

Cognitive screening instrument use in primary care: is it changing?



Practice points

- There is a discrepancy between observed versus expected frequency of dementia diagnosis in the UK, the 'dementia diagnosis gap', which might be addressed by the use of cognitive screening instruments (CSIs) in the primary care setting.
- In this study, around 30% of referral letters from primary care to a dedicated memory clinic mentioned use of a CSI, a rate that did not differ significantly from previous cohorts examined over the past decade.
- There was a significant increase in the proportion of primary care patients administered newer CSIs designed specifically for use in primary care (Six-Item Cognitive Impairment Test, General Practitioner Assessment of Cognition) compared with older scales like the Mini-Mental State Examination. This study suggests CSI use remains limited in primary care, with no evidence of reduction in the dementia diagnosis gap as yet.

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Aim: To measure the frequency of cognitive screening instrument (CSI) use in referrals from primary care to a dedicated secondary care cognitive function clinic. **Methods:** Over a 6-month period (July–December 2013), referral letters for consecutive patients referred from primary care ($n = 140$) were examined for mention of CSI use. **Results:** Although the total number of referrals from primary care increased compared with previous cohorts, there was no significant increase in the proportion (31.4%) administered a CSI before referral. However, newer CSIs specifically designed for use in primary care were used more frequently than previously. **Conclusion:** There is no evidence from this study that national dementia directives are reducing the observed versus expected dementia diagnosis gap.

Keywords: dementia • Dementia CQUIN • diagnosis • National Dementia Strategy • primary care • screening

Dementia continues to command a high public profile both nationally and internationally. In the UK, the Prime Minister's Challenge on Dementia of 2012 [1] sought to build on the National Dementia Strategy (NDS) of 2009 [2]. A key commitment in both of these documents was to increase dementia diagnosis rates, a necessity in view of the recognized dementia diagnosis gap, the discrepancy between the number of individuals with dementia in the population (as predicted on the basis of epidemiological

studies) and the number actually diagnosed (based on returns from primary care practitioners submitted as part of the requirements of the Quality and Outcomes Framework in general practice). Such comparisons have suggested that less than 50% of individuals with dementia in the UK have been given a diagnosis, although this rate does vary from region to region [3,4].

One strategy to improve dementia diagnosis rate was proposed in the Dementia Commissioning for Quality and Innovation (Dementia

CQUIN) document published under the auspices of the UK government in April 2012 [5]. Promoting a proactive approach to dementia diagnosis, it was recommended (with financial incentives) that all individuals aged 75 years or over presenting to primary care for whatever reason were to be asked a single screening question (“Have you been more forgetful in the past 12 months to the extent that it has significantly affected your life?”), which if answered in the affirmative should trigger a ‘Dementia Risk Assessment’. The precise details of this assessment were not specified [5], but it would seem likely that administration of some form of cognitive screening instrument (CSI) would form an integral part of any such assessment.

To our knowledge, there are relatively few published data on the frequency of CSI use in primary care, even though some instruments have been designed specifically for this purpose. A postal survey of three English primary care trusts claimed 79% use [6], whereas studies of patient referral letters from primary care to dedicated memory clinics have suggested much lower figures: an audit of referrals to an old age psychiatry service reported only 13.2% of referral letters contained Mini-Mental State Examination (MMSE) results [7], and in a neurology-led cognitive function clinic (CFC), only approximately 20–25% of letters had evidence of the use of any CSI, most usually the MMSE or the Abbreviated Mental Test Score (AMTS) [8,9]. Some NHS trusts within the CFC catchment area have now specified particular CSI as targets within Dementia CQUIN [10], but we are not aware of any operationalized national guidelines regarding CSI use.

The aim of the current study is to measure the frequency of CSI use reported in referrals from primary care to a dedicated neurology-led cognitive clinic in the second half of 2013, and to compare this with prospective cohorts previously reported from this clinic [8–10], both in terms of frequency of use and the specific CSI used.

Methods

As in previous studies [8–10], referral letters from primary care physicians to CFC were examined for explicit

information about the use of named CSI for patient assessment prior to referral. CFC is a neurology-led subspecialty clinic based in a regional neurosciences center in north-west England with a catchment area of around 3 million people, accepting referrals from both primary and secondary care sources with no restriction on patient age. There are no other memory clinics in the catchment area led by neurologists, but there are several led by old age psychiatrists.

The study took place over the 6-month period from July to December 2013. In addition to cognitive instruments, mention of instruments used to diagnose depression was also recorded.

Patients’ diagnoses were made in the clinic using standard clinical diagnostic criteria for dementia (DSM-IV) and dementia subtype, based on clinical interview, informant interview (where possible), bedside and formal neuropsychology testing and neuroimaging, as previously reported in this clinic [11]. Standard statistical methods (χ^2 test) were used to examine the null hypotheses that proportions were the same in the cohorts being compared (equivalence hypothesis) with $p < 0.05$ considered significant for rejection of the null hypothesis. As this was an observational study of practice, the study fell outside the scope of institutional review board approval.

Results

Over the 6-month period, 185 consecutive new outpatient referrals were seen in the clinic, of which 140 referrals (75.7%) were from primary care (M:F = 72:68; age range: 16–93 years; median: 59 years). Out of these 140, 34 received a dementia diagnosis (24.2%); of the nondemented patients (106), 18 were diagnosed with cognitive impairment no dementia (Table 1).

Out of the 140 patients referred from primary care, 44 (31.4%) had evidence for CSI use based on the information in the referral letter (Tables 1 & 2, far right column).

The proportions of patients with dementia and nondementia diagnoses who had been assessed with CSI in primary care were 12/34 (35.3%) and 32/106 (30.2%),

Table 1. Demographic and diagnostic information (n = 140).

Patient details and CSI use	Dementia	Cognitive impairment no dementia	Subjective memory impairment
Patients (n)	34	18	88
M:F (n)	21:13	9:9	42:46
Age range (median), years	39–86 (69.5)	54–83 (64)	16–93 (55)
CSI use in primary care, n (%)	12/34 (35)	5/18 (28)	27/88 (31)

CSI: Cognitive screening instrument; F: Female; M: Male.

Table 2. Cognitive test instruments reported in primary care referrals.

Patient details and tests used	Before NICE/SCIE launch (October 2004–September 2006) [8]	Before NDS launch (February 2008–February 2009) [9]	After NDS launch (February 2009–February 2010) [9]	(July–December 2012) [10]	(July–December 2013)
Patients (n)	123	131	175	99	140
Any instrument used, n (%)	25 (20.3)	34 (25.9)	47 (26.8)		44 (31.4)
Cognitive tests					
MMSE	17	31	29	–	13
AMTS	6	2	11	–	6
Clock test	1	0	0	–	0
6CIT	1	0	2	7	8
GPCOG	0	0	1	–	13
Equivocal	0	1	6 [†]	–	4
Other tests					
HADS	Not examined	0	2	–	1
PHQ-9	Not examined	1	3	–	4

Two tests reported in two patients.
 6CIT: Six-Item Cognitive Impairment Test; AMTS: Abbreviated Mental Test Score; GPCOG: General Practitioner Assessment of Cognition; HADS: Hospital Anxiety and Depression Scale; MMSE: Mini-Mental State Examination; NDS: National Dementia Strategy; SCIE: Social Care Institute for Excellence.

respectively. The null hypothesis that the proportion of demented and nondemented patients assessed in primary care with a CSI did not differ significantly was not rejected ($\chi^2 = 0.18$; $df = 1$; $p > 0.5$).

The proportions of cognitively impaired (dementia + cognitive impairment no dementia) and cognitively unimpaired (= subjective memory impairment) patients who had been assessed with CSI in primary care were 17/52 (32.7%) and 27/88 (30.7%), respectively. The null hypothesis that the proportion of cognitively impaired and cognitively unimpaired patients assessed in primary care with a CSI did not differ significantly was not rejected ($\chi^2 = 0.14$; $df = 1$; $p > 0.5$).

The frequency of CSI use was compared with previous cohorts of primary care referrals seen in the clinic (Table 2, three left hand columns), in which the proportions tested were: 25/123 (20.3%; October 2004–September 2006) [8]; 34/131 (25.9%; February 2008–February 2009) [9]; and 47/175 (26.8%; February 2009–February 2010) [9]. These data gave a crude increase of CSI use of 11.1% in 9.25 years = 1.2%/year. However, the null hypothesis that the proportion of patients referred from primary care who were administered a CSI in the sequential cohorts did not differ significantly was not rejected ($\chi^2 = 3.94$; $df = 3$; $p > 0.1$).

Looking at the use of individual CSI, there was a clear increase in the proportion of patients administered newer tests which have been designed or deemed suitable for use in primary care, such as the Six-Item

Cognitive Impairment Test (6CIT) [12] and the General Practitioner Assessment of Cognition [13], compared with older tests (MMSE, AMTS). In the 2013 cohort, these frequencies were 0.48 and 0.43 respectively, whereas in the previous three cohorts, the summed frequencies for newer and older tests were 0.04 and 0.91, respectively (Table 2). The null hypothesis that the proportion of new CSI use in primary care referrals did not differ significantly between the 2013 cohort and the summed previous cohorts was rejected ($\chi^2 = 46.4$; $df = 1$; $p < 0.001$).

Discussion

In the 5 years since NDS launch, there has been a significant increase in the number of referrals to this neurology-led memory clinic, principally from primary care [14]. As an example of this increase, the absolute number of primary care referrals seen in this 6-month cohort (140) was greater than the number seen in a previously reported 2-year cohort (123; October 2004–September 2006) [8] and in a more recent annual cohort (131; February 2008–February 2009) [9]. This increased referral rate suggests a willingness of primary care practitioners to engage with memory problems and to refer patients with memory complaints to specialist clinics. The current lack of disease-modifying treatment(s) for dementia does not therefore appear to be an impediment to referral of patients with memory complaints from primary care.

However, there has been no corresponding increase in the proportion of referred patients receiving a diagnosis of dementia [14]. Perhaps as a consequence of increased public awareness of dementia, stimulated by government directives such as the NDS and the Prime Minister's Challenge on Dementia, more individuals with neither dementia nor cognitive impairment but with subjective memory impairment (the 'worried well' in many instances) have been seen in the clinic [14].

One reason for this lack of evidence of closure of the dementia diagnosis gap (observed vs expected) may be the insufficient use of CSI in primary care prior to onward referral to specialist clinics (another possibility, not addressed in this study, is that brief CSIs are ineffective in detecting cognitive impairment in primary care settings). Although the frequency of CSI use in primary care referrals was above 30% in this cohort, this figure was not significantly different from previous cohorts, and well short of the 79% use figure suggested from the findings of a primary care postal survey [6].

However, the current data do show a significant increase in the use of newer CSI, specifically those recommended for use in primary care. The increase noted in 6CIT use was consistent with that observed in a previous study (July–December 2012), an increase which may have been prompted, at least in part, in response to publication of the Dementia CQUIN document [10]. This increased use suggests that primary care practitioners are increasingly adopting these instruments in place of the MMSE. It will be of interest to see if this change in CSI use continues in future cohorts and whether this may in time lead to an increased dementia diagnosis rate and movement toward closure of the dementia diagnosis gap.

Limitations

The data were collected from a single clinic over a limited time period, with the obvious risk of selection bias. The casemix seen in CFC likely differs from that seen in old age psychiatry memory clinics within the same catchment area, in particular those patients referred to CFC are younger; the age profile of referrals to CFC does not seem to have changed noticeably during the period over which these studies have been undertaken [11]. Obviously, it is hazardous to generalise from these local data to national trends: similar studies in other geographical areas would be of interest, and monitoring over time may shed light on the efficacy or otherwise of the national directives.

Unlike a previous study [10], use of all CSI, rather than just one specific instrument (6CIT), was examined in this study. An obvious unknown, not accessible to study methodology, is how many patients were administered a CSI in primary care and not referred, presumably on the basis of a reassuring score.

Conclusion

Primary care referrals to a neurology-led memory clinic are increasing, perhaps as a consequence of national directives on dementia [1–2,5], but there is currently no evidence that this is leading to closure of the dementia diagnosis gap [14]. There is no evidence for a significant increase in the use of CSI in primary care prior to referral, which may perhaps be one contributing factor to the unchanging diagnosis gap. Newer CSI designed specifically for use in primary care appear to be gaining ground in terms of a significant increase in the frequency of their use, although overall their use remains infrequent, but this has yet to translate into an increase in dementia diagnosis rate.

Future perspective

Increasing dementia diagnosis rates, as aspired to by both the National Dementia Strategy and the Prime Minister's Challenge on Dementia, will require innovative strategies. The proactive approach (i.e., screening) poses many challenges as well as opportunities [15,16], and may be better focused on at-risk groups rather than whole populations [17]. With the aging of the population and increasing dementia prevalence, improved use of CSI in primary care to identify patients with cognitive decline who might benefit from referral for treatment and/or intervention options will be necessary if the dementia diagnosis gap is to shrink. National guidance or good practice guidelines on which CSI primary care physicians should use (as part of a 'Dementia Risk Assessment' [5]) might improve the situation, but any such requirement might have important training implications for the primary care practitioners of the future. Fortunately, instruments such as 6CIT and General Practitioner Assessment of Cognition are both easy to learn and to use. Many other CSI have also been developed which might be used [18], but it is recognized that better tests are needed [19].

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Ethical conduct of research

The authors state that they have obtained appropriate institutional review board approval or have followed the principles

outlined in the Declaration of Helsinki for all human or animal experimental investigations. In addition, for investigations in-

volving human subjects, informed consent has been obtained from the participants involved.

References

Papers of special note have been highlighted as: • of interest

- 1 Department of Health. *Prime Minister's Challenge on Dementia. Delivering Major Improvements in Dementia Care and Research by 2015*. Department of Health, London, UK (2012).
- 2 Department of Health. *Living Well With Dementia: A National Dementia Strategy*. Department of Health, London, UK (2009).
- 3 Alzheimer's Society. *Mapping the Dementia Gap: Study Produced by Tesco, Alzheimer's Society and Alzheimer's Scotland*. Alzheimer's Society, London, UK (2011).
- 4 Alzheimer's Society. *Mapping the Dementia Gap 2012. Progress on Improving Diagnosis of Dementia 2011–2012*. Alzheimer's Society, London, UK (2013).
- **Two surveys showing the extent of the dementia diagnosis gap in various regions of the UK.**
- 5 Department of Health. *Using the Commissioning for Quality and Innovation (CQUIN) Payment Framework. Guidance on the New National Goals 2012–2013*. Department of Health, London (2012).
- 6 Milne A, Culverwell A, Guss R, Tuppen J, Whelton R. Screening for dementia in primary care: a review of the use, efficacy and quality of measures. *Int. Psychogeriatr.* 20, 911–926 (2008).
- 7 Hussey D, Foy K, Meehan K. Quality of dementia referrals to later life psychiatry service. *Psychiatr. Bull.* 33, 154–155 (2009).
- 8 Fisher CAH, Larner AJ. Frequency and diagnostic utility of cognitive test instrument use by GPs prior to memory clinic referral. *Fam. Pract.* 24, 495–497 (2007).
- **Prospective study examining the use of cognitive screening instruments in primary care referrals to a dedicated cognitive disorders clinic.**
- 9 Menon R, Larner AJ. Use of cognitive screening instruments in primary care: the impact of national dementia directives (NICE/SCIE, National Dementia Strategy). *Fam. Pract.* 28, 272–276 (2011).
- **Prospective study examining the use of cognitive screening instruments in primary care referrals to a dedicated cognitive disorders clinic.**
- 10 Cagliarini AM, Price HL, Livemore ST, Larner AJ. Will use of the Six-Item Cognitive Impairment Test help to close the dementia diagnosis gap? *Aging Health* 9, 563–566 (2013).
- **Prospective study examining the use of cognitive screening instruments in primary care referrals to a dedicated cognitive disorders clinic.**
- 11 Larner AJ. *Dementia In Clinical Practice: A Neurological Perspective. Pragmatic Studies in the Cognitive Function Clinic (2nd Edition)*. Springer, London, UK (2014).
- 12 Jefferies K, Gale TM. 6-CIT: Six-item Cognitive Impairment Test. In: *Cognitive Screening Instruments: A Practical Approach*. Larner AJ (Ed.). Springer, London, UK, 209–218 (2013).
- 13 Seehar KM, Brodaty H. The General Practitioner Assessment of Cognition (GPCOG). In: *Cognitive Screening Instruments: a Practical Approach*. Larner AJ (Ed.). Springer, London, UK, 201–208 (2013).
- 14 Larner AJ. Impact of the National Dementia Strategy in a neurology-led memory clinic: 5-year data. *Clin. Med.* 14, 216 (2014).
- 15 Brunet MD, McCartney H, Heath I *et al.* There is no evidence base for proposed dementia screening. *BMJ* 345, e8588 (2012).
- 16 Brunet M. Targets for dementia diagnoses will lead to overdiagnosis. *BMJ* 348, g2224 (2014).
- 17 Price HL, Larner AJ. Type 2 diabetes and cognitive impairment: a case for screening? *Prog. Neurol. Psychiatry* 17(5), 6–7 (2013).
- 18 Ashford JW. Screening for memory disorders, dementia and Alzheimer's disease. *Aging Health* 4, 399–432 (2008).
- 19 Harrison J. Cognitive approaches to early Alzheimer's disease diagnosis. *Med. Clin. North Am.* 97, 425–438 (2013).