

Alcohol Consumption: Risk Factor for Traffic Accidents

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INTRODUCTION

Alcohol-related accidents are a major public health problem all over the world. Drinking and driving claims more than 15,000 lives annually, according to National Institute on Alcohol Abuse and Alcoholism. Some progress has been made in reducing alcohol-related accidents. Even at low doses, alcohol reduces reaction time and slows the decision-making process, impairing driving. Numerous approaches to discourage driving under the influence of alcohol have been tried. Despite increased legislative and preventive measures to combat alcohol-related motor crashes, drunk driving remains a major social concern. The relative risk factors for driving while intoxicated are still largely unknown.

OBJECTIVE

The aim of this study was to determine the role of alcohol consumption as a risk factor of having a traffic accident in the population of northwestern Greece.

METHODS AND RESULTS

Preliminary examination in 4634 traffic accidents showed high alcohol levels in 45% of the drivers. Alcohol positive drivers were considered the drivers whose blood alcohol concentration (BAC) was greater or equal to 0,80 g/l. In addition alcohol consumption was related to 57% of fatal traffic accidents. About 50% of all traffic accidents happened during night and they involved young people (55%) from 26 to 40 years of age.

A method of a retrospective epidemiological analysis was chosen for the estimation of risk factors, in road traffic accidents. In this analysis case drivers (n=337) were considered all drivers involved in road traffic accidents during 1994-96, in four selected high-ways in south-western Greece, with known blood alcohol concentration. "Control drivers" were considered all drivers (n=863) non-involved in traffic accidents, which had been checked for alcohol in random breath tests, during the same period of time and at the same sites where the accidents had occurred. All

drivers in this study were matched for other external factors, such as: Sex, age of the drivers, condition of the road, difficulty of task, driving conditions and size of the vehicle.

In the group "Control drivers" the blood alcohol was measured by alcotest while in the "case drivers" by a gas chromatographic method. To normalize and compare the results of alcohol levels measured by the two methods, a methodological study was designed for evaluating the accuracy between the values of alcohol concentration in breath by alcotest and blood alcohol concentration by a gas chromatographic method. In this study, blood was taken from 30 volunteers who had ingested known amount of an alcoholic drink for gas-chromatographic analysis and breath for the alcotest, one hour after the last alcohol consumption. Values were correlated by Pearson's linear regression analysis and a conversion factor was established. Linear correlation between the two values in blood and in breath was observed and it was statistically significant ($r=0.959$, $p<0.001$). The conversion factor was found to be $p=1.038$.

For the statistical analysis of data: the McNemar's test, the χ^2 -test and the logistic regression analysis were used.

CONCLUSIONS

It has been shown that blood alcohol has a significant in risk of being involved in a road traffic accident. (Relative risk was estimated 3.6 for the drivers with $BAC>0.50$ g/l).

The drivers of two-wheeled vehicles with $BAC>0,80$ g/l are two times in greater risk of an accident than the drivers of four-wheeled vehicles.

The group of extremely high risk are the young drivers of two-wheeled vehicles with $BAC>0.80$ g/l (Relative risk 9.07).

Driving on week-ends, festival days and the days before, in high-ways of heavy traffic are more at risk of being involved in a road traffic accident.