Determined driving safety for palliative care patients: a literature review based on systematic principles

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Introduction

Driving a motor vehicle is a complex activity that requires different skills, such as physical abilities, proper judgment, perception and response time.[1] In the UK for the year ending June 2013, there were 185,540 reported road injuries, with 23,530 people being killed or seriously injured (Department of Transport 2013). When advising on driving safety, it is the duty of the healthcare professional to consider the patient’s illness itself, the symptoms burdens and medications that may influence their neuropsychological state.

In palliative care there is understandable concern about patients when it comes to driving. Not only can they have debilitating incurable illness and other comorbidities but their symptoms may be managed with opioid, neuropsychiatric and sedative medications.

There is already much published driving literature on patients with dementia, Parkinson’s, stroke, hepatic encephalopathy and traumatic brain injury.

Method

A literature search was undertaken based on systematic principles

This included

• Database searches
• Citation searching
• Grey literature
• Hand Searching
• Personal contact

Patients with cancer, cardiorespiratory disorders and neurological disorders were included.

Alosco et al’s study of heart failure patients showed significantly more simulated driving errors such as collisions, centerline crossings, and missed stop signs compared to controls. It also demonstrated that poorer performance on some neurocognitive tests correlated with behind the wheel performance such as executive function and attention.

The study by Orth et al demonstrated significantly more accidents than controls, but did not involve neurocognitive testing.

Neurodegenerative disorders

All of the six multiple sclerosis studies were observational. Three of them[4,7,8] used a behind the wheel assessment while the others employed a driving simulator.

On the behind the wheel assessments, in Schultheis’s study[4] 12 of 64 MS (19%) patients failed the behind the wheel assessment. Akimwuntan[4] found 10 of 44 (22%) to fail while 7 of 21 (33%) patients failed in Lincoln’s study[8].

In the simulated assessments, Kotterba[5] found an increase in accident rates and concentration faults. Dewosin[5] found no significant differences between MS patients and controls whereas Marcotte[5] found greater deviation in lane maintenance and poorer responsiveness on a simulated assessment in MS patients.

Results

The search captured 22,673 articles. An additional 92 articles were obtained from citation and reference list searching. Following removal of 5,750 duplicates, 17,015 articles were screened against the inclusion and exclusion criteria. 111 full text articles were examined after screening.

Nine articles met the inclusion criteria and were included in the review.

Cancer patients

The cancer study by Yuen et al[6] reported longer mean brake reaction times and steering variability however collision difference was not significant. Statistically significant correlations between neurocognitive tests and driving could not be determined due to the small heterogeneous sample size (n=10).

Cardiorespiratory disorders

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Aim

To provide an overview of the quality of literature available that would apply to the palliative care patient group, specifically in relation to behind-the-wheel or simulated driving performance.

Method cntd...

Table 1 – Breakdown of included articles based on diagnosis.

<table>
<thead>
<tr>
<th>Patient diagnosis</th>
<th>Number of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Sclerosis</td>
<td>6</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>1</td>
</tr>
<tr>
<td>COPD</td>
<td>1</td>
</tr>
<tr>
<td>Cancer</td>
<td>1</td>
</tr>
</tbody>
</table>

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Conclusion

This literature review based on systematic principles sought to find observational studies on behind the wheel or simulated driving performance for patients who would typically be known to palliative care services. Only nine articles were found after broadening the patient inclusion criteria to include non-malignant diagnoses. This reflects the paucity of studies which use this particular assessment method in these patient groups. There is a big need for more behind the wheel or simulated driving studies for patients with incurable life limiting illnesses to inform practice and policy.

References