

## The Diagnostic Accuracy of Brief and Ultra-brief Versions of the Geriatric Depression Scale: a Meta-analysis

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**Introduction:** Depression in older adults is often under-diagnosed and consequently under-treated, despite association with higher rates of morbidity and mortality, increased healthcare utilisation and greater economic cost compared to younger populations. Better identification will be imperative in the future because of the estimated growth in the older adult population. Screening could improve identification; a well-known screening tool is the Geriatric Depression Scale (GDS).

**Objective:** To evaluate the diagnostic accuracy of the brief GDS-15 and ultra-brief versions in the detection of major depression.

**Method:** Seven electronic databases and unpublished literature were searched, using predefined criteria, from 1982 to April 2014. Primary study quality was assessed using the QUADAS-2. Pooled diagnostic performance data was calculated using bivariate meta-analysis. Subgroup and sensitivity analyses were pre-planned. Heterogeneity was explored through meta-regression.

**Results:** Of 6635 records identified 32 studies were included. Meta-analyses were possible for the GDS-1, GDS-4 and GDS-15. For the GDS-15, at the recommended cut-off score of 5, the diagnostic odds ratio was highest in a community setting and for older adults aged  $\leq 69$  years. A cut-off score of 4, however, provided better diagnostic accuracy. Diagnostic data was less favourable when depression prevalence was  $\geq 10\%$ . Better diagnostic properties were found in non-Western countries. Meta-regression revealed country and language were predictive of diagnostic accuracy.

**Conclusions:** Further research is needed to explore diagnostic properties of ultra-brief GDS versions. GDS-15 findings suggest selective reporting of cut-off scores, which requires cautious interpretation and a need for greater methodological rigor in primary studies.