, effective resource allocation and management. The successful movement of “Mother Against Drunk Driving” in the US exemplifies a key role of civil society in policy adoption and implementation, which has not yet reached a meaningful momentum in Thailand. The next step of policy
advocacy in Thailand should shift the focus from personal responsibility to state responsibility to effectively enforcing the law. This entails revelation of those weaknesses in law enforcement mechanism and possible remedial actions to overcome. For instance, prosecution procedure should be revised to minimize unnecessary burden to police force; action plan should be clearly laid out with measurable objectives and concrete instrumental support. A systematic independent evaluation should be put in place to provide timely feedback to policy implementation, a role the health sector could play and influence other sectors in public health advancement.

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