Alcohol-Related Traffic Offences Among Elderly Persons Over the Age of 60: Comparison Between a Provincial and a Metropolitan Area in Germany

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Abstract
This study gives a survey on the characteristics of drunken driving in elderly persons (≥ 60 years) compared with younger offenders (< 60 years). It is based on the evaluation of the alcohol data banks of two German university institutes of forensic medicine in the 10-year-interval from 1991 to 2000. The proportion of elderly drunken drivers is still relatively small, but has increased continuously. Senior citizens showed lower average blood alcohol concentrations, but revealed stronger influence by alcohol and were relatively over-represented in various types of accidents. The development in a provincial and a metropolitan area of Germany was comparable.

Introduction
The proportion of elderly persons being 60 years and older is known to increase permanently in the population of industrial countries (1). At the same time the demands and wishes of this age group are changing concerning mobility and active life style. This includes the participation in traffic, so that car driving under the influence of alcohol could have gained in importance as well. Most literature reports concentrate on the analysis of (fatal) accidents (2-5). Aim of our study was to use the data acquired by blood testing on ethanol and to investigate the alcohol-related traffic delinquency of the elderly age group by drawing a comparison between two states of Germany with different structures: the provincial to urban region of Saarland (SL) in south-west Germany with about 1.1 million inhabitants and the metropolitan area of the Hansestadt Hamburg (HH) with approximately 1.7 million inhabitants.

Methods
The alcohol data banks at the university institutes of forensic medicine of both regions were evaluated for the 10-year-interval from 1991 to 2000. The databases comprised 1828 blood alcohol tests of elderly persons (age ≥ 60) in Saarland (of a total of 40,573 samples: 4.5 %) and 1638 tested elderly individuals in Hamburg (of a total of 55,642 samples: 2.9 %). All blood samples were ordered by the authorities (police) within the scope of either conspicuous driving behaviour or routine controls.
The following main parameters were recorded: age, gender, development over the 10-year-interval, blood alcohol concentration (BAC) in promille (g/kg), degree of alcoholic influence at the medical examination, weekday and time of incident, type of alcohol-related traffic offence, in particular frequency of accidents, hit-and-run-offences and drinking after the incident, frequency of intake of medicaments and pre-existing diseases.

For each parameter, persons aging at least 60 years („senior citizens“) were compared with drunken people under the age of 60. Statistical evaluation was performed by means of the programme SPSS and chi-square test.

**Results and Discussion**

The proportion of elderly persons over the age of 60 among all drunken traffic offenders showed a clear and statistically significant increase in the 10-year-interval investigated: from 3 % to 6.5 % in Saarland (SL) and from 1.8 % to 5 % in Hamburg (HH). This relatively continuous rise was mainly caused by the rapidly growing part of younger senior citizens from 60 to 69 years. The mean percentages of all old people in the total period were 4.5 % (SL) and 2.9 % (HH), respectively (Fig. 1).

![Fig. 1: Proportion of elderly persons (≥ 60 years) among all drunken traffic offenders in the period from 1991 to 2000.](image)

Among all drunken traffic offenders over the age of 60 the proportion of females amounted to 6.0 % (SL) and 9.3 % (HH). The absolute numbers of alcoholized and elderly women were small and revealed greater variations over the years. Therefore, a clear tendency or increase could not be observed (Fig. 2). The percentages of male senior offenders among all males were usually greater than the percentages of female senior offenders among all females.
Blood alcohol concentration (BAC): The average BAC amounted to 1.53‰ in senior people and 1.57‰ in younger offenders (SL). In accordance with Holubowycz (4), BAC decreased with increasing age and was lowest in persons over the age of 80. Senior citizens were less represented with BAC over 2‰ (Fig. 3). This was even more appropriate for the older senior citizens. In so far there was no indication of an excessive consumption of alcohol or a higher share of alcoholics in elderly persons. However, this observation was only significant for the Saarland, not for Hamburg.

Fig. 2: Proportion of females among all drunken traffic offenders over the age of 60, period from 1991 to 2000.

Fig. 3: Blood alcohol concentration.

Degree of alcoholization: In the medical examination, the degree of impairment by alcohol was considered to be stronger in elderly persons than in younger people - even in same BAC
classes (Fig. 4). This observation could be caused by the expectedly higher proportions of senior citizens with pre-existing diseases and intake of medicaments (6).

**Fig. 4:** Degree of alcoholic influence at the medical examination.

**Temporal circumstances of incidents:** Senior people dominated on working days, in particular from Monday to Thursday. Young offenders were conspicuous on the weekends. The time of the incidents differed significantly: drunken driving of the elderly was mainly detected from 12-24 h (Fig. 5), what is also known from literature (2, 3). Besides, senior citizens revealed higher representation during the winter months from January to March (only Saarland).
**Fig. 5**: Temporal circumstances of the incident.

Involvement in alcohol-related accidents: Based on the total number of blood samples, senior drivers over 60 were more frequently involved in drunken driving with accident, accidents with material damage and personal injury, accidents with hit-and-run offences and accidents with killed persons. Some of these differences were statistically significant (Fig. 6). This higher risk potential was mainly caused by the older seniors over 70. The claim of having drunk the alcohol after the incident was found more frequently in elderly people, in particular those between 70 and 79 years of age (Fig. 7).
Fig. 6: Involvement in alcohol-related accidents.

Diseases and medicaments: As it could be expected (3, 5), elderly persons exhibited significantly higher percentages of pre-existing diseases and intake-rates of medicaments (Fig. 7).

Fig. 7: Medicaments, diseases and drinking after the incident.

In summary, the study underlines the increasing importance of elderly drivers concerning traffic offences under the influence of alcohol. The essential trends during the last decade were comparable in two structurally different regions, a provincial and a metropolitan area in Germany. Differences between Hamburg and Saarland were only observed in some respects and then mostly in a rather tendentious way. Despite the increasing importance of the senior citizens with regard to their participation in alcohol-related offences, it must be finally stated, that this group of the population is still under-represented and there is not (yet) an evidence of an outstanding problem „alcohol and driving“ in the elderly.

References

