VISUAL ACUITY OF DRIVERS VERSUS NON-DRIVERS AGED OVER 55 YEARS DETERMINED UNDER CONDITIONS OF HABITUAL CORRECTION

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INTRODUCTION

Driving is a complex task in which processing of visual information is extremely important and requires good visual sensorial function, as well as a capacity for responding adequately. Limitations can produce changes in an individual’s driving habits, such as avoiding difficult traffic situations, not driving at night, and even avoiding driving altogether (Ball et al. 1998; Stutts 1998; Gilhotra et al. 2001; West et al. 2003; Satariano et al. 2004).

METHODS

Sample

In a retrospective study, we examined the visual skills of a random sample of 2449 healthy adult subjects aged 55 – 89 years. 62.60% of the subjects were drivers (86.56% men and 13.44% women).

Materials

The subjects’ visual skills were assessed by determining monocular distance VA under photopic and mesopic illumination conditions. To avoid bias between the eyes of the same subject, only the VA of the right eye was included, since the difference between eyes is not usually significant (Pinto 2008).

RESULTS

Table 2 shows the distance VA results obtained with the subjects’ habitual correction under both photopic and mesopic conditions by age range. The mean decical photopic VA for the whole sample was 0.63±0.25 (95% confidence interval: CI: 0.61 - 0.64). The overall mean decical mesopic VA was 0.26±0.10 (95% CI: 0.25 - 0.26).

Table 1: Mean habitual distance visual acuity and its confidence interval (CI) at 95% for photopic (PVA) and mesopic (MVA) conditions and the standard deviation (SD).

The mean VA values for each age range obtained by other authors Elliott et al. (1995), Rubín et al. (1997), Haegerstrom-Portnoy et al. (1999), Bergman & Sjostrand (2002), and Lott et al. (2005) are shown in Table 3.

Table 2: Differences between genders in photopic and mesopic VA among drivers and non-drivers.

Monova was estimated by reducing the best binocular VA by 20% to 30% to obtain an approximate value for each age range.

VAs were recorded for the whole sample in five-year age intervals divided into drivers and non-drivers in both photopic and mesopic conditions, and the differences between the two subject groups determined. In all cases, we provide the p value, which indicates whether there is a significant difference between drivers and non-drivers or not. Figures 9a and 9b illustrate this variation. The mean decical photopic VA for drivers was 0.67 ± 0.25 (95% CI: 0.63 - 0.68) and 0.62 ± 0.26 (95% CI: 0.59 - 0.64) for non-drivers. The mean decical mesopic VA for drivers was 0.26 ± 0.11 (95% CI: 0.25 - 0.27), and 0.25 ± 0.11 (95% CI: 0.24 - 0.25) for non-drivers.

CONCLUSIONS

Using their habitual corrective lenses, about 35% of the participants in this study showed a lower VA than those reported for others in their age range. This visual impairment could be easily avoided through the use of appropriate correction. The drivers’ habitual VA was about 11% better than that of non-drivers in each age range and differences were significant for both photopic and mesopic VA.

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REFERENCES


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