How drivers with brain pathologies deal with in-vehicle distraction, what are their emotions and driving habits: a questionnaire assessment

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BACKGROUND
Driving is a complex task, which requires possessing cognitive, motor and visual skills and it is necessary for the drivers to have adequate motor strength, speed and coordination. The normal aging process leads to declines in these motor and cognitive skills and when combined with a cerebral disease, it may significantly impair the person’s driving performance.

OBJECTIVES AND METHODOLOGY

• Analyze the self-reported driving behaviour of older drivers with brain pathologies, through an extensive questionnaire assessment.
• Several brain pathologies examined: include Alzheimer’s disease (AD), Parkinson’s disease (PD), Mild Cognitive Impairment (MCI) and some other cognitive disorders (PCA, FTD, RBD).
• 2 groups to compare: “healthy controls” vs “patients”.

The questionnaire that was developed and used in order to compare patients with healthy controls, includes 24 questions about:
• their usual driving routines (driving and alcohol use, seat belt use etc.).
• their self-assessment about their driving frequency and their driving performance.
• their possible avoidance of driving.
• their opinion about in-vehicle driver distraction (conversation with passenger or mobile phone use) and how they deal with it.
• their emotions while driving.

SAMPLE SCHEME
• 137 drivers have participated in our research project.
• 44 are healthy individuals (63.1y.o ±7.1)
• 93 have some brain pathology (68.7y.o ±8.7)
• They are all of similar demographic characteristics (similar level of education and similar driving experience).

ANALYSIS METHOD
• All answers from all participants were analyzed through Kruskal-Wallis One-Way Analysis of Variance (nonparametric tests algorithms) techniques.
• Kruskal-Wallis test is a nonparametric test, and it assesses for significant differences on a dependent variable by a grouping independent variable.

RESULTS – CONCLUSIONS
• 24 questions were analyzed through Kruskal-Wallis one-way ANOVA techniques and in 14 of them there were statistically significant differences between the two examined groups’ answers.
• Q2-3: Patients self-report that they are likely to avoid using their vehicle because they are afraid of their driving abilities which they admit that have been deteriorated over the years.
• Q4-7: Patients believe that conversing with passenger and using handheld mobile phone while driving are dangerous and they avoid to do so.
• Q8-10: Patients self-report that when conversing with passenger while driving, they speed down, keep larger headways, and drive to the “right” border of the road.
• Q11-14: Patients and controls have the same behaviour when using the mobile phone while driving (Q12: 50% of patients claim they stop the vehicle in order to use the mobile phone).
• Q15-16,19: All participants claim they are quite calm and concentrated when driving.
• Q17: Patients use the seat belt significantly less times than controls.
• Q18: Patients never drive under the influence of alcohol.
• Q20-24: Overall, patients claim they don’t have accidents and don’t violate the Traffic Code.

Drivers with brain pathologies are aware of their deterioration in their driving performance, and thus they are either very conservative while driving, or even they avoid doing so.

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