

## Commentary

Life expectancy, almost all over the world, is increasing and older age is associated with higher risk of cognitive impairment and dementia. Therefore, the need for reliable and standardized screening instruments for the assessment of cognitive impairment and dementia is crucial both for clinicians and researchers.

Since 1975, the Mini-Mental State Examination (MMSE) is extensively used as a screening tool for cognitive disorders in general population, neurological, geriatric, and psychiatric patients.<sup>[1,2]</sup> It is well known that age and education, influence MMSE results and its scores are evaluated considering age and education level. Although other screening tests for cognitive impairment have been proposed in clinical research, MMSE is still the most used for cognitive impairment screening. The MMSE is easy to use, short, inexpensive, and the examiner only needs paper and pencil as testing material. These characteristics have contributed the MMSE popularity.

MMSE has been translated and validated almost all over the world. Translated and in some cases modified versions of MMSE have been made in European countries, Brazil, China, Korea, Nigeria, India, Sri Lanka, Bangladesh, and many other countries. Nevertheless, language translation may contribute to measurement bias. Moreover, several studies in European, American, Asian countries, show that sociodemographic and cultural background could influence MMSE results. An accurate evaluation of the possible transcultural biases of MMSE have been presented by Limidis and Tokgoz,<sup>[3]</sup> who highlight in their paper the complexity of cognitive and perceptual processing across cultures. They list five recommendations for administration and interpretation of MMSE in cultural and linguistic groups for which it was not designed or validated, recommendations which should really be taken into account by clinicians in order to avoid the possible risk of over-diagnosis of cognitive impairment. Nevertheless, further difficulties in MMSE

use point out that MMSE requires at least some literacy skills to be performed, which makes MMSE unavailable for use in illiterate or almost illiterate subjects.<sup>[3]</sup>

In order to meet the needs of countries with illiterate population, several attempts have been made to adapt MMSE. In few studies the translation and modification of MMSE was really challenging because of the target population.<sup>[4-6]</sup> Also when the Authors decided to modify the original MMSE test, results are described as satisfactory in detecting subjects with cognitive deficits compared to normal population. The very recent and interesting paper "Development of a cognitive screening instrument for tribal elderly population of Himalayan region in northern India" by Raina *et al.*<sup>[7]</sup> shows that a cognitive evaluation by means of a modified version of MMSE can be done also in remote and less developed regions where the majority of elderly individuals in this community has no formal education and is illiterate. This study is methodologically very accurate and results are promising in this challenging topic.

Further studies will be needed to show how the modified and therefore different versions of MMSE could be compared among different populations.

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