



## The Prevalence of Alcohol in Road Traffic Accidents Fatalities in Central Serbia

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### Dear Editor-in-Chief

Alcohol causes a number of behavioral disorders, sensory function, motor skills, and thanks to that, it is an important accentogenic factor in road traffic accidents (RTA) (1).

In this cross-sectional autopsy study, we investigated the sixteen years period of fatal RTA in central Serbia regarding the alcohol abuse. Autopsies were performed at the Department of Forensic Medicine and Toxicology, University Clinical Centre of Kragujevac (approval of the Ethical Committee 18/10/2016, No 01/13221).

The samples were divided into two groups. The first included cases from 2001-2009 – at which time the old traffic safety law was in force; the legal limit for blood alcohol concentration (BAC) for drivers was 0.5 g/l. The second group included the cases from 2010-2016, under the new traffic safety law; with legal limit for BAC for drivers was 0.3 g/l. Blood samples obtained from the femoral vein during the autopsy were analyzed for BAC (determined by gas chromatograph).

A total of 377 fatally injured RTA subjects were examined. Positive BAC was recorded in 124

(32.9%) subjects. Most of the alcoholic participants had BAC between 1.01 g/l and 1.5 g/l (state of light drunkenness). There was a strong male predominance in alcohol use, with 116 out of 164 males positive for alcohol, compared to 8 out of 89 women (Pearson  $\chi^2=35.935$ ,  $P<0.001$ ). In addition, the mean BAC of males ( $1.5\pm 0.9$  g/l) was significantly higher than the mean BAC of females ( $0.8\pm 0.4$ g/l), ( $t$  test=4.513;  $P<0.001$ ).

These results are in consistent with other literature data (2-5), and can be explained by the fact that the socio-cultural pattern in our country is traditionally related to the consumption of alcoholic beverages, especially spirits, because they are the most available.

Road traffic fatalities in which participants were with positive BAC occurred mostly in autumn (30.6%, n=38) and summer (29.8%, n=37). The highest number of RTA with positive BAC happened during the weekends, Friday to Sunday (46%, n=57).

The highest number of traffic accidents involving alcoholics was recorded on weekends especially



on Sunday. These results can be explained by the trend of alcohol consumption on weekends, and is a global and local trend (6-8). The majority of RTA occurred during autumn, correlated with the results of other studies (7, 9).

The legal limit for BAC for drivers in Serbia was 0.5 g/l until the end of 2009, but new traffic safe-

ty law stipulates the new limit to be 0.3 g/l. Statistical analysis, shows a significant decrease in the total annual number of fatalities, after 2009, compared to the previous years (Pearson  $\chi^2=17.86$ ,  $df=6$ ,  $P<0.001$ ) (Table 1).

**Table 1:** The annual distribution of fatally injured participants, under influence of alcohol and BAC (g/l) ranges

	<i>Blood alcohol concentration (g/l)</i>						
	0	0.01-0.50	0.51-1.0	1.01-1.50	1.51-2.0	2.01-3.0	>3.0
							1
2001	14	1	1	1	2	-	-
2002	22	1	2	1	-	-	-
2003	15	1	1	1	1	-	-
2004	14	2	1	-	1	3	-
2005	18	-	2	4	-	-	-
2006	11	1	5	3	-	-	-
2007	19	3	3	3	4	1	-
2008	19	3	-	1	1	3	-
2009	18	2	4	2	2	3	-
2010	25	1	2	4	-	5	-
2011	14	3	-	2	4	-	-
2012	16	-	1	1	3	1	-
2013	12	1	-	-	-	1	3
2014	12	-	1	2	-	2	2
2015	12	1	2	2	-	-	2
2016	12	1	-	-	1	5	1
Total	253	21	25	27	19	24	8

The change in this law has brought good results, because after 2009 we have reduced the number of mortally fatalities in traffic that were under the influence of alcohol. Although this new law on traffic safety is in relations on reduced of BAC for motor vehicle drivers, accordingly, those who are under the influence of alcohol even when not driving when proved necessary may be detained by the police. Driving performance can be affected by alcohol even in low dosage as 0.2 g/l (2).

The results indicate a significant role of alcoholism of RTA participants for the occurrence of traffic accidents in Central Serbia. So, the reduction of the allowed BAC to 0.3 g/l gave satisfactory results, but even stricter treatment of RTA subjects with positive BAC is needed.

## Conflict of interest

The authors declare no conflict of interest.

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