

Tool: Discomfort Behavior Scale (DBS)
Tool developer: Stevenson, K.
Country of origin: USA
Reviewed: 06/08

Conceptualization Panel rating: 2									
Purpose	The stated purpose was to develop and test the psychometric properties of the Discomfort Behavior Scale for the identification of discomfort in persons with cognitive impairment and to improve pain management in nursing homes. The DBS is based on informant data in the MDS.								
Conceptual basis	The conceptual basis for the tool is provided and builds on the Assessment of Discomfort of Dementia (ADD) protocol which uses a Behavior Symptoms List (BSL) to identify discomfort. The tool does not necessarily differentiate those in pain, but identifies those with discomfort that may be due to pain or other sources.								
Item Generation	<p><u>Stage 1</u></p> <p>Four experts (in pain assessment or pain in cognitively impaired elders) reviewed content validity of the DBS. All items in the BSL were reviewed in relation to quarterly MDS and those with conceptual overlap selected.</p> <p>20 items total : 8 from section E1 (indicators of depression, anxiety or sad mood) 10 from section E4 (indicators of behavioral problems such as wandering or resisting care) 2 from Section G1 (self performance such as ability to walk)</p> <p>There was 100% agreement by experts on 19 of 20 items. One item with 50% agreement was dropped (persistent anger with self or others) and two items related to walking were dropped because they did not occur frequently enough and would bias nonmobile resident scores. The final tool included 17 items.</p> <p>Leveling of items is variable depended on the scoring within the MDS, ranging from 2 responses (occurrence/nonoccurrence) to 4-point frequency scale (0-3). All items were rescaled to a 0-6 weighting.</p> <p><u>Stage 2</u></p> <p>Exploratory (EFA) and confirmatory factor analysis (CFA) was conducted (reported under Validity) to confirm single factor dimension of the scale.</p> <p>Good fit of the single dimensional model was again confirmed in a third set of residents, testing a restricted model. This allowed for single DBS score.</p> <p>The final DBS includes the following 17 items from the MDS 2.0:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%;">E1c. Repetitive verbalizations</td> <td>E4b(A). Verbally abusive behavioral symptoms-frequency</td> </tr> <tr> <td>E1k. Insomnia/change in usual sleep patterns</td> <td>E4b(B). Verbally abusive behavioral symptoms-alterability</td> </tr> <tr> <td>E1f. Sad, pained, worried facial expressions</td> <td>E4c(A). Physically abusive behavioral symptoms-frequency</td> </tr> <tr> <td>E1m. Crying, tearfulness</td> <td>E4c(B). Physically abusive behavioral symptoms-alterability</td> </tr> </tbody> </table>	E1c. Repetitive verbalizations	E4b(A). Verbally abusive behavioral symptoms-frequency	E1k. Insomnia/change in usual sleep patterns	E4b(B). Verbally abusive behavioral symptoms-alterability	E1f. Sad, pained, worried facial expressions	E4c(A). Physically abusive behavioral symptoms-frequency	E1m. Crying, tearfulness	E4c(B). Physically abusive behavioral symptoms-alterability
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	E1n. Repetitive physical movements	E4d(A). Socially inappropriate/disruptive behavioral symptoms-frequency
	E1o. Withdrawal from activities of interest	E4d(B). Socially inappropriate/disruptive behavioral symptoms-alterability
	E1p. Reduced social interaction	E4e(A). Resists care-frequency
	E4a(A). Wandering-frequency	E4e(B). Resists care-alterability
	E4a(B). Wandering-alterability	
Content Validity	The draft scale was reviewed by four pain experts—two with expertise in pain in cognitively impaired elders.	
-Panel Commentary	<p>The DBS focus is on discomfort, rather than pain, and there could be issues related to meaning of the tool score. However, many of the behavior indicators included represent possible pain indicators and capturing changes in them may reflect pain behavior. The tool represents a comprehensive screening approach to recognizing pain in those not presenting with typical pain behaviors and would necessitate further evaluation.</p> <p><u>Comprehensiveness and clarity of items</u> The tool includes at least one cue from each of the 6 categories of non-verbal pain behaviors in the AGS Persistent Pain Guidelines. Facial expression, Verbalizations/vocalizations, Body language and to some extent Changes in activity patterns or routines, Mental status changes and Changes in interpersonal interactions. However, nonverbal vocalizations (such as moaning) and bodily movements that accompany pain (e.g. rubbing, bracing, or limping) are absent due to limitations within the MDS data set itself.</p>	
Subjects		
Panel rating: 2		
Subjects	<p><u>Stage 2</u> Data were obtained from CMS to access MDS Quarterly Assessments. The sample of 86,844 nursing home residents was narrowed to those with cognitive impairment using the MDS CPS. N= 29,120 cases representing moderate or severe cognitive impairment Age: mean 84.44 (SD=10.71), range 18-111 Gender: 69% female; 31% male</p> <p>The data set of residents was split into three groups for exploratory factor analysis, confirmatory factor analysis and final assessment for scaling properties. Age and gender was therefore similar for all three samples. There is no information on ethnicity.</p>	
-Panel Commentary	The sample used for tool development is extremely large using resident data from the MDS Quarterly Assessment records and is strong for initial tool development. Limitations within the sample relate to the accuracy of assessments recorded in the MDS records. Gender and age are appropriate, but there is no data on ethnic or cultural diversity of sample.	
Administration, Scoring, Feasibility		
Panel rating: 0		
Administration, Scoring, Feasibility	No information provided regarding administration, scoring or feasibility for regular use in the nursing home.	
-Panel Commentary	Use of the DBS requires computer coding within each nursing home to calculate the tool score. It is not clear what financial and personnel resources would be required for implementation. It would appear that nursing staff would not be involved on a regular basis to generate the DBS score, but	

	would be essential in follow-up evaluation to determine if the behavioral indicators identified are related to pain or some other etiology.
Reliability	
Panel rating: 1	
Internal consistency	Cronbach's alpha for the total scale was 0.77 and a shared variance estimate of 76%, indicating that only 24% of the average variance is due to error.
Interrater reliability	Not reported
Test-retest reliability	Not reported.
-Panel commentary	Preliminary internal consistency is established, however interrater and intrarater reliability have not been studied yet. Because the tool uses data already documented in the MDS, issues related to reliability of the initial documentation impact the DBS reliability.
Validity: Criterion or construct	
Panel rating: 2	
Construct validity/ Criterion related validity	<p><u>Stage 2</u> EFA demonstrated a single dimension with goodness of fit .068 for single dimension. Eigenvalue structure indicates 42.4% of variance explained by single dimension.</p> <p>CFA with second sample supported single dimensional model. Fit was good with CFI=0.977, TLI=0.974, and RMSEA=0.068.</p> <p>Third sample of residents used to test the single dimensional model again with good fit and a restricted model resulted in the following: CFI=0.955, TLI=0.955, and RMSEA=0.087. This allowed for single DBS score.</p> <p>The DBS was contrasted across four categorical variables (CPS, pain frequency, pain intensity and sex). Effect sizes for pairwise comparisons were examined and were variable across measures and levels within the variables ranging from no effect (d=.09) to a moderate effect (d=0.40).</p> <p>Residents with moderately severe impairment had higher DBS scores than those with moderate impairment. DBS scores increased with increasing levels of impairment except at the highest level. DBS did not differ by pain frequency or intensity, but there were small differences between subjects with no pain versus those with daily pain; those with daily pain had higher DBS scores.</p>
-Panel commentary	The DBS has preliminary construct validity, but additional evidence of discriminant, concurrent and criterion validity is needed. Additionally, study of the sensitivity of the DBS to detect pain in persons with dementia and response to treatment is important. Concerns exist regarding the accuracy/reliability of the MDS reporting methods which are known to underreport pain.
Summary of panel evaluation of pain assessment tool	
DBS items include the scope of behavioral indicators that may represent pain in persons with dementia; however, some key indicators are not included because of limitations within the MDS dataset. The tool has reasonable content and construct validity and preliminary internal consistency established with a large dataset of existing patient MDS records. Given that it is used only quarterly, the tool may be best used for a screening approach that triggers further direct observation and evaluation to determine if the findings are related to pain. The subject sample is appropriate, however validation in minority samples is needed, as well as testing to establish discriminant and criterion validity and sensitivity to treatment effects. Scoring procedures and resources required to transform MDS data into the DBS total score are not clear, nor is its use in the clinical setting. Further tool testing and future utility will likely be impacted by revisions to the MDS 3.0 expected in 2009.	

Source of evidence

Stevenson, K., Brown, R., Dahl, J., Ward, S., & Brown, M. (2006). The Discomfort Behavior Scale: A measure of discomfort in the cognitively impaired based on the Minimum Data Set 2.0. *Research in Nursing & Health*, 29, 576-587.

Key to panel rating

3= Available evidence is strong

2= Available evidence supports need for further testing

1= Available evidence is insufficient and/or tool revisions are needed

0= Evidence is absent

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The authors have provided a scoring grid which is posted on this website (Karen Stevenson, personal communication, July 2008).

Evaluation completed by:

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