DRIVING WHILE INTOXICATED AND THE COMBINED USE OF ALCOHOL AND DRUGS

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1. INTRODUCTION

The report "Changes in consumption from a social perspective", prepared for the Netherlands Scientific Advisory Council, estimates that the use of drugs increased by 114% in the Netherlands between 1970 and 1971. The same report estimates that alcohol consumption has risen more than 400% since 1955.

People in the Netherlands are clearly making more use of both drugs and alcohol. A definite relationship has been found between the consumption of alcoholic beverages and the deterioration of driving ability. The Grand Rapids Study and other related research proved this beyond any doubt.

To date very little scientifically based evidence has been offered to show that drugs impair driving ability. So far no investigation following the Grand Rapids model has been made of drugs and driving. Drivers' use of alcohol in combination with drugs is yet another matter. On this subject too, there is still not much known.

In the Netherlands traffic checks provide little information concerning the use of drugs by drivers, since records kept by the police are not designed to produce this type of information. Even drivers involved in serious accidents are not as a rule asked if they take drugs. The situation is different for drivers apprehended by the police while driving under the influence of intoxicating beverages. The 1 November 1974 law made the blood test mandatory in the Netherlands. The procuring of blood specimens is a medical function and the standardized procedure that also went into effect at that time requires
the doctor in question to fill out a report. This report includes a question concerning drugs used. The existing standard procedure and the cooperation of the doctors carrying out the sampling made it possible for me to obtain the necessary data. Use was made of a report form that was completed partly by the doctor and partly by the police officer involved.

2. THE INQUIRY

2.1 Subjects

The subjects were 1321 drunken drivers apprehended by the Rotterdam police during the period 15 March 1979 to 1 August 1979. The 1321 drunken drivers were also asked by the doctor whether they were taking tranquilizers, pills or medicines of any kind and, if so, what kind.

2.2 Classification of drugs

The classification of the drugs (see Figure I) occurred in close consultation with Dr. H.T.P. Cremers, one of the medical officers who takes the blood samples for the Rotterdam Police Department. This classification, like any other, is arbitrary. It suffices to point out that the drugs are divided into those that do and those that do not directly affect the central nervous system (see the dotted lines in the Figure).

3. RESULTS

3.1 The trend in combined use

Earlier investigations which I carried out in Rotterdam on the use by drunken drivers of alcohol in combination with drugs produced the following percentages: in 1965 8.8% indicated that they had used drugs as well as alcohol, in 1975/1976 16.5% reported so. 5) Out of the 1321 report forms obtained for my present study, 1266 were suitable for the compilation of data on drug use. These 1266 forms revealed the following percentages:

- alcohol alone 1003 = 79.2%
- in combination with drugs 263 = 20.8%

Total 1266 = 100.0%

In the course of nearly 15 years combined use rose from 8.8% to 20.8% - an increase of 136%:
3.2 The kinds of drugs used

In examining the kinds of drugs used 254 of the 263 users could be classified. When a user belonged to more than one category, the first drug category marked was regarded as the kind of drug used. Analysis of the questionnaires produced the following percentages:

- sedatives / tranquilizers = 128 = 50.4%
- antidepressants = 5 = 2.0%
- antiemetics = 0 = 0.0%
- antihistamines = 4 = 1.6%
- antihypertensives = 10 = 3.9%
- antimigraine drugs = 0 = 0.0%
- analgetics / antipyretics = 43 = 16.9%
- other drugs = 64 = 25.2%

Total = 254 = 100%

The large percentage of sedative / tranquilizers used is striking. Unfortunately, there are few or no ways of making comparisons with drugs in general. For the sake of brevity, we can assume that sedatives / tranquilizers account for about 10 - 17% of the total drug consumption in the Netherlands. This percentage is 14.7% for the Dutch speaking region of Belgium.

It is safe to conclude that a considerably greater percentage of the sedative / tranquilizer consumption in the Netherlands can be ascribed to the drinking driver than to the average driver.

3.3 Comparison between drug use and selected variables

In the following paragraphs a comparison will be made between the alcohol alone and combined use drivers. Eight variables have been selected for comparison. A similar comparison was previously made from a 1975/1976 sample. The findings of the 1975/1976 survey and the present survey (1979) for the same variables were as follows.

No significant differences. No significant differences between the "alcohol alone" and "combined use" drivers were found in either the 1975/1976 or the 1979 samples for the variable 'recidivism'.

Significant differences. Significant differences were found in both studies for the variables 'sex' (women showed more "combined use" than did men), 'age' (combined use increased with age) and 'BAC'
These similarities are striking. The 1975/1976 data led me to assume that particularly drivers with problems use drugs in addition to alcohol. In order to gain more insight into this situation, four additional variables were introduced in my present study: (1) whether the subject drove after drinking in the weekend or on a working day; (2) the time of the day the subject was driving while intoxicated; (3) work situation and (4) the brief MAST.

Weekend/working day. It can be assumed that social drinkers drive after drinking more during the weekends and that the problem drinkers in particular also drive after drinking on working days. In fact, the variable weekend/working day showed no significant differences with reference to alcohol and combined use.

Time of day. Earlier studies revealed that drivers who drove while intoxicated during the day have higher BAC's and recidivism rates than those who drive while intoxicated in the evening and that this difference is even more marked with regard to the night-time drunken driver. Examination now being carried out of the variable 'time of day' with regard to 'alcohol alone' and 'combined use' reveals a consistent and significant difference.

(Table I). The day-time drivers show the highest percentage of combined use (27.2), the night-time drivers the lowest percentage (18.3) with the evening drivers in between (22.2).

Work situation. In the work situation it is a question of whether or not one is part of the production process. Individuals who have a more 'disturbed' work situation can be expected to experience more problems. Table II shows that the industrially disabled are over-represented in the 'combined use' category (51.8%). The industrial disability group includes persons who, on the basis of a medical procedure, are found to suffer from a disease or disability to such a degree that they are eligible for a disability allowance.

The unemployed also score higher on drug use. The difference is slight, however I would like to point out that the unemployed are younger on the average than the employed and the industrially disabled. For your information I like to mention that my findings concerning the unemployed and industrially disabled drunken drivers will be presented in a separate publication.
HAST-score. M. L. Selzer, the American professor of psychiatry who developed the MAST (Michigan Alcoholism Screening Test), considers a score of 5 points to indicate the likelihood of alcoholism in the test subject and that this likelihood increases with each successively higher score. 9)

The MAST provides revealing figures concerning the 'alcohol alone' and 'combined use' drivers (Table III). The higher a subject scored on the MAST, the more likely he was to use drugs in addition to alcohol. The differences are consistent and significant to a high degree.

3.4 Comparison of the sedative/tranquilizer users with the users of other drugs

As we have already seen, 50.47% of the 'combined users' took sedatives/tranquilizers and 49.67% used antidepressants, antihistamines or some other drug(s). The same variables were examined for groups, the sedative/tranquilizer users (128 drunken drivers) and the users of other drugs (126 drunken drivers).

Not calculated. A statistical analysis of differences between men and women was not possible because the sample was too small.

No significant differences. The following variables showed no significant differences: (a) age; (b) recidivism; (c) BAC; (d) weekend/working day and (e) time of day.

Significant differences. Significant differences were found for the variables 'work situation' and 'MAST'.

Work situation. Table IV shows that both the unemployed and the industrially disabled scored higher on sedative/tranquilizer use. The differences were highly significant. If they take drugs, drunken drivers in a disturbed work situation make a particularly higher use of sedatives/tranquilizers.

MAST-score. The MAST revealed a decrease in sedative/tranquilizer use for scores in the 5-8 point range (Table V).

A score of ≥9 points shows a very high percentage of sedative/tranquilizer use. The differences are highly significant.

3.5 Combined use and traffic safety

It remains to be considered whether impairment in drivers using
drugs in combination with alcohol is greater than in drivers using alcohol alone.

A discriminant analysis is being made to examine the impact of combined use on traffic safety. The findings will be presented in a separate publication.

I cannot go into this important aspect to any depth here. However, I can report that there is no indication that the use of alcohol in combination with drugs impairs drivers' ability to any considerably greater extent than does the use of alcohol alone.

4. CONCLUSION

My observations concerning the use of alcohol in combination with drugs can be summarized as follows.

There has been a great increase in the last few years in the use of alcohol in combination with drugs among drunken drivers. Also, it can be assumed that drunken drivers, if they use drugs in addition to alcohol, take considerably more sedative/tranquilizers than the average driver.

Comparing the 'alcohol alone users' with the 'combined users' the latter stand out on a number of points (more women, older, higher BAC, more day-time drinkers, higher MAST score and a more disturbed work situation).

A comparison between two combined use groups (the sedative/tranquilizer group and the other drugs group), based on the MAST and the work situation, showed that the sedative/tranquilizer group clearly has the most problems.

One of the conclusions reached by Havard at our 7th International Conference was that more should be done to combat drunken driving from the public health point of view.10)

I fully subscribe to this conclusion and hope that my study has demonstrated that the use of drugs in combination with alcohol by the drinking driver is clearly a public health problem.
References

1) A. Hogervorst, et. al., Konsumptieverandering in maatschappelijk Perspektief, Vakgroep Planning en Beleid Sociologisch Instituut Rijksuniversiteit Leiden, Wetenschappelijke Raad voor het Regerings-beleid, 1979, p. 53;
2) Ibid., p. 92;
3) R. E. Alssop, Alcohol and Road Accidents, A Discussion of the Grand Rapids Study, Harmondsworth, Road Research Laboratory, p.40;
5) Ibid., p. 25;
6) D. van Ooijen, The Combined Use of Alcohol and Medicine by DWI-drivers, (still to be published)
8) Van Ooijen, "Driving under the influence of alcohol and the combined use of medicine", p.p. 22-26;
FIGURE I. CLASSIFICATION OF THE DRUGS TAKEN IN COMBINATION WITH ALCOHOL.

SEDATIVES / TRANQUILIZERS
ANTIDEPRESSANTS
ANTIEMETICS
ANTIHISTAMINES

ANTIHYPERTENSIVES
ANTIMIGRAINE DRUGS
ANALGETICS / ANTIPYRETICS

OTHER DRUGS

<table>
<thead>
<tr>
<th>TIME OF THE DAY</th>
<th>ALCOHOL ALONE</th>
<th>ALCOHOL IN COMBINATION WITH DRUGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAYTIME (06.01-18.00 HRS)</td>
<td>72.8</td>
<td>27.2</td>
</tr>
<tr>
<td>EVENING (18.01-24.00 HRS)</td>
<td>77.8</td>
<td>22.2</td>
</tr>
<tr>
<td>NIGHTTIME (00.01-06.00 HRS)</td>
<td>81.7</td>
<td>18.3</td>
</tr>
</tbody>
</table>

\[ x^2 = 6.74 \quad \text{DF} = 2 \quad p < .05 \]

TABLE II. WORK SITUATION AND THE DIFFERENCE BETWEEN THOSE WHO DID AND THOSE WHO DID NOT USE DRUGS IN COMBINATION WITH ALCOHOL (N = 1167).

<table>
<thead>
<tr>
<th>WORK SITUATION</th>
<th>EMPLOYED</th>
<th>UNEMPLOYED</th>
<th>DISABLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALCOHOL ALONE</td>
<td>81.8</td>
<td>77.5</td>
<td>48.2</td>
</tr>
<tr>
<td>ALCOHOL IN COMBINATION WITH DRUGS</td>
<td>18.2</td>
<td>22.5</td>
<td>51.8</td>
</tr>
</tbody>
</table>

\[ x^2 = 36.50 \quad \text{DF} = 2 \quad p < .0001 \]
### TABLE III. MAST - SCORE AND THE DIFFERENCE BETWEEN THOSE WHO DID AND THOSE WHO DID NOT USE DRUGS IN COMBINATION WITH ALCOHOL (N = 1178).

<table>
<thead>
<tr>
<th>MAST - SCORE (POINTS)</th>
<th>0</th>
<th>2-4</th>
<th>5-8</th>
<th>≥ 9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALCOHOL ALONE</strong></td>
<td>82.1</td>
<td>80.5</td>
<td>74.2</td>
<td>61.9</td>
</tr>
<tr>
<td><strong>ALCOHOL IN COMBINATION WITH DRUGS</strong></td>
<td>17.9</td>
<td>19.5</td>
<td>25.8</td>
<td>38.1</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 16.01 \quad DF = 3 \quad p < 0.005 \]

### TABLE IV. WORK SITUATION AND THE KIND OF DRUGS USED IN COMBINATION WITH ALCOHOL (N = 231).

<table>
<thead>
<tr>
<th>WORK SITUATION</th>
<th>EMPLOYED</th>
<th>UNEMPLOYED</th>
<th>INDUSTRIALLY DISABLED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALL OTHER DRUGS</strong></td>
<td>58.5</td>
<td>24.1</td>
<td>23.1</td>
</tr>
<tr>
<td><strong>SEDATIVES/TRANQUILIZERS</strong></td>
<td>41.5</td>
<td>75.7</td>
<td>76.9</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 22.61 \quad DF = 2 \quad p < .001 \]
TABLE V. MAST - SCORE AND THE KIND OF DRUGS USED IN COMBINATION WITH ALCOHOL (N = 233).

<table>
<thead>
<tr>
<th>MAST - SCORE (POINTS)</th>
<th>0</th>
<th>2-4</th>
<th>5-8</th>
<th>≥ 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL OTHER DRUGS</td>
<td>63.2</td>
<td>44.0</td>
<td>63.6</td>
<td>20.8</td>
</tr>
<tr>
<td>SEDATIVES/ TR' LIZERS</td>
<td>36.8</td>
<td>56.0</td>
<td>36.4</td>
<td>79.2</td>
</tr>
</tbody>
</table>

\[ x^2 = 17.28 \quad DF = 3 \quad p \leq .001 \]