Driver Performance and Accident Risk of Patients with ADHD

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The paper presents the results of study within the European Immortal project on Assessment of fitness to drive amongst patients with learning difficulties.

Undoubtedly, mental status and cognitive skills are important requirements for driving. Yet scientific research has not been able to point out a causal relationship between such parameters and safety of driving for drivers with Attention Deficit Hyperactivity Disorder (ADHD). The main objective of the study presented here has been to explore how specific dysfunction of ADHD is associated to driver performance and accident risk ADHD Study.

The principal characteristics of ADHD are inattention, hyperactivity, and impulsivity. The skills needed for safe driving are several; the ability to focus on the road, attention to detail, and sustained attention are often the areas which all patients with ADHD have difficulty. Becoming distracted by the passengers in the car, by the radio, or something outside the vehicle for even just a moment, can cause an accident.

The present study is the first Norwegian study on ADHD and car driving. On an international level there are few studies on ADHD and fitness to drive. In the present ADHD study, seventeen adults with ADHD participated and completed the tests without side effects. Stimulant medication was used in a double blinded design to ensure evaluation under both conditions. A high end-simulator was used as an instrument to investigate the driving skills of patients with ADHD in comparison to a control group and in terms of influence of adherent medication (Ritalin) for the diagnosis. Subjective workload was measured in the study, using the NASA RTLX.

When data from the driving simulator were analysed, the most striking finding is the similarities between the ADHD group and the reference group. There are small differences with regard to distance to vehicle in front or shift in position in the lane. These differences indicate that persons in the ADHD group show better driving skills. However, the differences are small and not considered to be of practical significance.

The data in this study compared a reference group of drivers with patients in medicated or non-medicated condition during a navigation task in a high-end simulator. The results indicate that there are not distinct and clear group differences, either between reference drivers and patients with active medication or compared to patients with placebo treatment.

Separating the ADHD drivers into two groups, denoting them as fast or slow drivers, some interesting results on subgroups and effects of medication surfaced. A correlation analysis suggest that the cluster label follows the medical condition, that is, subjects tend to be e.g. fast drivers when medicated, then become labelled slow when the placebo treatment condition. A possible interpretation of this pattern can be that the subject compensates their medical condition in accordance to their driving. This may be the case for fast drivers when driving without medication: They slow down in the placebo treatment in order to get everything right. Concerning the slow drivers, there may be another mechanism at work. This change of driving performance (from slow to fast) may possibly be a more traditional ADHD pattern, in which placebo treatment suffers the impulse control and thus results in faster driving. The simulator performance showed no clear differences between the ADHD group and the reference group. At the same time we know that persons with ADHD have more car accidents and make more traffic violations. We also see that the selected ADHD group in this study has more accident involvement than the reference group. The most probable reason for our findings is the test situation in the simulator. When there are guiding clues and fairly interesting tasks, often persons with ADHD can perform very well, even on vigilance tests. Our data indicate that the participants with ADHD were quite cautious and very attentive during the tests.

This ADHD study shows that individual factors may play a role in fitness to drive and that there may be individual response to medication.

Keywords: ADHD, Driver performance, Accident risk