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Screening for dementia in primary care: how is it measuring up?

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ABSTRACT

Despite evidence that early identification of dementia is of growing policy and practice significance in the UK, limited work has been done on evaluating screening measures for use in primary care. The aim of this paper is to offer a clinically informed synthesis of research and practice-based evidence on the utility, efficacy and quality of dementia screening measures. The study has three elements: a review of research literature; a small-scale survey of measures employed in three primary care trusts; and a systematic clinical evaluation of the most commonly used screening instruments. The authors integrated data from research and clinical sources. The General Practitioner Assessment of Cognition (GPCOG), Memory Impairment Screen (MIS) and Mini-Cognitive Assessment Instrument (Mini-Cog) were found to be: brief; easy to administer; clinically acceptable; effective; minimally affected by education, gender, and ethnicity; and to have psychometric properties similar to the Mini Mental State Examination (MMSE). Although the MMSE is widely used in the UK, this project identifies the GPCOG, MIS and Mini-Cog as more appropriate for routine use in primary care. A coherent review of evidence coupled with an in-depth evaluation of screening instruments has the potential to enhance ability and commitment to early intervention in primary care and, as part of a wider educational strategy, improve the quality and consistency of dementia screening.

KEY WORDS

dementia screening
screening measures

early identification
evaluation

primary care
effectiveness

BACKGROUND

The importance of the early identification of dementia for older people with concerns about their cognitive function is now widely accepted. It is increasingly emphasised as a legitimate goal of policy and practice and is a key focus of the forthcoming National Dementia Strategy (Department of Health, 2001; National Audit Office, 2007). The pivotal role of primary care staff in facilitating this process is well established and there is some recent evidence that increasing numbers of GPs recognise the value of early identification (Milne *et al*, 2005). This shift is, primarily, a reflection of its importance for users and their families, the advent of cholinesterase inhibitors and improvements in services for people with dementia and carers. Access to targeted training also plays a role (Turner *et al*, 2004).

Despite this, inadequate detection rates have repeatedly been documented with failure rates estimated as between 50% and 80% for moderate to severe dementia and up to 91% for milder cases (Ashford *et al*, 2006; Boustani *et al*, 2005). That there is continuing evidence to suggest that 'timely referrals' to specialist mental health services are far from universal, adds additional impetus to the drive for accurate and effective early identification of dementia in primary care (Iliffe *et al*, 2002; National Institute for Clinical Excellence/Social Care Institute for Excellence (NICE/SCIE), 2006).

Although there is a specific policy drive to increase the use of dementia screening instruments in the UK, to date little specific guidance has been offered on which are the most reliable, effective and clinically acceptable for routine use in primary care (NICE/SCIE, 2006). Those measures that are suggested tend to be either too long or insufficiently researched in the UK context to be considered reliable. While the most widely used instrument – the Mini Mental State Examination (MMSE) – is commonly accepted as a valid screening instrument, it has been criticised for its bias linked to social class, educational level and age (Wind *et al*, 1997). It is also lengthy to administer, exceeding the typical GP consultation time of 7.5 minutes.

It is important to note that while 'screening' in North America and Australia typically refers to population-wide screening, in the UK screening refers to case finding

where there is a positive concern expressed about memory changes by the patient, relative or doctor. Screening measures on their own are not diagnostic tools, but act as an indicator about whether further investigation is required from specialists (National Audit Office, 2007).

THE PROJECT

The project described in this paper was conducted in late 2005/early 2006; it was completed just prior to publication of the NICE/SCIE guidance: *Supporting People with Dementia and their Carers in Health and Social Care* (2006). Its aim was to support local primary care staff to enhance commitment and ability to identify possible dementia at an early stage as well as to facilitate appropriate referral to specialist diagnostic and support services. The team consisted of three secondary care clinicians with considerable expertise in dementia and an academic researcher.

The project comprised three discrete but interlocking elements: a local survey of current usage of screening measures in primary care, a literature review, and a clinically driven rating exercise of commonly used measures (Milne *et al*, 2008).

GP PRACTICE SURVEY

In order to raise the profile of early identification of dementia and to ascertain which, if any, screening measures were used in primary care, a practice audit was undertaken of all GP practices in the three primary care trusts (PCTs), in one area of south-east England (Culverwell and Tuppen, 2006). A list of commonly used instruments was circulated and additional commentary was invited. Of the total of 260 practices, 138 replied (55%). Of these, 79% reported using at least one instrument and 21% did not use any. A total of 70% of all the practices employing an instrument used only one, 26% used two and 4% used more than two.

As can be seen from **Figure 1**, the MMSE (Folstein *et al*, 1975) was by far the most frequently used instrument with 80% of practices using it either alone (51%) or alongside another measure(s), principally the Clock Drawing Test (Shulman, 2000), Abbreviated Mental Test (Hodkinson, 1972) or Six-Item Cognitive

Impairment Test (6CIT) (Brook and Bullock, 1999). The pattern of usage was very similar across all three PCT areas; this suggests that it may well reflect the wider national picture.

Over 40% of respondents made additional comments. Key points raised include:

- the very limited availability of screening measures other than the MMSE
- little access to information on early identification of dementia
- a need for guidance on which measures to use
- training.

The results of this small-scale survey confirm the observations of secondary care staff, ie. that there is limited and variable use of screening instruments in primary care. Also there is a predominant reliance on the widely available and familiar MMSE.

LITERATURE REVIEW

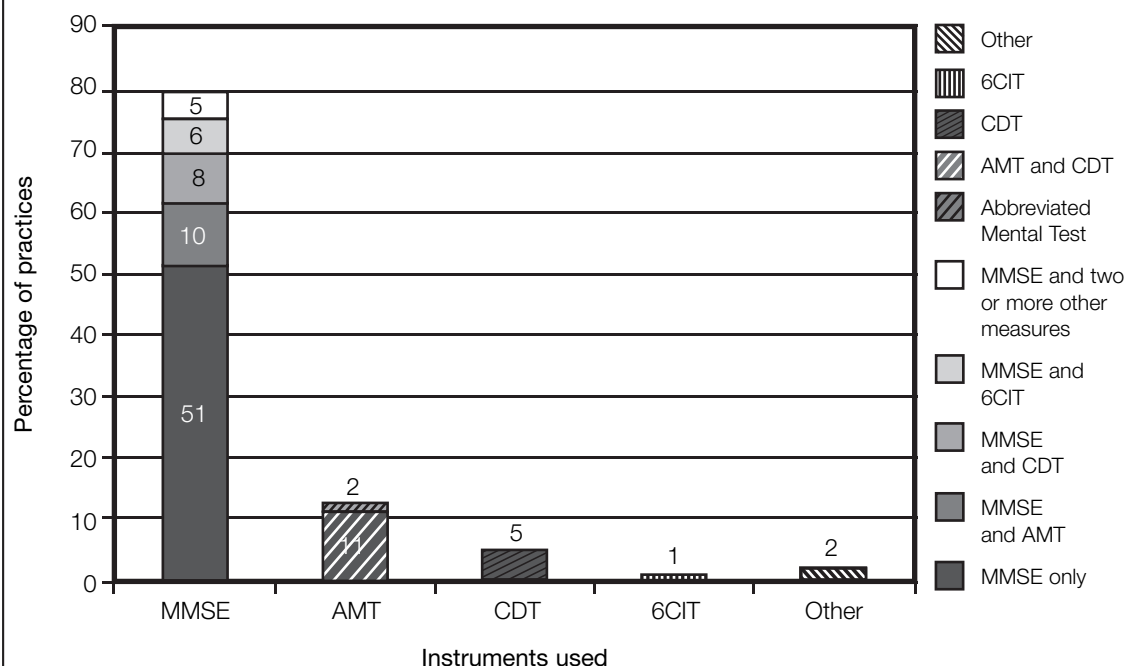
The aim of the literature review was to identify and summarise the research evidence relating to dementia screening instruments. Key words 'dementia' or 'cognitive impairment' combined with 'screening' or 'diagnosis' were used.

MEDLINE, PsychoINFO, PSYCHLIT and Cochrane Library Database electronic databases were searched for the period 1990–2006 and limited to English language articles. Papers reporting the use of instruments in primary care or as a screen for the population under review were prioritised. While most articles focused on the efficacy of individual measures, an exception was a Canadian review by Lorentz and colleagues in 2002; this compared a number of brief screening tests for dementia for routine use in primary care. A subsequent review by Brodaty *et al* (2006) built on Lorentz's more general paper, specifically evaluating the tools' psychometric properties and 'suitability for purpose'. This study was published at the end of the literature review stage of this project and was not particular to the UK context.

CLINICAL EVALUATION OF SCREENING MEASURES

Informed by the first two stages, the third stage of the project aimed to provide a clinically informed systematic evaluation of dementia screening measures for universal adoption in primary care settings in the UK. To be

Figure 1: Types and numbers of instruments used by practices



included, measures had to be: designed to screen for early signs of cognitive change among older people presenting to primary care; appropriate for use in the UK; and be sufficiently short to be administered within the normal consultation time available to GPs. In addition, measures had to be designed for face-to-face consultation. Eight measures met these criteria. The MMSE was also included despite its lengthy administration time as its widespread usage has made it a reference point for much research in this area (National Audit Office, 2007).

An 'evaluation grid' was developed to compare and evaluate the instruments. It comprised 16 criteria grouped into four key domains:

- practicality
- feasibility
- range of applicability
- psychometric properties.

Full details of the specific items and the evaluative process are available in Milne *et al* (2008). This methodology drew on an earlier review of psychological outcome measures in routine clinical practice conducted by Sperlinger *et al* (2004); it was adapted for this particular target population. Each criterion was rated on a five-point scale, hence the maximum score a single instrument could achieve is 20. The nine measures were rated independently by the three clinical members of the team. The ratings were then discussed in depth and consensus reached on a final score for each.

The three instruments that were rated best in terms of their overall clinical utility, efficacy and quality, were the General Practitioner Assessment of Cognition (Brodaty *et al*, 2002) (overall score of 16 out of 20), the Mini-Cognitive Assessment Instrument (Borson *et al*, 2000) (16 out of 20) and the Memory Impairment Screen (Busche *et al*, 1999) (15 out of 20). These were followed by the Short Portable Mental Status Questionnaire (14), the 6CIT (14), the Abbreviated Mental Test (13) and the CDT (12). Although costs for these instruments are minimal (some are free), not all are currently easily accessible.

Relative to the well-established standard of the MMSE, the GPCOG, MiniCog and MIS perform as well as (GPCOG in a clinical sample and MiniCog in an epidemiological sample) or significantly better (MiniCog in a

multi-ethnic sample). They also have the additional advantage of relative freedom from bias by educational attainment (MiniCog and MIS) or language and culture (MiniCog) (Harvan and Cotter, 2006).

DISCUSSION

Evidence is unequivocal about the key dimensions of an effective screening instrument for use in primary care. Minimum requirements are that it is: cheap; acceptable to users and clinicians; brief and easy to administer, score and interpret; validated in a community, population or primary care sample; and with high sensitivity and specificity (Lorentz *et al*, 2002; Brodaty *et al*, 2006).

Applicability across ethnically and socio-economically diverse populations, as well as across a broad age range, is also important. For the UK context instruments additionally need to take no longer than the average length of a primary care consultation. Further, the 'ideal' instrument should be accessible to, and easily used by, both doctors and practice nurses (Iliffe and Manthorpe, 2004).

Two overarching findings emerge from this project. First, both the literature review and the clinical evaluation come to the same conclusion – that the GPCOG, MIS and MiniCog best meet the above requirements. This is consistent with the findings of Lorentz *et al*'s (2002) and Brodaty *et al*'s (2006) reviews. All three instruments are relatively easy to learn, administer, score and interpret and have psychometric properties equal to, or better than, those displayed by the MMSE. They also have wide applicability and are minimally affected by education, gender, age or ethnic or cultural background (Parker *et al*, 2007).

Second, the survey echoes wider findings, that there is limited and uneven access to screening in primary care in one area of England and lack of consistency in relation to the instruments used. Moreover, of those GPs who use a screening instrument, a disproportionate number rely on one – the MMSE – which, as noted above, has a number of shortcomings. Its enduring popularity appears to largely be a reflection of ease of availability, familiarity and 'professional habit'; its prominence in policy guidance may reinforce this (NICE/SCIE, 2006).

The project has a number of limitations. Although the survey is non representative, it is nevertheless an accurate 'snapshot' of practice in one area of the UK. Further, the authors recognise that the potential value of dementia screening is dependent, to a significant degree, on the availability and quality of specialist and support services in the locality. A well-developed care pathway is much more likely to facilitate the effective use of dementia screening by primary care staff and 'trigger' referral to memory assessment services for further investigation and early diagnosis.

The authors are currently seeking funding to take the findings of the project forward. In partnership with a group of primary care practitioners they intend to develop an accessible 'website', which would provide concise information about dementia screening and showcase the three instruments identified (copyright permitting). It is intended that this would form part of a wider educational and training strategy for primary care staff. It would also help deliver one of the key goals of recent policy as well as respond to a widely evidenced need for clear information about which instruments to use for dementia screening in primary care (Care Services Improvement Partnership, 2005).

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