Driving Practices in professional drivers with dementia

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Driving in old age

• is associated with health and independence.

• With the increasing number of the elderly, their safe transportation becomes a worldwide problem.

• In the U.S.A. 31 million elderly people above the age of 65 have received a driving license

• (National Service of Road Safety, 2009).
The elderly people’s driving ability

• is inherently associated with their identity and wish to maintain their independence.

• The loss of their driving license leads to a ‘career of dependence’,

• in which the individual should rely on others for their transport.
For the individuals with AD

• the loss of driving privileges could be abrupt and traumatic.

• The former drivers who lose their means of transport feel isolated and face deep distress.

• A better understanding of the dynamic of the loss of driving should be developed,

• for the change brought about in the way of transport and adjustment of the elderly.
Driving and transport

- belong to the category of the Instrumental Activities of Daily Living (IADL),
- and constitute a sub-category of the range of transport functions,
- through public and private means,

The role of occupational therapy

• could facilitate the participation of the elderly in the community during their transport.

• Driving is a Complex Task demanding the healthy function of many cognitive and functional abilities,

• if it is to be conducted without any risks both for the driver and others

• (Stav, 2014).
The ethical issues related to AD and driving

- turn to the principle of non-harmfulness and concern driving with safety.

- However, some drivers maintain their driving ability for a longer period,

- which is considered to be related to their former profession, if for instance they were professional drivers.

  (Gauthier et al, 2013).
Professional drivers

- The driving ability of individuals with AD and MCI who were professional drivers has not been investigated yet.
Material and Method

• The participants were outpatients with cognitive disorders at the Outpatient Clinic for Memory and Dementia of the 3rd Neurological Clinic in Aristotle University of Thessaloniki.

• The participants were diagnosed with AD, based on NINCDS-ARDRA criteria,

• and with MCI according to Petersen and Winblad’s criteria \(^2,\ 3\) by a group of specialized health professionals.
639 individuals from December, 2012 to September, 2016.

- 153 individuals over 65 years of age with cognitive impairment were found,
- from whom 55 were diagnosed with AD, 44 with MCI and 54 with HC.
- From the 153 participants, 43 had a professional driving license and 110 not.
- Participants of a younger age were excluded as well as those who suffered from dementia of a different etiology (Vascular dementia, Parkinson’s disease, etc).
• A neurological examination,

• neuropsychological,

• and neuropsychiatric evaluations,

• Neuroimaging,

• and blood tests,

• were conducted along with the acquisition of the medical/social history to support the diagnosis of AD and MCI.
All participants were examined with a battery of neuropsychological tests:

- Mini Mental State Examination – (MMSE),
- Clock-drawing Test,
- Functional Rating Scale for Symptoms of Dementia (FRSSD),
- Geriatric Depression Scale (GDS),
- Hamilton’s Depression Rating Scale (HDRS),
- and Functional-Cognitive Assessment Scale (FUCAS).

All these batteries were used as routine for AD and MCI staging. The healthy elderly were also examined with the same neuropsychological battery.
Two questionnaires

- were combined by the research team to produce a third one which was distributed to individuals with cognitive impairment.

- The first one was the Driving Questionnaire for patients with dementia (Tsantali, Tsolaki, and Tsamaslidis, 2006).

- The second questionnaire was the Aged People Integration, mobility, safety and quality of Live Enhancement through Living (AGILE),

- which was adjusted for use for patients with dementia

- (Widlroither et al, 2003).
The new questionnaire includes 33 questions with 52 sub-questions.

• More specifically, we ask information about:

• Personal information,

• Opinions about age-related training and assessment,

• Physical & mental fitness,

• Driving habits.
Statistics

Data analysis included descriptive statistics and univariate analysis.

- Shapiro-Wilk test
- Chi-squared test
- Independent samples t-test or the Mann-Whitney U test
- P-values less than 0.05

The statistical analysis was performed with the statistical software SPSS v. 21.0.
Results
Demographic Characteristics

• 153 individuals were found of whom

• 55 (35.9%) were diagnosed with AD,

• 44 (28.8%) with MCI,

• and 54 (35.3%) were healthy elderly individuals (HC) as a control group.

• All participants were above 65 years of age.

• In total 119 (77.8%) men and 34 (22.2%) women were tested. In Greece there are very few women who drive at this age.
Their marital status is as a follows:

- 125 (81.7%) were married,
- 8 (5.2%) widowed,
- 2 (1.3%) single.
- Concerning their profession 143 (93.5%) were pensioners
- and 10 (6.5%) not.
Professional driving license

- Of the 153 participants 43 (28.1%) answered Yes to the question whether they had a professional driving license,

- and 110 (71.9%) replied negatively.

- In all three diagnostic categories there are no women drivers with a professional license, HC (p=0.011), MCI (p=0.038) and AD (p=0.026).
<table>
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<th>Healthy Controls N(%)</th>
<th>MCI N(%)</th>
<th>NA N(%)</th>
<th>Σύνολο N(%)</th>
<th>p</th>
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<td></td>
<td>54 (35.3%)</td>
<td>44 (28.8%)</td>
<td>55 (35.9%)</td>
<td>153 (100%)</td>
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<td>«65-74»</td>
<td>30 (55.6%)</td>
<td>16 (36.4%)</td>
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<td>23 (42.6%)</td>
<td>25 (56.8%)</td>
<td>34 (61.8%)</td>
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<td>3 (6.8%)</td>
<td>4 (7.3%)</td>
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<td>38 (70.4%)</td>
<td>33 (75.0%)</td>
<td>48</td>
<td>119 (77.8%)</td>
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<td>16 (29.6%)</td>
<td>11 (25.0%)</td>
<td>7 (12.7%)</td>
<td>34 (22.2%)</td>
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<tr>
<td>No</td>
<td>42 (77.8%)</td>
<td>34 (77.3%)</td>
<td>34 (61.8%)</td>
<td>110 (71.9%)</td>
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<tr>
<td>Yes</td>
<td>12 (22.2%)</td>
<td>10 (22.7%)</td>
<td>21 (38.2%)</td>
<td>43 (28.1%)</td>
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</table>
Years of education

• The individuals in the healthy group have significantly more years of education compared to the rest (p=0.003).

• Also, the healthy non professional drivers have proportionally more years of training compared with the professional ones (p=0.012).

• Professional drivers have significantly fewer years of education (8.93±4.88) compared to the non-professional (11.77±5.26) (p=0.003).

• There is no significant difference in MMSE between professional and non-professional drivers (p=0.751).
Regarding driving habits

- In AD individuals, more non-professional drivers have not renewed their license in comparison with the professional ones (p=0.048).

- In MCI individuals, more non-professional drivers cover fewer kilometers in proportion with the professionals (p=0.029).

- Moreover, more professional drivers with AD would rent a car in comparison with the non-professionals with AD (p=0.009).

- In the MCI individuals non-professional drivers were not the main family drivers in proportion with the professionals (p=0.038).

- In the Healthy group more professionals regard that they drive as well as in the past than the non-professionals (p=0.008).
Physical & mental ability

- In the AD individuals more professional drivers believe that a test for the physical condition should be conducted in relation to the non-professionals (p=0.023).
Avoidance of Driving

• In the MCI and AD groups more non-professional drivers always avoid driving in unknown areas in proportion to the professionals, MCI (p=0.045) and AD (p=0.026).

• Moreover, in the AD group more non-professionals avoid driving while snowing in relation the professionals (p=0.034).
Conclusions

• Lack of research among professional drivers.

• Individuals with cognitive impairment and previous professional experience, behave better during driving compared with those without such experience.

• Need for further research.
Thank you very much!