THE ROLE OF ALCOHOL IN TRAFFIC ACCIDENTS IN HUNGARY (1991-2000)

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Abstract
The role of alcohol consumption in traffic accidents were investigated based on the statistical data of Hungary and autopsy data of the Department of Forensic Medicine, University of Szeged. The number of the drunken fatally injured victims was constant, the rate of the drunken victims increased in this period. The frequency of alcohol intoxication did not play a role in the decreasing of the frequency of traffic accidents during the decade.

Introduction
Alcohol consumption is a major public health and traffic problem in Hungary. Alcohol consumption per capita varies between 10.5 and 11.2 litres of absolute alcohol/year and in recent years it shows a slightly declining trend. The number of alcoholics is estimated around 5-800 thousand, which makes 5 to 8% of the entire population. But according to other surveys, 35-40% of the male population regularly consumes alcoholic drinks of considerable quantity on a daily basis. Drunken driving and accidents due to drunken driving is quite frequent. Drinking is one of the main causes of accidents despite the fact that the law forbids driving after drinking.

Surveys conducted in the past years indicate that drunken driving and accidents caused by drunken driving are on the decrease world-wide, which may be connected to the decrease in the number of accidents. The overwhelmingly high number of accidents in Central Europe including Hungary as well in the early 1990s has decreased in recent years and at the same time the number of fatal road accidents also decreased.

In the present report we examined how drunken driving and accidents caused by drunken driving worked out between 1991 and 2000 according to the various surveys and what role it may have played in the number of accidents.

Material and Method
During the survey three different databases were compared: the number of observed drunken driving and accidents caused by drunken driving and their ratios.

1. The publications of the Hungarian Central Statistical Office (KSH) include accidents accompanied by personal injuries in time and place. The database relies on the forms filled in by the police following the accidents, and which
includes the main details of the accidents, the sex and the age of the perpetrator, and whether he was impaired by alcohol. In many cases there is no objective (blood and breath) testing and the data do not include the degree of impairment by alcohol and the personal data of the legally unprotected injured individuals.

2. The statistical data about the closed court cases include the most important demographic data of the convicted persons and their possible alcoholic impairment. Neither in this database can values be found about the injured persons.

3. A post mortem examination is carried out on all the victims of road accidents who did not die natural death together with toxicological tests including an alcohol test.

As the post mortem data are not collected on a national scale, in the present report we only analyse the personal data of 856 individuals who died in road accidents in County Csongrád (South-East Hungary, population is 428.000) between 1991-2000 and who underwent a post mortem. The fact of alcoholic impairment of people who died on the site and within 6 hours after admittance to hospital was determined from blood and urine samples with a headspace gas chromatographic method. In case of prolonged survival (20.2% of the cases) the possible alcoholic impairment and its degree were recorded on the basis of case history.

Results and Discussion
Prior to the examined period approximately 18-20 thousand road accidents happened in Hungary and as a consequence of which 1300-1500 people died annually. The alcoholic impairment of those who caused the accidents was between 15.3-17.3%. The road accidents and their fatalities increased from 1989 and reached its peak in 1990 when 27401 road accidents of personal injuries were recorded and as a direct consequence 1840 people died in 48 hours and 2185 people in 30 days. In the coming years the numbers slightly decreased and they only reached the figures characteristic of the previous years in 1995. Since then both the number of accidents and fatalities were decreasing (Fig. 1), which were affected by several factors. Partly these factors were the consolidation following the change in the political system, the organisation of traffic, the measures introduced to legally regulate traffic (the permanent use of headlights, the use of safety belts on the rear seats and the compulsory baby seats, etc.) as well as the modernisation of cars and the road system.
The highest number of perpetrators impaired by alcohol (16.3%) was in 1991 and was followed by a considerable decrease in the following two years and stabilised at around 12%. The average values mainly represent the alcoholic impairment of drivers of passenger cars, which has been unchanged since 1993. The ratio of the alcoholic impairment of motor-cyclists and cyclists who cause accidents is higher than this and does not show the characteristics of the average values. According to the data of the Hungarian Central Statistical Office the degree of the alcoholic impairment of pedestrians causing accidents is relatively low and corresponds to the values characteristic of those of drivers. (Chart 1)

The electrochemical and infrared spectroscopic analysis of the alcohol content of the air breathed out was introduced in 1992-93. This may be reason why the proportion of drunkenness decreased in these years but later neither prevention nor sanctioning led to significant results and the proportion of drunkenness does not follow the number of accidents since 1993.
It makes the assessment of the data difficult that it is not defined objectively which part of the perpetrators were impaired by alcohol. Also in many cases when people are injured and taken to hospital only clinical tests are carried out and the concentration of the blood alcohol level is not determined in a laboratory. All these result in a loss of data, which cannot be estimated and for this reason the published data may only indicate the trend in alcoholic impairment.

Due to prolonged judicature, statistics based on legally closed court cases lag behind the actual events by 1-2 years and only those individuals are included who are involved in a crime after causing a road accident and the perpetrators themselves did not become victims of the accidents. This survey indicates that 24.83% of those who caused a fatal road accident in 1992 decreased to 13.33% in 1999 whereas those who caused injuries in a state of alcoholic impairment decreased from 19.40% to 13.62% in the same time interval. The same tendency can be observed in the lawsuits that the proportion of those who cause serious and fatal accidents while they are impaired by alcohol is higher. (Chart 1)

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**Chart 1.** Distribution of rate of different traffic crimes during the investigated period

In Hungary drunken driving is against the law. If the concentration of blood alcohol level is below 0.8% g/litre the driver commits a summary offence and above this level he is taken to court. Statistics based on decisions of the court only include the latter ones. The number of those who were convicted for this reason in 1992 was more than twice the value of the previous decades and gradually decreased after 1992 but in the last recorded year it was also higher.
than in the period before the survey. (Chart 2) As the data of drunken driving without causing accidents mainly indicate police activity - depending on its frequency - no reliable conclusion can be drawn on the change of the actual driving attitude.

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**Chart 2.** Absolute number and percentage of the convicted drunken drivers

From the 1970s the changes in drunken driving has been studied in roadside studies internationally. The published data show that the frequency of drunken driving resulting in accidents in Western Europe and some states of North-America is between 5-10% and in the Scandinavian countries it is below 1%. In Hungary the only survey was conducted in 1999 when the frequency of drunken driving was 1.05%, and 0.35% of the drivers had the detectable concentration of blood alcohol level over 0.8% g/litre. This is a considerably better value than what was recorded in most of the surveys and indicates that both prevention and sanctioning have led to results.

The data about the fatal road accidents are independent of the legal adjudication but can be considered comprehensive values due to the post mortem examinations. In the examined area 4.2% of the entire population lives and 6.58% of all accidents happened there. 325 individuals of the overall number of 856 individuals (37.9%) were impaired by alcohol which value for men was 46.4% (300 drunken drivers of 646 drivers) and 11.9% for women (25 drunken drivers of 210 drivers). Analysing the role played in traffic in the entire time interval 52% of pedestrians, 40.2% of cyclists, 44.2% of motor-cyclists, 31.6% of car drivers and 21.8% of passengers were drunk at the time of the accident. (Fig. 2.).

![Fig. 2. Distribution of rate of fatally injured victims](image-url)
The average concentration of blood alcohol level in all categories was above 2.0 g/litre. Annually the number of fatalities gradually decreased and the absolute number of fatalities in a state of drunkenness did not change, therefore the proportion indicates an increasing trend. Similar data were found in the United States of America where the number of the fatal road accidents was decreasing and the accidents suffered in a state of drunkenness nearly doubled.

The proportion of pedestrians and cyclists who suffered fatal road accidents in the state of drunkenness did not change in the examined decade, whereas the proportion of the fatally injured drivers increased. Regarding the place and time of the accidents there were no noticeable differences between accidents happening in towns and in the country. The number of accidents of drunken people during daytime remained unchanged whereas those at night more than doubled in ten years’ time. (Fig. 3.)

Fig. 3. The rate of fatally injured victims according to the time of accident

As drunken driving and causing accidents are characteristic of men, we mainly analysed the details of these categories. During the day 50.8% of pedestrians are drunk and during the night this figure is 83.0%. The values are worse in the country. During the day it is 73.5% and 90.3% during the night. These proportional numbers are much worse than most of those quoted in literature, although, several publications indicate that there are a greater number of fatally injured drunken pedestrians than drunken drivers. As we indicated it in previous surveys the reasons for this seem to be the frequency of chronic alcoholism, the underdeveloped infrastructure and the wrong traffic socialisation of this segment of the population. During the day 26.2% of the drivers are drunk and during the night 56.3% of them are. These figures were higher in accidents in towns. These values exceed most of the values published in the European Union, which is especially conspicuous if we compare them to the low frequency figure of the occurrence of drunken driving that was detailed above.
In summary we can state that the absolute frequency of drunken driving is low in Hungary but despite this fact it is high and in recent years the number of fatal accidents suffered in the state of drunkenness has not changed and their proportion has even increased. Therefore, the change in the number of the accidents between 1991 and 2000 is primarily not due to the changes in drink consumption. It can be explained by the fact that an insignificant proportion of the population does not change their drinking habits because of the preventive or the sanctioning measures. Their traffic culture is low and they both cause and suffer the same number of frequently serious and fatal road accidents. Its decrease can be achieved by checking and more severe sanctioning. However, regarding pedestrians such measures do not result in changes and cannot be implemented. Considering the tendencies in the past years it is doubtful that providing information is going to have any results. The only solution seems to be the separation of cars and pedestrians in space but due to the given underdeveloped infrastructure it cannot be achieved for a very long time.

References