The underdetection of cognitive impairment in nursing homes in the Dublin area. The need for on-going cognitive assessment

SIR—Cognitive impairment (CI) or dementia may now be a major concern of Irish nursing homes (NHs) [1]. In the USA and Europe, between one-half and two-thirds of NH residents are said to have dementia [2–8]. Whilst one should exercise caution in comparing NH populations in different countries, due to large differences existing between facilities, in general private [9], smaller [3] and urban facilities [3] have been shown to have a higher prevalence of residents with dementia.

Diagnosis has been called ‘the gateway for care’ [11]. Differential diagnosis is also the gateway to appropriate medical and drug treatment. Dementia with Lewy body (DLB) for example must be excluded before commencing anti-psychotic (AP) drugs. In residential care, diagnosis and staffs’ assessment of residents’ cognitive status is essential for optimal treatments [4, 10]. The absence of knowledge about residents’ memory and cognitive status may also seriously compromise care services and quality of life. Mild and moderate dementia are more frequently overlooked than severe [12]. Low expectations of cognitive functioning and the absence of challenging behaviours often hinder staffs’ recognition of dementia [4, 10]. One UK study showed that only 34% of residents classified on Mini-Mental State Examination (MMSE) as cognitively impaired were acknowledged by senior nursing staff as having dementia [10]. For those with a severe impairment, a higher number (46.4%) were recognised [10]. In a Danish study, key carer staff [4] correctly identified some 74% of the residents that had a dementia or other brain disorder.

Recent Irish research, based on the 2002 Census, estimated that there were some 14,764 people aged 65 and over living in NHs of whom 85% experienced a disability [13]. Of these, large numbers may have had CI or dementia since 58% had difficulties ‘learning, remembering and concentrating’. Regrettably in the Census, no direct question was asked about dementia or CI nor has any recent audit of Irish NHs been undertaken for dementia or CI since. This study was undertaken to address this gap in our understanding and to test a methodology for a future larger national survey of CI across NHs in Ireland.

Methods

Sampling of NHs

All general private and voluntary NHs belonging to the former Irish Health Service Executive East Coast Area (Dublin Mid-Leinster) were sampled. Three areas, namely 1, (Dun Laoiré), 2 (Dublin South East) and 10 (Wicklow) which represent the former East Coast Eastern Regional Health Authority provided the sampling frame. Four of the 53 NHs were randomly selected. The chance of a NH being sampled was directly proportional to its size.
Table 1. Cognitive status (as per MMSE assessment) of residents with and without a clinical diagnosis of dementia

<table>
<thead>
<tr>
<th>Cognitive status</th>
<th>Diagnosis (n = 32)</th>
<th>No diagnosis (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intact</td>
<td>3% (1)*</td>
<td>15% (10)</td>
</tr>
<tr>
<td>Mild</td>
<td>3% (1)</td>
<td>27% (19)</td>
</tr>
<tr>
<td>Moderate</td>
<td>31% (10)</td>
<td>25% (17)</td>
</tr>
<tr>
<td>Severe</td>
<td>63% (20)</td>
<td>32% (22)</td>
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</table>

*MoCA test classified this resident as MCI.

Sampling of residents

The total capacity of the four NHs was 187 beds, and at the time of study, 174 beds were occupied. A sample of 100 residents was randomly drawn, 25 from each NH. Over-sampling occurred at each facility to allow for refusals (please see Appendix 1 in the supplementary data available on the journal website at http://www.ageing.oxfordjournals.org). Only 18 residents or their next of kin refused participation. The MMSE was administered to all 100 residents.

Ethical considerations

Ethical approval was granted by Trinity College Dublin. Informed consent was obtained in all NHs, and proxy consent got for those residents known to lack capacity.

Instruments

The MMSE was used to assess CI [14]. When used for screening purposes, a cut score of 23/24 is conventionally used for detection of significant impairment. In contrast when the intention is to classify CI severity as was the case in this study, Folstein et al. recommendations were followed, i.e. normal cognitive function = 27–30, mild CI (MCI) = 21–26, moderate CI = 11–20 and severe CI = 0–10.

Residents who scored within the normal ranges (MMSE ≥ 27) were re-assessed using the Montreal Cognitive Assessment (MoCA). The MoCA test is a screening instrument for the detection of mild CI. It was developed to discriminate individuals between mild CI and normal cognitive function [15]. The MoCA test scores 0–30 points. Scores of 26 or above are considered normal. Where residents were classified on the MMSE as severely impaired (MMSE ≤ 10), a proxy appraisal (the Dementia Screening Scale, DSS) was completed [The DSS total score varies between 0 and 14 with higher scores indicating worse CI [8]]. Using a Likert scale (no impairment, mild, moderate and severe), Directors of Nursing (DONs) perception of resident’s cognitive status was also assessed.

Results

Mean age of residents was 85.1 (range, 63–101 years; SD = 7.97). Most were female (82%), single or widowed (44% and 42%) and well educated (52% with completed secondary or tertiary education). Average length of stay in NHs was 3.3 years (SD = 2.8). No statistical relationship was found between age (r = −0.165, n = 100, P > 0.05) or length of stay in the NHs (r = 0.173, n = 100, P > 0.05) and level of CI. Main reason for NH admission was medical/non-dementia (32%) such as immobility, falls, depression and other physical reasons. In about one quarter of cases (26%), the individual’s inability to live alone precipitated admission. Only 14% of admissions were due to dementia (please see Table Characteristics of the Residents in Appendix 2 in the supplementary data available on the journal website at http://www.ageing.oxfordjournals.org).

Prevalence of CI

Eleven participants scored 27 or above on the MMSE and therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact. Forty-two residents scored 10 or below on the MMSE and therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact. Forty-two residents therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact. Forty-two residents scored 10 or below on the MMSE and therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact. Forty-two residents scored 10 or below on the MMSE and therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact. Forty-two residents scored 10 or below on the MMSE and therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact. Forty-two residents scored 10 or below on the MMSE and therefore completed the MoCA of whom only three, when re-assessed, were cognitively intact.

Clinical diagnosis of dementia

One-third (32%) had a clinical diagnosis of dementia, and about one-third had a prior MMSE. Table 1 shows the cognitive status (MMSE) of residents with and without a clinical diagnosis. Virtually, all those with a clinical diagnosis (93.8%) were assessed as having a moderate or severe CI. One-third (32.4%) of those with no clinical diagnosis had a severe CI (MMSE ≤ 10), and a further 17.6% were moderately cognitively impaired (MMSE 20–11). More than three quarters (76.5%) of those without a clinical diagnosis had no prior MMSE.
**DONs' perceptions of CI**

DONs reported a CI prevalence rate of 77%. Severity of CI as assessed by DONs was, 23% were intact, 22% were mildly impaired, 21% were moderately impaired and 34% were severely impaired. Table 2 shows differences between DONs subjective perceptions of residents’ cognitive status (Likert scale) and MMSE assessment (Kappa = 0.33). In each NH, DONs underestimated the severity of CI. A total of 65% of residents that DONs deemed cognitively intact were assessed by the MMSE as having a CI. A further 59% classified as mildly impaired were assessed by the MMSE as moderate or severe, and a further 38% of those classified as moderately impaired were considered severely impaired using the MMSE. Further analysis revealed how DSS scores were associated with DONs classification of residents cognitive status ($U = 108, n = 42, P <0.05$).

**Discussion**

Our findings (MMSE) show that 89% of participants surveyed were cognitively impaired, of whom 42% were severely and 27% moderately impaired. These prevalence rates are higher than those reported elsewhere [2–8]. Whilst moderate to severe CI is not synonymous with dementia, and the MMSE can never be used as a diagnostic tool, these findings would suggest that within the NHs surveyed, there may have been a high degree of undetected dementia.

Our findings also show some discrepancy between DONs assessment of residents’ cognitive status and MMSE results. Data show that whilst DONs by and large competently identified people with a severe CI (85%), they had more difficulty accurately identifying other degrees of CI. In particular, they were very likely to underestimate the level of CI experienced by residents with no prior clinical diagnosis. Of course recognising CI does not necessarily translate into improved quality of care, and regular updated MMSE scores do not rule out the adverse effects of AP in cases of DLB, however, our findings suggest that a clinical diagnosis of dementia helped DONs to have a more accurate perception of residents’ cognitive status and that those without a diagnosis were more likely to be mis-identified.

This study has some limitations. Firstly, the sample is small and was drawn from only four Dublin-based NHs. Secondly, the study relied solely on cognitive and memory scales as screening tools, and functional capacity was not assessed. Thirdly, whilst the MMSE was best suited to the aims and objectives of the study, it is not a good instrument when residents are depressed, delirious, have other chronic or acute diseases such as Parkinson’s disease or pneumonia or have significant communication problems including aphasia.

**Conclusion**

Results from this study show how a large majority of the residents surveyed in this research had a CI of whom a number were likely to have undiagnosed dementia. More attention needs to be paid in long-term care to the careful recognition, diagnosis and follow-up of CI and dementia.

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**Key points**

- A very large number of participants in the surveyed NHs had a CI and in almost half of the cases, this impairment was severe.
- Very few participants had a clinical diagnosis of dementia.
- DONs in the surveyed NHs tended to underestimate the severity of the CI of the participants.
- More attention should be paid to the recognition, diagnosis and follow-up of the cognitive status of residents in long-term care.

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**Conflicts of interest**

The authors declare no conflicts of interest. This manuscript has been read and approved by all the authors.

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**Supplementary data**

Supplementary data mentioned in the text is available to subscribers at the journal website http://ageing.oxfordjournal.org.

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References


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Detection of delirium in the acute hospital

SIR—Delirium remains a common, serious and under-recognised problem affecting older hospitalised patients. Despite being associated with poor longer-term outcomes, including death and institutionalisation [1], delirium remains disproportionately ignored relative to impact [2], and poor recognition remains the greatest obstacle to improved care and research [3]. It is ‘missed’ in up to two-thirds of cases [1]. Under detection of delirium may occur for a number of reasons; symptoms are heterogeneous and transient [1], and diagnosis is subjective relying on clinical skills in the absence of a diagnostic ‘test’ [2].

There is conflicting data on whether correct diagnosis is associated with demographic factors (male gender and older age [4]) or ethnicity [5]. Poorer English and education may decrease detection [6]. ‘Hypoactive’ delirium [7] with its less dramatic presentation and psychiatric co-morbidity may impede correct diagnosis, possibly through incorrect attribution of a psychiatric diagnosis [8, 9].

There is little published UK data, and previous work is limited by small numbers and under-reporting of co-morbid conditions [1]. We aimed to identify the patient characteristics associated with a correct detection of delirium in older patients with unplanned acute medical admissions.

Methods

Subjects were recruited from a large north London general hospital (serving a primary care trust (PCT) population of almost 1.5 million) over 6 months (4th June 2007 to 4th December 2007). All patients aged over 70 with unplanned acute admission to the Medical Acute Admissions Unit (MAAU) were eligible. The MAAU takes all medical admissions direct from the accident emergency department and general practitioners (GPs), except those requiring urgent coronary artery procedures, acute stroke patients and those admitted to surgical specialties. Participants were excluded if they were admitted for <48 h or did not speak sufficient English for assessment with the Confusion Assessment Method (CAM) [10].

All patients were assessed within 72 h of admission by an old age psychiatrist or specialist registrar. Subjects were screened with the CAM which has high sensitivity and specificity for the detection of delirium and discriminates between delirium and dementia. It can be completed in <5 min and consists of nine operationalised criteria for delirium from the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) [10]. All assessors used the same standardised version that maximises sensitivity [11].

The primary outcome was the correct detection and documentation in nursing or medical notes of delirium by the medical team (compared to detection by the study team using the CAM) within the first 72 h of admission. Pseudonyms acceptable for delirium were ‘acute confusional state’, ‘acute confusion’ and ‘delirious’. ‘Confused’ and ‘disoriented’ were not accepted for diagnosis of delirium in the main analysis, although we subsequently conducted a sensitivity analysis, accepting more approximate terms as evidence of detection.

We then compared patients with detected and non-detected delirium in relation to a number of clinical and demographic characteristics (see Table 1). These included: demographics, whether the admitting team had attempted