Risk of severe driver injury by driving with psychoactive substances

Driving with alcohol and other psychoactive substances imposes an increased risk of severe injury accidents. In a population-based case-control design, the relative risks of severe driver injury (MAIS ≥ 2) by driving with ten substance groups were approximated by odds ratios (alcohol, amphetamines, benzoylecgonine, cocaine, cannabis, illicit opiates, benzodiazepines and Z-drugs, i.e. zolpidem and zopiclone, medicinal opioids, alcohol-drug combinations and drug-drug combinations). Data from six countries were included in the study: Belgium, Denmark, Finland, Italy, Lithuania and the Netherlands. Case samples (N = 2490) were collected from severely injured drivers of passenger cars or vans in selected hospitals in various regions of the countries. Control samples (N = 15,832) were sampled in a uniform sampling scheme stratified according to country, time, road type and season. Relative risks were approximated by odds ratios and calculated by logistic regression. The estimates were adjusted for age, gender and country. The highest risk of the driver being severely injured was associated with driving positive for high concentrations of alcohol (≥0.8 g/L), alone or in combination with other psychoactive substances. For alcohol, risk increased exponentially with blood alcohol concentration (BAC). The second most risky category contained various drug-drug combinations, amphetamines and medicinal opioids. Medium increased risk was associated with medium sized BACs (at or above 0.5 g/L, below 0.8 g/L) and benzoylecgonine. The least risky drug seemed to be cannabis and benzodiazepines and Z-drugs. For male drivers, the risk of being severely injured by driving with any of the psychoactive substances was about 65% of that of female drivers. For each of the substance groups there was a decrease in the risk of severe driver injury with increasing age. It is concluded that among psychoactive substances alcohol still poses the largest problem in terms of driver risk of getting injured. © 2013 Elsevier Ltd. All rights reserved.