Validity and reliability of the Minimum Data Set Depression Rating Scale (MDSDRS) for older adults in nursing homes

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Abstract

Objective: this research examined the psychometric properties of the Minimum Data Set Depression Rating Scale for use among older adults living in nursing homes.

Methods: interviews with 145 older adults in three nursing homes were conducted to complete the Hamilton Depression Rating Scale and the Geriatric Depression Scale. Information relevant to completing the Minimum Data Set Depression Rating Scale was gathered from the Minimum Data Set.

Results: the Minimum Data Set Depression Rating Scale did not perform well when validated against the Hamilton Depression Rating Scale and the Geriatric Depression Scale. Minimum Data Set Depression Rating Scale cut-off levels of ≥2 and ≥3 were associated with relatively low total score correlations and sensitivity rates, but acceptable specificity.

Conclusions: findings suggest that the Minimum Data Set Depression Rating Scale may be of limited clinical value to identify depression among older adults living in nursing homes.

Keywords: depression, Minimum Data Set, nursing homes, validity, reliability

Introduction

About two-thirds of residents living in nursing homes (NH) have a psychiatric disorder [1]. Of these 15–30% have symptoms of depression as compared to 13% for older adults in the community [2]. Another 15–50% of NH residents experience significant depressive symptoms that fail to meet DSM-IV criteria of major depression [3].

Depression in NH residents is associated with diminished quality of life, isolation and despair, and behavioural problems [4, 5]. Recognition and treatment of depression in NH residents can result in remission of symptoms, the amelioration of pain associated with physical illnesses, and an increase in well-being [2].

A significant barrier to the treatment of depression is the failure to diagnose symptoms. Health care providers under-diagnose depression at rates of 42–56% among NH residents [6]. This research studied the process of symptom recognition for NH residents who suffer from depression. The objective was to examine the validity and reliability of the Minimum Data Set Depression Rating Scale (MDSDRS) [3]. The MDSDRS required further evaluation of its psychometric properties as available information is based on a limited sample. Implementing valid instruments to measure symptoms of depression...
that use available information can establish guidelines for symptom recognition, address unmet need, and strengthen level-of-care decision-making for older adults.

Methods

Subjects and procedure
Data were gathered on 145 residents living in three NHs in Iowa. Of the 154 residents approached, 9 refused to participate. One facility (768-bed capacity) provides long-term care for veterans and their current/surviving spouses (n=55). A second facility (136-bed capacity) is a non-profit care centre affiliated with the Sisters of St. Francis (n=62). The third facility (53-bed capacity) is a privately owned skilled-care facility (n=28). Residents (age 60 years and older) for whom recent Minimum Data Set (MDS) information was completed and who gave informed consent participated in the study. Research staff interviewed participants and completed the Hamilton Depression Rating Scale (HDRS) and the Geriatric Depression Scale (GDS) within 2 weeks after nursing staff completed the MDS. Interviews took 45 minutes to complete. Information relevant to completing the MDSDRS was gathered from the MDS. Residents were followed up at 3 months and again interviewed using the MDS, HDRS and GDS (n=95).

Measures

Minimum Data Set
Resident characteristics, background information and data relevant to completing the MDSDRS was obtained from the MDS (Version 2.0) [7]. The MDSDRS is comprised of a core set of seven mood items including: (1) Resident-made negative statements, (2) persistent anger and irritability with self or others, (3) expressions of what appear to be unrealistic fears, (4) repetitive health complaints, (5) repetitive anxious complaints/concerns (non-health related), (6) sad, pained, worried facial expressions, and (7) crying, tearfulness. Scoring is based on: '0' the behaviour was not exhibited in the last 30 days; '1' exhibited in the last 5–30 days; and '2' exhibited daily or almost daily. A cut off score of '3' is suggested to maximise sensitivity for mild and moderate depression [3].

Hamilton Depression Rating Scale
The HDRS contains 17-items that are observer-rated and has been validated in disabled and medically ill older populations [8, 9]. HDRS scores >11 suggest the presence of mild depression, while scores >17 correspond to a likelihood of major depression.

Geriatric Depression Scale
The GDS is a 30-question yes/no, self-rated instrument [10]. Because the coexistence of dementia and depression can confound the diagnosis of one or both of these disorders, the GDS was designed to focus on the emotional factors of depression, eliminating the somatic questions that can be ubiquitous and confound the diagnosis of depression. The GDS has been validated for community and hospitalised elderly; however, there is some evidence that it is not valid for use with persons with dementia [11]. To document cases of mild and major depression, a GDS cut off score of 14 and 11 was used.

Results

Sample description
The mean age of residents was 84 years (range 60–103), 63% were women, 99% were white and the average level of education was 12 years. Most residents were admitted to the NH from the community (58%), 27% were admitted from the hospital and 15% from an assisted living setting. Twenty-eight percent of residents had a chart diagnosis of depression (n=5 major depression and n=35 depressive disorder NOS) and 21% had a diagnosis of dementia.

Thirty-four percent of residents scored ≥1, 19% scored ≥2 and 9% scored ≥3 on the MDSDRS, with an average score of 0.71. In comparison, 9% of residents scored ≥12 on the HDRS and 10% scored ≥14 on the GDS.

Scale performance
Correlations between each MDSDRS item and the HDRS, the GDS and chart diagnoses of depression were calculated. Correlations with the HDRS ranged from 0.09 to 0.23. Correlations with the GDS ranged from −0.07 to 0.19. Correlations with chart diagnoses ranged from 0.10 to 0.26.

Correlation between the MDSDRS and the HDRS was 0.24, 0.13 with the GDS and 0.31 with chart diagnoses (Table 1). The correlation between the HDRS and the GDS was 0.68. Sensitivity of the MDSDRS was relatively low with little difference associated with a cut off score of either two or three. Specificity was adequate for the MDSDRS, and higher specificity was associated with a cut off score of three. Cronbach’s Alpha for the MDSDRS was 0.67. Analyses were repeated excluding cases with a chart diagnosis of dementia to avoid potential confounds due to cognitive impairment. Differences are negligible, however, the correlation between the HDRS and the GDS increased to 0.80. Internal consistency for the MDSDRS also increased slightly to 0.72.
Validity of the minimum data set depression rating scale

Table 1. Correlation of the MDSDRS with the HDRS, GDS and Chart Diagnosis of Depression

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Test</th>
<th>MDSDRS Correlation</th>
<th>MDSDRS ≥ 1 Sensitivity</th>
<th>MDSDRS ≥ 1 Specificity</th>
<th>MDSDRS ≥ 2 Sensitivity</th>
<th>MDSDRS ≥ 2 Specificity</th>
<th>MDSDRS ≥ 3 Sensitivity</th>
<th>MDSDRS ≥ 3 Specificity</th>
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</thead>
<tbody>
<tr>
<td>HDRS</td>
<td>Correlation</td>
<td>0.24</td>
<td>0.69</td>
<td>0.46</td>
<td>0.46</td>
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<tr>
<td></td>
<td>Sensitivity</td>
<td></td>
<td>0.70</td>
<td>0.83</td>
<td>0.95</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>GDS ≥ 11</td>
<td>Correlation</td>
<td>0.13</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sensitivity</td>
<td>0.46</td>
<td>0.24</td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specificity</td>
<td>0.70</td>
<td>0.82</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDS ≥ 14</td>
<td>Correlation</td>
<td>0.31</td>
<td>0.57</td>
<td>0.29</td>
<td>0.21</td>
<td>0.69</td>
<td>0.82</td>
<td>0.92</td>
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<tr>
<td></td>
<td>Sensitivity</td>
<td>0.47</td>
<td>0.32</td>
<td>0.23</td>
<td></td>
<td>0.72</td>
<td>0.86</td>
<td>0.97</td>
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<tr>
<td></td>
<td>Specificity</td>
<td>0.72</td>
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</table>

Table 2. Test-retest estimates for the MDSDRS

<table>
<thead>
<tr>
<th>Scale</th>
<th>Number scored</th>
<th>Mean score (Variance)</th>
<th>ICC (95% CI lower/upper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative statements</td>
<td>95</td>
<td>0.05 (0.05)</td>
<td>0.27 (-0.10 0.51)</td>
</tr>
<tr>
<td>Anger and irritability</td>
<td>95</td>
<td>0.17 (0.21)</td>
<td>0.59 (0.38 0.72)</td>
</tr>
<tr>
<td>Unrealistic fears</td>
<td>95</td>
<td>0.06 (0.07)</td>
<td>0.75 (0.63 0.83)</td>
</tr>
<tr>
<td>Repetitive health complaints</td>
<td>94</td>
<td>0.11 (0.12)</td>
<td>0.53 (0.30 0.69)</td>
</tr>
<tr>
<td>Repetitive anxious complaints</td>
<td>95</td>
<td>0.12 (0.12)</td>
<td>0.51 (0.26 0.67)</td>
</tr>
<tr>
<td>Sad, worried facial expressions</td>
<td>95</td>
<td>0.25 (0.21)</td>
<td>0.56 (0.34 0.71)</td>
</tr>
<tr>
<td>Crying, tearfulness</td>
<td>95</td>
<td>0.07 (0.06)</td>
<td>0.41 (0.12 0.61)</td>
</tr>
</tbody>
</table>

Reliability

Table 2 presents the test-retest estimates for the MDSDRS (random effects, one-way model). The intraclass correlation coefficients were generally low for individual items (range = 0.27 to 0.59) except for expression of unrealistic fears (0.75).

Discussion

Data show that the MDSDRS did not perform well when validated against the HDRS and the GDS, of which both are validated measures of depression in older adults. Various cut off levels were examined; all produced relatively low total score correlations and sensitivity rates, but acceptable specificity. Intraclass correlation coefficients were also generally low. However, this reliability approach assumes no substantial change in the construct being measured between the two occasions. Low intraclass correlation coefficients may not suggest poor test-retest reliability of the MDSDRS. However, future research examining the psychometric properties of the MDSDRS should consider this limitation.

The usefulness of any depression index depends on its capacity to identify cases of depression. The failure of the MDSDRS to identify depression in NH residents in our study as compared to Burrows et al. [6] may be due to several factors. The ability of staff to recognise symptoms related to depression on the MDS assessment is a concern. Nursing staff in many facilities do not receive training to evaluate residents for distressed mood or behaviour symptoms, with many problems under-diagnosed [7]. Implementation of training programs, as well as utilisation of the mental health Resident Assessment Protocol Guidelines, would help improve the identification of psychiatric needs in NH residents. Second, residents sampled in Burrows et al. [3] study and this one may have been significantly different in terms of physical illness and level of cognitive impairment. Comparative data based on diagnostic opinion for depression, dementia and level of medical need would provide stronger evidence of the psychometric properties of the MDSDRS. Finally, our sample was limited by geographic location and demographic diversity, potentially representing quite different groups of people.

Overall findings from this study suggest that the MDSDRS may be of limited clinical value in identifying depression among older adults living in nursing facilities.

Key points

- The MDSDRS performed poorly when tested against the HDRS, the GDS and psychiatric diagnosis.
- The MDSDRS may be of limited clinical value in identifying depression among NH residents.
- Further validation studies considering medical and psychiatric diagnostic opinion in larger and more diverse samples are needed to confirm these preliminary findings.
Acknowledgements

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