



Senior driving under the influence A five-year retrospective study of alcoholized road-users aged 70 and over



Benjamin Kirsch, Christoph G. Birngruber*, Reinhard Dettmeyer

Institute of Legal Medicine at Justus-Liebig-University, Frankfurter Straße 58, 35392 Giessen, Germany

ARTICLE INFO

Article history:

Received 31 January 2017

Received in revised form 29 March 2017

Accepted 2 May 2017

Available online 10 May 2017

Keywords:

Alcohol
Traffic
Senior
Driving suitability
Medical examination

ABSTRACT

The demographic development in Germany shows a steady increase to senior citizens. The driving suitability of older road-users is of large social and political concern, because awareness and reactivity can be influenced by age-related diseases and potential medication, particularly in combination with the consumption of alcohol.

This study provides an overview of senior road-users under the influence of alcohol. Therefore, 404 cases of drunken-driving by road-users aged 70 and over within the purview of the Institute of Legal Medicine at Justus-Liebig-University, Giessen, from the years 2009–2013 were evaluated in retrospect.

The vast majority of the drivers were male (88.4% of the cases). Distribution of the blood alcohol concentrations were almost equally in male and female drivers with 62.8% of all cases showing a blood alcohol concentration (BAC) of more than 1.1‰ and 10.9% a BAC of more than 2.0‰. In 48.5% of the cases, drunk driving was associated with an accident. 54.5% of the drivers stated suffering from at least one disease and 60% admitted a regular medication or an intake prior to the incident.

Moreover, the collected data includes aspects such as the kind of traffic participation as well as neurological and physiological deficits of the road-users. If accidents were caused by drunk driving, the external circumstances and consequences of these accidents were analyzed, too. The evaluation revealed, that the standard medical examination protocol proved to be improbable to cover polypharmacy and multimorbidity of older alcoholized drivers. So, an evaluation and adaptation of the common medical examination protocol must be considered.

© 2017 Elsevier B.V. All rights reserved.

1. Introduction

In recent years, demographic trends in the Federal Republic of Germany led to a steady increase in the proportion of seniors among the population. According to the Federal Statistical Office, in 2013 16% of the German citizens were aged 70 years or older. Looking at current calculations, this share is expected to increase to 20% by the year 2030 [1]; therefore, also the share of the older road-users is steadily growing. In this respect, there is a large public interest in the driving suitability of elderly people, since perception and responsiveness can be influenced by an age-related increase of morbidity. In 2007 the Higher Regional Court of Celle, Germany, decided, that the high age of a road-user alone, even in connection with major driving errors, does not justify the

conclusion of physical deficiencies affecting driving safety [2]. Pottgießer et al. concluded similarly in 2012, when they said, that not the age alone but the individual combination of age-related, physical restrictions and possibly existing medication has evident influence on the driving safety [3]. However, if the driving fitness is affected by any kind of disease, such as unstable cardio-vascular disorders or diabetes, German law demands a reevaluation of the driving suitability [4]. Kaiser discussed the requirements for road safety programs for senior drivers in 2003. He proclaimed, there was a complex interaction of degenerative processes on one hand and compensation mechanisms, learned through years of experience, on the other hand. So, the need for assistance and problem management must be determined for each elderly traffic participant individually [5]. In 2016, Germann et al. compared different compensation strategies of elderly road-users. They concluded, that an individual amount of self-awareness helps to identify subjective limitations of driving skills. Similar to the reports mentioned above, high age alone was not considered a risk [6]. Currently developed driver assistance systems can possibly be

* Corresponding author.

E-mail address: Christoph.Birngruber@forens.med.uni-giessen.de (C.G. Birngruber).

adapted specifically to the needs and deficits of the elderly drivers [7]. As Rudisill et al. discussed in 2016, the influence of alcohol on driving ability deserves a higher attention in the age group of the elderly, considering the influence of physical constitution and possibly existing medication on alcohol tolerance [8]. Alcohol consumption in higher ages is not a rare phenomenon as Du et al. showed in 2008, when they analyzed a collective of 1605 elderly German adults and showed a last week prevalence of 47.3% for alcohol consumption as well as 15.1% for risky drinking behavior [9]. So, a possible combination of high age and alcohol seems to be a risk to traffic safety, that should not be underestimated. Since data on that matter is scarcely to be found in literature, this work provides an overview of alcoholized elderly road-users, their impairments, and the consequences of drunken driving in high age. Additionally, we evaluate the current medical examination and check, if it captures the impairments of senior drunken drivers sufficiently.

2. Material and methods

In the years 2009–2013, 26,395 blood alcohol tests had been analyzed at the Institute of Legal Medicine at Justus-Liebig-University, Giessen. Retrospectively, the data on blood alcohol tests of persons aged >70 years were looked up in the digital archive of the institute using Microsoft Access[®]. Beforehand, study design and data collection were approved by the ethics committee of the medical faculty at Justus-Liebig-University. Following the acquisition, the data was anonymized for further analysis, making it impossible to trace back information to a certain person. In 404 of these cases, blood alcohol tests were conducted in a drunkenness-associated event in road traffic.

In addition to that, police reports and medical examination protocols of this collective were evaluated to gain insight into the circumstances of the drunkenness and the condition of the alcoholic user. Moreover, an insight into the corresponding files of the respective public prosecutor's office took place. These files provided information about the legal consequences as well as the nature and implications of traffic accidents.

The analysis of the data and the graphics shown in this article were created with Microsoft Excel[®].

3. Results

In the analyzed collective, the gender comparison shows a clearly unequal weighting with 47 female versus 357 male traffic

participants in the age of 70 and over. Men and women, however, distribute similar by blood alcohol concentrations (BAC) (Fig. 1).

25.5% of the women and 27.7% of the men show a BAC of between 0.5 and 1.1‰, which would be a legal offence according to § 24a of the German Road Traffic Law (StVG), provided, that no additional change of behavior had occurred. Whereas 70.2% of the women and 61.9% of the men showed a BAC above the 1.1‰ limit at the time of blood collection. Post-offence drinking aside, this level of BAC complies with the criminal offence mentioned in § 316 of the German Penal Code (StGB) [10].

The investigated cases were divided into 171 traffic offences, 196 traffic accidents and 37 contraventions. Drunken driving was associated with an accident in 48.5% of the cases.

In the 404 cases, 375 police reports and medical examination protocols were available for further research at the time of data collection.

A detailed look at the distribution of the BAC by the road-users' age at the time of the blood sampling shows, that most of the examined individuals aged 70–74 had a BAC of between 1.40‰ and 1.69‰. The peak of the 75–79 age group can be located at between 1.10‰ and 1.39‰, while the persons aged 80 and over seem evenly spread in the per thousand range below 2.0‰ (Fig. 2).

The evaluation of the medical examination protocols showed, that during the motor coordination tests, 144 disorders in tandem gait and 164 failed sudden turn-arounds were documented. Dysmetria could be diagnosed in 144 cases with the finger-to-finger-test and in 124 cases with the finger-to-nose-test. 89 persons showed a coarse post rotatory nystagmus lasting at least five seconds. This nystagmus test was not performed in 57% of the examinations, while it was stated explicitly in 61 of these cases, that the reason for not performing this test was a high risk of falling due to an impaired motor system. According to the respective examiner, said impairment based on a gait disorder suspected to be age-related (Fig. 3).

A further aspect of the medical examination protocol was the question regarding a regular medication intake. 60% of the examined persons admitted a regular medication or at least a single intake prior to the time, the blood sample was taken. 27% declined taking any medication and 13% denied a statement.

220 examined persons declared suffering from at least one acute, chronic, or pre-existing disease. A detailed look at the distribution of the different diseases shows, that most of them were illnesses affecting the cardio-vascular system like arterial hypertension or coronary artery disease followed by metabolic disorders such as diabetes or dyslipidemia. Degenerative

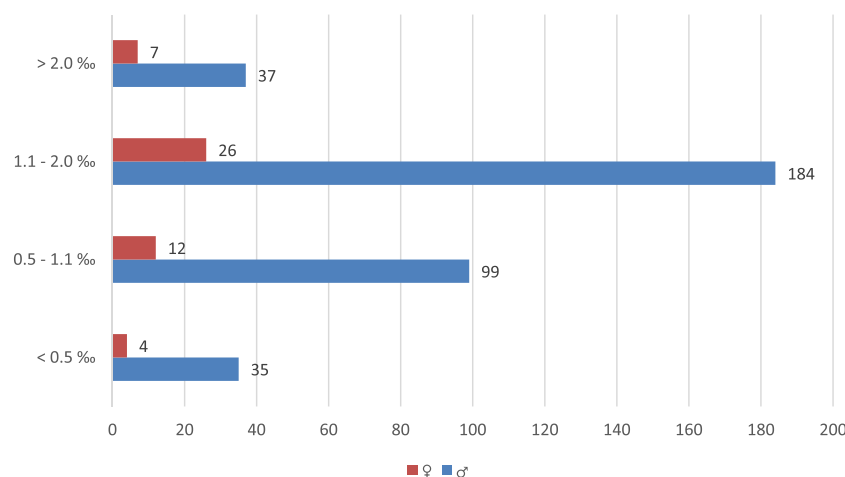


Fig. 1. Distribution of BAC by sex in the case of road users aged >70 years at the time of blood collection (n=404).

Download English Version:

<https://daneshyari.com/en/article/4760246>

Download Persian Version:

<https://daneshyari.com/article/4760246>

[Daneshyari.com](https://daneshyari.com)