



CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

MOOD, COGNITION AND FATIGUE FOLLOWING STROKE

**Table 1B: Selected Validated Screening and Assessment Tools for Post-Stroke
Anxiety**

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Lancôt KL, Swartz RH (Writing Group Chairs) on Behalf of the Canadian Stroke Best Practice Recommendations Mood, Cognition and Fatigue following Stroke Writing Group and the Canadian Stroke Best Practice and Quality Advisory Committee, in collaboration with the Canadian Stroke Consortium

Table 1B: Selected Validated Screening and Assessment Tools for Post-Stroke Anxiety

This table provides a summary of the psychometric properties of a selected set of screening and assessment tools that have been validated for use with stroke patients, or frequently reported in the stroke literature. This list is not exhaustive, rather it highlights the more commonly used and validated tools.

Assessment Tool and Link	# of Items	Response Format	Total Score	Reliability & Validity	Interpretation of Scores	Sensitivity & Specificity
Validated with stroke patients						
Hospital Anxiety and Depression Scale (HADS-A) http://www.strokinge.ca/assess/hads/	14 (2 x 7-item subscales)	Self-report consisting of multiple-choice response options graded on a 4 pt scale	0-42 (0-21 for each subscale)	<p>Reliability: Johnston et al. (2000) reported that at 6-month post-stroke, the HADS-A and overall HADS had excellent internal consistency $\alpha=0.87$ and 0.89, respectively.</p> <p>Construct validity: Reported satisfactory on confirmatory factor analysis (Johnston et al. 2000).</p> <p>Discriminative validity: HADS-D and HADS-A scores obtained by stroke patients differed significantly from controls ($p<0.001$) (Visser et al. 1995).</p>	A score of 0 to 7 on either the depression or anxiety subscale is considered being in the normal range; a score of 11 or higher indicates probable presence of a mood disorder; a score of 8 to 10 being suggestive of the presence of the state, (Zigmond and Snaith 1983). Alternate cut-off points have been evaluated for the post stroke population.	<p>Aben et al. (2002) reported that using a cut-off score of 5+, the HADS-A had a sensitivity of 88.5% (AUC=0.77) and specificity of 56.1% (AUC=0.78). For the total scale, using a cut-off of ≥ 11, sensitivity and specificity were 86.8% and 69.9% respectively. Johnson et al. (1995), using a cut-off of 5+ for the HADS-A, demonstrated a sensitivity of 95% and specificity of 46%.</p> <p>Aben et al. (2002) noted a high correlation ($r=0.67$, $p<0.01$) between the depression and anxiety subscales; a result of the frequent coincidence of symptoms of anxiety and depression in stroke patients.</p>
Behavioural Outcomes of Anxiety (BOA)	10 items	Self-reported or carer-reported consisting of multiple choices ranging from 'not at all' to 'a lot' (Kneebone et al. 2012)	0 to 21 (each item is score can range from 0 to 3)	<p>Construct Validity: The BOA questionnaire correlated well with the HADS-A ($r=0.77$)</p> <p>Test-Retest validity: The BOA demonstrated good to excellent test-retest reliability, ranging from 0.81 at 1-week (Linley-Adamns et al. 2014) to 0.91 (Eccles et al. 2017)</p>	There are no acceptable cut-off scores, but the following has been proposed: 0-6 = minimal anxiety; 7-13 = mild anxiety; 14-17 = moderate anxiety; 18+ = moderately severe or severe anxiety	<p>With a cut-off score of 16/17, the BOA had a sensitivity of 0.85 (0.71, 0.94), and specificity of 0.85 (0.73, 0.92). The positive predictive value was reported as 0.38 with the negative predictive value being 0.98. (Eccles et.al. 2017)</p> <p>A cut-off score of 13/14 yields a sensitivity and specificity of 0.77 and 0.58, respectively (Linley-Adamns et al. 2014)</p>
Geriatric Anxiety Inventory (GAI) http://gai.net.au/	20 items	Self-reported or nurse administered	Range from 0 to 20	The Cronbach's α for the GAI was 0.91 for normal elderly people and 0.93 for a psychogeriatric sample (Pachana et al. 2007)	Each item is scored 0 or 1.	For stroke patients, a cut-off for 6/7 on the GAI demonstrates a sensitivity and specificity of 0.88 and 0.84, respectively (Kneebone et al. 2016)

Assessment Tool and Link	# of Items	Response Format	Total Score	Reliability & Validity	Interpretation of Scores	Sensitivity & Specificity
		d questionnaire that consist of agree-disagree items		<p>Internal consistency: GIA has shown to have good internal consistency, ranging from $r=0.91$ to 0.95.</p> <p>Convergent validity: The GAI correlates well with other measures including the DSM-IV GAD questionnaire ($r=0.653$), The Penn State Worry Questionnaire ($r=0.794$), and the Beck Anxiety Inventory ($r=0.613$) and the State-Trait Anxiety Inventory ($r=0.63$).</p> <p>Construct validity: Total scores of the GAI correlated well with the HADS-A ($\beta=0.61$, $p<0.001$)</p> <p>Test-retest reliability: The GAI demonstrated acceptable test-retest reliability, ranging from $r=0.91$ to 0.99 ($\beta=0.53$, <0.001)</p> <p>Note: Validations studies have shown the GAI has weak divergent validity from depression measures.</p>	<p>Suggested cut-offs for healthy population: 10/11 out of 20 for identifying likely GAD 8/9 out of 20 for identifying any anxiety disorder</p> <p>For stroke patients, a lower cut-off is used to identify anxiety</p>	<p>A cut-point of 10/11 correctly identifies 83% of patients for DSM-IV generalized anxiety disorder (GAD), with a specificity of 84% and sensitivity of 75% (AUC-0.80; 95%: 0.64-0.97)</p>
Additional tools, which have not been validated in the stroke population						
<p>Beck Anxiety Inventory (BAI)</p> <p>http://www.pearsonclinical.com/psychology/products/10000251/beck-anxiety-inventory-bai.html</p>	21 items	Self-report or interviewer administered questionnaire consisting of multiple-choice response	0 to 63 (sum of scores for each item)	<p>Validity and reliability estimates reported here are from the general population</p> <p>Construct validity: Demonstrates good convergence with other measures of anxiety including Hamilton Anxiety Rating Scale ($r=0.51$), the State-Trait Anxiety Inventory (STAI) ($r=0.47-0.58$) and the anxiety scale of the Symptom Checklist-90 ($r=0.81$) (Beck & Streer 1991)</p> <p>Internal consistency: Demonstrates high internal consistency (α rang 0.90 to 0.94). (Fydrich et al 1993; Creamer et al. 1995; Osman et al. 1993)</p>	<p>From the sum from all 21 items: 0-9 = normal or no anxiety; 10-18 = mild to moderate anxiety; 19-29 = moderate to severe anxiety; 30-63 = severe anxiety</p>	<p>There are no published reports of the sensitivity and specificity of the BAI in screening for post-stroke anxiety.</p> <p>The BAI is intended to be used a screening measure that discriminates anxiety from depression; and not be used a diagnostic measure itself</p>

Assessment Tool and Link	# of Items	Response Format	Total Score	Reliability & Validity	Interpretation of Scores	Sensitivity & Specificity
				<p>Test-retest: BIA demonstrates reasonable test-retest coefficients ranging from 0.62 at 7-week to 0.91 at 1-week intervals.</p>		
<p>Hamilton Anxiety Rating Scale (HAM-A) https://egret.psychol.cam.ac.uk/medicine/scales/HAM_A.pdf</p>	14 items	A clinician-rated scale consisting of multiple-choice response option graded on a 5 pt scale.	0 to 56 (score range 0-4 for each items)	<p>Validity and reliability estimates reported here are from the general population</p> <p>Construct validity: Correlates with other self-reported measure of anxiety, such as the Beck Anxiety Inventory ($r=0.51$) (Beck et al. 1988)</p> <p>Interrater reliability: HAM-A has good interrater reliability among experienced ($r=0.74$ to 0.86) and less experienced ($r=0.74$ to 0.93) raters. (Gjerris et al. 1983)</p>	<p>Each item is scored on a 5-point scale, ranging from 0 = not present to 4 = severe.</p> <p>From the sum from all 14 parameters: 14-17 = mild anxiety; 18-24 moderate anxiety; 25-30 severe anxiety</p> <p>Note: scale was developed as a rating for severity among individuals known to have anxiety, not as a mean of diagnosing anxiety.</p>	<p>There are no published reports of the sensitivity and specificity of the HAM-A in screening for post-stroke anxiety.</p> <p>The major value of the HAM-A is to document the results of pharmaco- or psychotherapy, rather than as diagnostic or screening tool.</p>
<p>State-Trait Anxiety Inventory (STAI) http://www.mindgarden.com/index.htm</p>	40 items (20 items per subscale)	Self-report consisting of multiple-choice questions	40 to 80 (range score for each subtest is 20-80)	<p>Validity and reliability estimates reported here are from the general population</p> <p>Construct validity: Limited in discriminating anxiety from depression (Kabacoff et al. 1997)</p> <p>Test-retest reliability: Test-retest coefficients range from 0.31 to 0.86 with intervals ranging from 1 hour to 104 days. (note the S-Anxiety scale tends to detect transitory states, thus test-retest coefficients are lower from the S-Anxiety vs. to the T-Anxiety scale)</p>	<p>A cut point of 39-40 is suggested to detect clinically significant symptoms for the S-Anxiety scale</p> <p>A higher cut point of 54-55 is suggested for older adults</p>	<p>There are no published reports of the sensitivity and specificity of the STAI in screening for post-stroke anxiety in the general population</p>

Assessment Tool and Link	# of Items	Response Format	Total Score	Reliability & Validity	Interpretation of Scores	Sensitivity & Specificity
				Since the T-Anxiety scale is to characterize "proneness" as a characteristic of anxiety, the T-Anxiety scale is less responsive to change vs. S-Anxiety		
Zung Self-Rating Anxiety Scale https://psychology-tools.com/zung-anxiety-scale/	20 items	Self-report consisting for multiple choice questions for each item	20 to 80	There are no published reports of the reliability and validity of the Zung in the general population	Each item is score on a 4-point scale from 1 to 4. The sum of all 20 items: 20-40 = Normal range; 45-59 = Mild to moderate anxiety levels; 60-74 = marked to severe anxiety levels; 75-80 = Extreme anxiety levels	There are no published reports of the sensitivity and specificity of the Zung in screening for post-stroke anxiety

References for Tables 1B

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