ALCOHOL INVOLVEMENT IN TRAFFIC DEATHS INVESTIGATED BY SPECIAL BOARDS OF INQUIRY IN FINLAND

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The actual number of alcohol-related traffic deaths is not known and even the best approximations are subject to question (Zylman 1979). Further, a term such as "alcohol-involved" has different meanings to different people. For some, the term includes any indication of alcohol, such as even the odor of the beverage or blood alcohol concentrations (BAC) as low as 10-20 mg/ml (0.1-0.2 o/oo). In many countries, BACs such as 50, 100, or 150 mg/ml (0.5, 1.0, or 1.5 o/oo) or more are assumed to be evidence of alcohol involvement whether there was any proven causal relation or not. Most authors agree that the relationship of alcohol to traffic deaths is, at least, very complex (Baker 1972). In order to look further into the possible alcohol involvement and its interaction with other causes of traffic deaths, each case should be investigated individually, and, if possible, by a team of experts.

The Traffic Accident Boards of Inquiry

In most industrial countries, serious accidents in the air and at the sea are investigated by a special board of inquiry. This has not been the case with traffic accidents, although their death toll (more than 250 000 people annually in the world, 1100-600 in Finland) is much higher. Therefore, similar boards of inquiry for traffic accidents were also introduced in Finland in 1968. The Insurance Companies Traffic Safety Committee
established, in 1968, the first traffic accident board of inquiry in Uusimaa, province near Helsinki. Since 1971 similar boards of inquiry have been in operation in every province of Finland. The boards utilize the services of experts in several fields to investigate factors connected with traffic accidents. These boards consist of a police officer (usually a provincial inspector of the Highway Patrol), a motor vehicle inspector, a traffic safety engineer from the National Board of Roads and Waterways, and a physician who most often is the forensic pathologist of the province. In addition, other experts, such as psychologists, may join the team when needed (Karkola 1978).

The Methods of Investigation Used by the Boards

After having received notification from the police as many board members as possible investigate the accident at the scene. The members use a specified form for evaluating the various factors possibly connected with the accident. During the following days they continue the work by interviews and more thorough investigations in garages etc. A medico-legal autopsy is performed on practically every traffic accident victim. Blood and/or urine samples, obtained at autopsy or at the time of hospital admission, are analyzed for the presence of alcohol, and if suspected, of drugs. For this purpose blood, urine, and organ samples, obtained at autopsy, are also used, when needed.

In a meeting, with all board members present, a final report is formulated. It includes such sections as the safety equipment of the vehicle and its possible effects, the injuries and their causes, the events preceding the accident, and the causes of the accident, including possible alcohol or drug involvement. Although the investigation is not aimed at solving the juridical responsibility, the final statement is made available at the request of the prosecutors, to the persons involved in the accident, and to the insurance companies.
The Material Studied

The main project of the board has included those motor vehicle accidents in which at least one of the individuals in the vehicles died within three days after the crash. For several years, almost half of all the road deaths (400-500 out of 800-1100 cases annually) in Finland were investigated within the main project. The total material of the main project consisted of 3688 highway deaths in 1968-1979. In recent years, several specific projects have been introduced in order to widen the field. These include, for example, bicyclist and pedestrian road fatalities (74 and 135 cases, respectively, in 1971-1975).

Results

In 1971-74 the boards investigated 1430 fatal traffic accidents (vehicle occupants). Alcohol was present in the blood samples of the victims, at a concentration of 0.15 mg/100 ml (0.15 o/oo) or more, in 27.5 per cent. The BAC usually was high: in 63 per cent of the fatalities with alcohol involvement the BAC was 1.5 o/oo or more. In single vehicle crashes, 48.1 % (from 32 % to 63 % in the various years under study) of the drivers showed a positive blood alcohol test. In multivehicle crashes the average percentage was 16.2 (variation from 11 % to 27 %).

In their final reports, the boards estimated the significance of the alcohol involvement as a causative factor. Among the 393 fatalities with alcohol involvement (= 27.5 % of the 1430 cases investigated) alcohol was the decisive factor in 31.4 % of the cases, an indispensable cause in 51 %, and an additional factor in 13.7 % of the cases. In 3.9 % of the fatalities with alcohol involvement, the low alcohol content (0.3 - 0.4 o/oo) did not influence the course of events. In the cases with alcohol as decisive factor, the BAC was in the range 1.9 - 3.5 o/oo. In the cases in which alcohol was an indispensable cause, the BAC varied from 0.7 o/oo to 2.7 o/oo. When alcohol was considered to be an additional factor the BAC was usually lower than 1 o/oo, although even in this group there were solitary cases with BAC
as high as 1.5 o/oo.

There were, thus, 393 (=27.5 %) fatalities with alcohol involvement among the 1430 traffic deaths (vehicle occupants; 334 of them were drivers and 59 passangers). Of all the 1430 road deaths investigated in 1971-74, alcohol was the decisive factor in 8.6 % of the cases, an indispensable factor in 14 %, and an additional factor in 3.8 %. In 1 % of all the cases, alcohol involvement did not influence the course of events. Altogether, alcohol was either the decisive or indispensable factor in 8.6 % + 14 % = 22.6 % of the road deaths investigated.

In the blood samples of the 135 pedestrians and 74 bicyclists, killed in traffic accidents and investigated by the boards in 1971-1975, alcohol was present (as a BAC of 0.15 o/oo or more) in 60 (44.4 %) of the pedestrians and in 11 (14.9 %) of the bicyclists. According to the final reports of the board, alcohol was the decisive factor in the fatalities of 35 (25.9 %) pedestrians, considered to be responsible for their own death, and in two (1.5 %) pedestrian deaths, caused by intoxicated car drivers. Thus, in the traffic deaths of 25.9 % + 1.5 % = 27.4 % pedestrians, alcohol was the decisive factor. Similarly, alcohol was an indispensable cause in the road deaths of 13 (9.6 %) + two (1.5 %) = 15 (11.1 %) pedestrians, and an additional factor in three (2.2 %) pedestrians deaths, caused by drunken drivers. Further, alcohol was the decisive factor in the fatalities of four (5.4 %) bicyclists considered to be responsible for their own death, and in two (2.7 %) bicyclist deaths, caused by intoxicated car drivers. Thus, in the traffic deaths of 5.4 % + 2.7 % = 8.1 % bicyclists, alcohol was the decisive factor. Similarly, alcohol was an indispensable cause in the road deaths of five (6.8 %) + two (2.7 %) = seven (9.5 %) bicyclists, and an additional factor in two (2.7 %) + two (2.7 %) = four (5.4 %) in bicyclist deaths.

Summary

Special boards of inquiry for fatal traffic accidents were introduced in Finland 1968. These boards consist of an inspector of Highway Patrol, a motor vehicle inspector, a traffic safety
engineer, and a physician. In 1971-74 the boards investigated 1430 motor vehicle accidents in which at least one of the individuals in the vehicles died within three days after the crash. In the blood samples of the victims, alcohol was present (at a concentration of 0.15 mg/100 ml = 0.15 o/oo, or more) in 27.5 per cent. The blood alcohol concentration (BAC) was usually high. In 63 per cent of the fatalities with alcohol involvement, the BAC was 1.5 o/oo or more. In single-vehicle crashes, 48.1 per cent of the drivers showed a positive blood alcohol test. In multivehicle crashes the average percentage was 16.2.

Among the 393 fatalities with alcohol involvement (= 27.5 % of the cases investigated in 1971-74), alcohol was the decisive factor in 31.4 per cent, an indispensable factor in 51 per cent, and an additional factor in 13.7 per cent. In 3.9 % of the fatalities with alcohol involvement, the low alcohol content (0.3 - 0.4 o/oo) did not influence the course of events. Of all the 1430 road deaths investigated, alcohol was the decisive factor in 8.6 % of the cases, an indispensable cause in 14 %, and an additional factor in 3.8 %.

In the blood samples of the 135 pedestrians and 74 bicyclists, alcohol was present in 44.4 % and 14.9 %, respectively. In 27.4 % of the pedestrian deaths, alcohol was the decisive factor, in 11.1 % an indispensable cause, and in 2.2 % an additional factor. In 8.1 % of the bicyclist deaths, alcohol was the decisive factor, in 6.8 % an indispensable cause, and in 5.4 % an additional factor.

Percentages, describing alcohol-involvement in traffic deaths, are often exaggerated. However, in this material, alcohol was either the decisive or the indispensable factor in 22.6 % of the road deaths of motor vehicle occupants investigated.

References


