

# Knowledge, Attitudes and Behaviors of Young People Related to Drinking and Driving in Mostar Region, Bosnia and Herzegovina

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## ABSTRACT

*The traffic accidents became the leading cause of morbidity and mortality among young population groups during the late 60s and early 70s. Among several European countries that are in transition, Bosnia and Herzegovina takes the leading place in fatal traffic accidents. In this study we have investigated knowledge, attitudes and behavior of young people related to alcohol impaired driving. Our aim was to investigate the patterns and behavior among young people that could be useful for public health intervention among them. This is of special interest as there is a lack of such information from Bosnia and Herzegovina. The study was performed in the city of Mostar, Bosnia and Herzegovina. The study included 189 examinees of both genders, aged between 18 and 24 years, who have been divided in two groups: students of the University of Mostar and those who did not go for further education after high school (nonstudents). Sampling was performed in July 2006 in Mostar and surrounding area. The Gallup organization questionnaire was used. Descriptive statistic test and chi-square were used in statistical analysis. Result of this study could be helpful in taking preventive measures for lowering number of traffic accidents among young people or they could be base in some protective programs for increasing traffic safety.*

**Key words:** adolescent, alcohol use, traffic safety, traffic accidents, Bosnia and Herzegovina

## Introduction

In the late 60's and early 70's road traffic accidents became the leading cause of morbidity and mortality among young people<sup>1,2</sup>. Alcoholic beverage consumption is widespread and very common in our society. Physical and psychic damages due to alcohol consumption are well known today. Long time consumption of smaller alcohol amounts leads to brain function damages, while use of larger amounts cause medulla oblongata and spinal cord damages<sup>3</sup>. There is clinical distinction between soberness and acute alcoholism states<sup>3</sup>. It is well known that the smallest alcohol concentration has an influence on drivers and their driving abilities<sup>4</sup>. Alcohol increase self-esteem, but at the same time lowers driving abilities, so directly and indirectly contributes to incidence of road traffic accidents<sup>5,6</sup>. Alcohol makes perception distortions, which lead to mistakes in drivers own rate adaptation,

wrong incoming vehicles velocity estimation, lower noticeably of moving objects, which all cause inappropriate overall traffic evaluation. Every third road traffic accident and even 40% of all annual lethal accidents in USA were caused by alcoholic beverages consumption<sup>7</sup>. Majority of injured people in traffic accidents in Canada were men aged between 16 and 24 years, who were in 17% cases alcohol impaired<sup>8</sup>. By data of National Highway Traffic Safety Administration (NHTSA), such young people in the USA participated in 31% of traffic accidents<sup>9</sup>. More than 50% of young man drove after alcohol consumption, and even 20% did it even though they were not able to drive safely<sup>10</sup>.

Results of previous education campaigns which tried to reduce incidence of road traffic accidents after alcohol

consumption gave positive results, but are still insufficient and need to be continued<sup>11</sup>. Worldwide alcohol drinks availability has been limited by laws, legal limits of alcohol consumption are lowered, seat belts use continues to be promoted, and it is all for the benefit of traffic safety improvement.

After war in Bosnia and Herzegovina, there were not many studies which explored knowledge, attitudes and related behavior of young people about drink and drive, so our main goal in this research was to examine knowledge, states and behavior of young people due to drunk driving in the city of Mostar, Bosnia and Herzegovina. Results of this study could be helpful for taking preventive measures in reducing number of traffic accidents especially among young people or it could be just basis for making certain alcohol abuse prevention programs that could be implemented for traffic safety promotion.

## Materials and Methods

Data for this study was collected in July 2006 in the Mostar city region, Bosnia and Herzegovina. Completed basis included 200 examinees of both gender aged between 18 and 24 years. The examinees were chosen by systematic occasional sampling method. Each examinee filled questionnaire, approved use and publication of examination results. Eleven examinees were excluded from this study because of incorrect fulfilling the questionnaire. All examinees had valid driving licenses. Two groups of 100 examinees were examined. In the first group there were students of Mostar University. The second group consisted of people who did not enter tertiary level of education after finishing high school. This study included 189 examinees out of which 116 (61.4%) were men and 73 (38.6%) women. Average age was 21.9 years with standard deviation of 1.7 years. Data was collected by anonymous questionnaire which was adopted and translated from standardized Gallup's organization questionnaire<sup>13</sup>.

The questionnaire consisted of 44 questions and statements about drunk driving which were divided into 6 groups: generals and habits of alcohol consumption, exploring attitudes about drinking and driving and possible risks of impaired driving, exploring knowledge and states about possible consequences caused by drunk driving, experiences of earlier traffic accidents and injuries, and exploring drunk driving habits and prevention measures. Given answers or statements the examinees were choosing by marking the number in front of the chosen answer or statement. Filling the questionnaire usually lasted about 20 minutes.

Methods of descriptive statistics were used in data processing, and for testing between groups.  $\chi^2$ -test was used. All tests were processed in statistic program package SPSS 11.5.1 for Windows (2002, SPSS Inc. Chicago Illinois, SAD) on Windows XP platform by statistical level of significance of  $p < 0.05$ .

## Results

This study included 189 examinees, 116 (61.4%) men and 73 (38.6%) women. Average age of examinees was 21.9; standard deviation (SD)=1.7 years. Among examinees 49.1% were full-time or part-time employed, the others were unemployed or students at Mostar University. All examinees had valid driving licenses. Most of them used motor vehicles every day [50 (58.3%) non-students and 39 (40.6%) students] or for a few days *per week* [32 (34.4%) non-students and 38 (39.6%) students].

Less than 10% of examinees declared alcohol non-consumption, the others most commonly drank beer in 55.9% of non-students and 56.3% students. More than 20% of examinees from students' sample (20.4%) and 20% of others along with (19.8%) of non-students declared that during last year they consumed only stronger alcohol beverages. In the sample of non-students (83%) and in student sample (74%) the most common places of alcohol consumption were bars and restaurants.

Driving motor vehicles after consuming any amount of alcohol beverages would not be approved by 28 (30.1%) of non-students and 21 (21.8%) of students. Even 37 (39.7%) of non-students and 25 (26.8%) of students declared that there are better drivers when they drive impaired no matter how much alcohol they have had. Their opinion was that even drunk, they felt safer if driving themselves than being driven by a designated driver. Students' statement about it was statistically more significant and they had more self-confidence than their peers ( $\chi^2=4.05$ ;  $p < 0.05$ ).

Majority of examinees in both groups were aware [72 (77.4%) of non-students and 68 (70.8%) of students] that planning an alternative transportation after alcohol consumption would prevent accidents even with possible lethal consequences. More than a third of examinees [33 (35.4%) non-students and 29 (31.2%) students] declared that it is much more convenient and easier for them to consciously drive impaired than to use alternative ways of transportation ( $\chi^2=0.60$ ;  $p < 0.05$ ), and the most often reasons for that were that they felt uncomfortable to seek for alternative transportation or to depend on others.

Examinees tend to underestimate possibilities of causing or participating in traffic accidents caused by driving impaired and the opinion of 26 (28%) of non-students and 34 (35.4%) of students was that there are small chances for that. Non-students declared in 36.6% of cases that chances for that were 50:50%, while students accepted that statement in only 27% of cases ( $\chi^2=9.09$ ;  $p < 0.05$ ).

More than half of examinees [41 (41.1%) non-students and 46 (47.9%) students] thought that chances for being stopped by the police for sobriety check were small. Among those who thought that they could not be arrested for drunk driving significant statistical difference occurred ( $\chi^2=12.21$ ;  $p < 0.05$ ).

Only 1.1% of non-students considered that being arrested for drunk driving was impossible while even 12.5% of students did not share that opinion. In last five years only 10% examinees were punished for drunk driving.

Examinees of both groups most often considered that incidence of drunk driving consequences were small or meaningless (43% of non-students and 28% students). There was no statistically significant difference in estimation about long-term consequences (physical and psychic injuries that last more than three months) caused by drunk driving between students and non-students ( $\chi^2=14.81$ ;  $p<0.05$ ). Majority of examinees considered that possible consequences of drunk driving were serious [53 (57%) non-students and 47 (49%) students]. While most of non-students considered that possibility of long-term consequences due to drunk driving was mainly small (9.7%) ( $\chi^2=4.97$ ;  $p<0.05$ ) and almost insignificant, at the same time the students thought that that kind of driving can cause permanent disabilities for drivers, thus preventing them from participating in normal life activities (13.5%) ( $\chi^2=4.93$ ;  $p<0.05$ ) or even be cause of death (17.7%;  $\chi^2=4.42$ ;  $p<0.05$ ).

About half of examinees [49 (52.7%) non-students and 48 (50.0%) students] shared opinion that possibilities of lethal outcome in car crashes caused by drunk driving were small. Nevertheless, 27% of non-students and 19% of students considered that chances of lethal accident were 50:50%.

In last two years 26% of non-students and 11% of students had experienced traffic crash injuries. Difference in experience between two groups of examinees was statistically significant ( $\chi^2=5.89$ ;  $p<0.05$ , Table 1). There was statistically significant difference between two groups of examinees [17 (18.3%) non-students and 6 (6.3%) students] who participated in crash accidents within two hours of alcohol consumption ( $\chi^2=6.40$ ;  $p<0.05$ ).

There was no statistically significant difference in attitude between students and non-students when driving after alcohol drink consumption was considered. More

than 50% of examinees in both groups chose to drive even though they were drunk (Table 2). Due to personal estimation of examinees during last year, the majority of them from both groups were driving motor vehicle between 2 and 10 times when they were over the legal limit of alcohol consumption. During last year non-students were driving motor vehicles 5 to 10 times while they were over the legal limit for alcohol, at the same time the majority of students have driven drunk in average of 2 to 5 times. More than half of examinees in both groups [53 (57.0%) non-students and 54 (56.3%) students] did not quit driving motor vehicle even though they felt impaired for safe driving. Among those who quit driving, the majority decided to take an alternative transportation or to be driven by a designated driver [24 (60.0%) non-students and 31 (73.8%) students], second most common choice was staying at friends' home and waiting until they were sober. In spite of planning not to drive after alcohol consumption, 48 (51.6%) non-students and 34 (35.4%) students drove anyway. Students were more consistent with their intention not to drink and drive ( $\chi^2=5.05$ ;  $p<0.05$ ). To this attitude of 28 (30.1%) non-students and 29 (30.2%) students contributes the statement that their friends were consciously encouraging them to drive under the influence of alcohol.

## Discussion

Alcohol consumption among young population is widespread. Almost 90% of examinees in our study declared themselves as alcohol consumers, whereas only 10% of all examinees denied the habit of alcohol consumption. Majority of examinees consumes light alcohol beverages, mostly beer (55.6% of students and 56.3% of non-students), 20% of examinees consume hard liquors. The majority of our examinees use motor vehicles on daily basis even when alcohol impaired. About 40% of non-students and 27% of students consider that no matter how much they have drunk they have better control when they drive compared to being driven by somebody else.

TABLE 1  
BEHAVIOR OF YOUNG PEOPLE RELATED TO DRIVING AFTER ALCOHOL CONSUMPTION

Answers	Number (%) of examinees who drove impaired after consuming at least 2 alcohol drinks		Number (%) of examinees who drove impaired after consuming at least 4 alcohol drinks		Number (%) of examinees who drove drunk	
	Non-students	Students	Non-students	Students	Non-students	Students
Yes		79	68	75	50	50
%	(88.2)	(82.3)	(73.1)	(82.3)	(53.8)	(52.1)
No	3	8	17	12	35	37
%	(3.2)	(8.3)	(18.3)	(8.3)	(37.6)	(38.5)
Not consuming	8	9	8	9	8	9
%	(8.6)	(9.4)	(8.6)	(9.4)	(8.6)	(9.4)
Total	93	96	93	96	93	96
%	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
$\chi^2$	$\chi^2=2.34$ ; $p=0.310$		$\chi^2=1.22$ ; $p=0.544$		$\chi^2=0.07$ ; $p=0.967$	

TABLE 2

NUMBER (%) OF EXAMINEES WHO PARTICIPATED IN TRAFFIC ACCIDENTS AS DRIVERS

Number (%) of examinees who participated in traffic accidents as drivers		
	Non-students	Students
Never	50	50
%	(53.8)	(52.1)
Once	35	37
%	(37.6)	(38.5)
Twice	8	9
%	(8.6)	(9.4)
Total:	93	96
%	(100.0)	(100.0)
$\chi^2$	$\chi^2=6.45; p=0.011$	$\chi^2=5.89; p=0.015$

In this statement, non-students are statistically more self-confident than students. Represented data shows that young people have poor knowledge about alcohol influence on overall body and on body functions. Though 70% of examinees understand that quitting impaired driving could lower rate of traffic accidents and deaths, the fact is that 30% of them do not use alternative transportation because they feel uncomfortable and do not want to depend on others.

Similar attitude is shared by people younger than 30 years in the USA who claimed that even after alcohol consumption they are safer drivers than some other sober persons<sup>9</sup>. These results show that solely education efforts are not enough, therefore repressive methods should be included to lower availability of alcohol to young persons, as well as enforcement of sobriety controls on weekends when traffic accidents most often happen.

The fact that only 10% of our examinees claimed to be punished for impaired driving indicates that more often sanctions for impaired driving should be undertaken. The results of a similar study in the USA show that only 1.6% of students were arrested for impaired driving which can be result of respecting the traffic laws or because of insufficient police activity<sup>14</sup>.

Attitude of examinees in our study towards impaired driving reveals that only third of all examinees would not approve drunk driving regardless of alcohol amount consumed. Comparison of these results with the results of NHTSA's study which showed that only 33% of drivers in America would not approve drunk driving<sup>9</sup> makes it clear that awareness of young people about drunk driving in the USA is slightly higher than is in the city of Mostar (Bosnia and Herzegovina).

Our research showed that students are less critical than non-students when impaired driving is considered. 22% of students and 30% of non-students would not approve drunk driving. About 1% of non-students and 13% of students consider that being arrested for impaired

driving is impossible. Though it was not one of our aims we have found out that students included in the study in spite of better knowledge about alcohol influence on body functions do not know much about traffic laws concerning impaired driving.

Students showed to be more conscious about possible consequences of impaired driving than nonstudents when frequency of traffic accident injuries and lethal outcomes is taken in consideration. The attitude of students changed considerably when they were asked directly about consequences of impaired driving that could happen to them. The majority of examinees in both groups consider the possibility of consequences due to impaired driving to be small and insignificant (43% of nonstudents and 28% of students). Larger number of nonstudents declared that long-term consequences of impaired driving are small and insignificant.

Statistically significant difference in estimation of long-term consequences of impaired driving occurred between students and nonstudents. By investigating the experiences of earlier traffic accidents we have confirmed our previous presumptions. Even though 24% of nonstudents have experienced traffic accident in last two years and 18% of them admitted that they were alcohol impaired it was not enough of reason to change their attitude and behavior. There was no statistically significant difference in opinion between students and nonstudents regarding drunk driving after larger amounts of alcohol were consumed. More than 50% of examinees decided to drive impaired though it was noticed that less students were willing to drive after consumption of four alcohol beverages (almost 10% of all cases).

In the end we tested willingness to use their knowledge and attitudes about impaired driving. In our region legal alcohol limit is 0.05 mL/L<sup>15</sup>, and this study once more proved that young people are prone to drunk driving. Only one year before the study, according to their estimations, examinees were driving impaired between 2 and 10 times on average. Students have been driving impaired between 2 and 5 times while nonstudents have done it between 5 and 10 times. These answers were based on personal estimation of examinees, therefore we presume that real numbers are higher.

Among examinees who have given up driving after alcohol consumption, majority chose to be given a ride by a sober driver or they used to stay at their friends home overnight. The proof of how serious the problem is and how difficult is it to solve it lies in the results of the research on students in the USA which showed that 47% of them drive impaired when they are over legal alcohol limit between 3 and 6 times a year<sup>14</sup>, while one-third of all drivers in the USA declared that during last year they have at least once wittingly drove impaired when they were over legal alcohol limit<sup>9</sup>.

If we take our examinees as example we cannot be satisfied with their participation in the improvement of traffic safety especially since they represent large population that is most often involved in traffic accidents<sup>8,15</sup>. Results that L. Greening and associates got in the USA

have shown that 61% of examinees drove after consumption of 2, and »only« 37% of examinees after consumption of 4 alcohol beverages.

Among young Americans who gave up drunk driving, the majority (61%) decided to be given a ride by a sober driver. Through their educational reports the public media in Bosnia and Herzegovina inform people about consequences of impaired driving and that contributed to our result that 50% of our examinees are educated about risks and consequences of drunk driving. However, reports about prevention are rare. In addition to direct media campaign that will provide quality information, one has to respect the existing laws.

Croatia, among some other countries, is already applying regulations for limiting availability of alcohol to young population. These regulations include higher prices and taxes, prohibited alcohol sale to people under 18, by restricting liquor stores and by increasing sanctions for lawbreakers. In addition to alcohol restrictions there are other laws that require young drivers to drive only with experienced drivers and not to drive at all during days in week that are marked as risky days.

Data obtained from the Ministry of internal affairs show that in our region during the year 2003 there were 2650 traffic accidents whereby 157 persons were heavily injured and 22 persons died.

Bosnia and Herzegovina is, among other 13 European states in transition, on first place according to the number of deaths in traffic accidents *per* 100,000 citizens<sup>15</sup>. In this study we have investigated knowledge, attitudes and behavior of young people when driving impaired is considered. Our aim was to detect some of possible preventive measures. Results could be helpful in taking preventive measures for lowering the number of traffic accidents among younger population or they could be basis for some preventive programs in traffic safety. Results of

potentially preventive activities should not be expected earlier than after a few years of consistent implementation, example is the USA where number of alcohol impaired drivers is still high but considerably lower than before<sup>9</sup>.

## Conclusions

- Less than 10% of examinees declared that they do not consume alcohol at all, while those who consume mostly drink beer. (55.9% of nonstudents and 56.3% of students), around 20% of examinees consume hard liquors. Bars and restaurants are in most cases places of alcohol consumption (83% of nonstudents and 74% of students)
- Nonstudents with statistically significant difference towards students consider having better control when driving themselves than when driven by others
- Students in 12.5% of cases believe that being arrested for impaired driving is impossible, while 1% of nonstudents share that opinion
- There is statistically significant difference between students and nonstudents in estimation of long-term consequences of impaired driving. Students are more familiar with possible consequences
- Various experience in prior traffic accidents showed statistically significant difference because nonstudents have participated in higher number of traffic accidents (26%) than students (6.3%). In accidents 18.3% of nonstudents were alcohol impaired which is statistically considerably more than (6.3%) of students who claimed that they were drinking within two hours before accident
- There was not statistically significant difference in drunk driving habits between students and nonstudents. Both groups were driving alcohol impaired.

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## **ZNANJE, STAVOVI I PRAKSA MLADIH O VOŽNJI POD UTJECAJEM ALKOHOLA: MOSTAR, BOSNA I HERCEGOVINA**

### **S A Ž E T A K**

Kasnih 60-ih i početkom 70-ih godina prometne nezgode su postale vodeći uzrok morbiditeta i mortaliteta, osobito unutar mlade populacije Bosna i Hercegovina je, od 13 europskih država u tranziciji, na prvom mjestu po broju smrtno stradalih u prometnim nezgodama na 100,000 stanovnika, a ovim je istraživanjem provjereno znanje, stavovi i praksa mladih ljudi u upravljanju vozilom pod utjecajem alkohola, s ciljem detektiranja potencijalnih preventivnih mjera. U poratnoj Bosni i Hercegovini nema preveliki broj studija koji je istraživao znanje, stavove i praksu mladih o vožnji pod utjecajem alkohola, stoga je cilj ovoga istraživanja bio ispitati znanje, stavove i praksu mladih ljudi o vožnji motornih vozila nakon konzumacije alkohola u gradu Mostaru, Bosna i Hercegovina. Ispitanici su birani metodom sustavnog, prigodnog uzorkovanja. U istraživanju je sudjelovalo 189 ispitanika oba spola, u dobi između 18 i 24 godine koji su podijeljeni u dvije skupine: studente fakulteta mostarskog Sveučilišta i one koji su nakon srednje škole završili svoje daljnje školovanje (nestudente). Podaci su prikupljeni u periodu između 17. i 27. srpnja 2006. godine na širem području grada Mostara. Podaci za statističku obradu prikupljeni su modificiranim upitnikom načinjenim na osnovi standardiziranog upitnika Gallup organizacije. U statističkoj su obradi korišteni testovi deskriptivne statistike i  $\chi^2$ -test uz razinu statističke značajnosti 0,05. Rezultati ovoga istraživanja bi donekle mogli pomoći prilikom poduzimanja preventivnih mjera za smanjenje broja prometnih nezgoda među mlađom populacijom ili mogu biti podloga na temelju koje se određeni preventivni programi povećanja sigurnosti u prometu mogu implementirati.