

The Anxious-Depressive Attack Severity Scale: Development and Initial Validation and Reliability

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Abstract

Background: Anxious-depressive attack (ADA) is a symptom complex that comprises sudden intense feelings of anxiety or depression, intrusive rumination of regretful memories or future worries, emotional distress due to painful thoughts, and coping behaviors to manage emotional distress. ADA has been observed transdiagnostically across various psychiatric disorders. Although the importance of ADA treatment has been indicated, a scale to measure the severity of ADA has not been developed. This study aimed to develop the Anxious-Depressive Attack Severity Scale (ADAS) for measuring the severity of ADA symptoms and examine its reliability and validity.

Methods: A total of 242 outpatients responded to a questionnaire and participated in an interview, which were designed to measure the severity of ADA, depression, anxiety, anxious depression, and social anxiety symptoms. Based on the diagnostic criteria for ADA, 54 patients were confirmed to have ADA and were included in the main study analyses.

Results: The results of the exploratory factor analysis showed that the ADAS had two factors: severity of ADA symptoms and ADA frequency and coping behaviors. McDonald's ω^2 coefficients were high for the overall scale and the first factor ($\omega^2 = .78$ and $\omega^2 = .83$, respectively) but low for the second factor ($\omega^2 = .49$). The ADAS score was significantly positively correlated with clinical symptoms related to anxiety and depression.

Conclusion: The present study demonstrated that the ADAS had sufficient reliability and validity; however, internal consistency was insufficient for the second factor. Overall, the ADAS has potential to be a valuable tool for use in clinical trials of ADA.

1. Background

Anxious-depressive attack (ADA) is a novel symptom cluster that comprises abrupt outbursts of anxiety or depression, followed by intrusive rumination of negative memories or future worries (with or without flashbacks), intense emotional distress due to painful details of intrusive ruminations, and a range of violent coping behaviors for emotional distress, such as self-harm and overdosing. There is no direct psychological cause of ADA, and it is thought to be a psychological form of a panic attack.

Table 1 shows the diagnostic criteria of ADA (1). ADA has been reported in patients with various anxiety disorders as well as mood disorders (2, 3). ADA frequency has been shown to be correlated with severity of social anxiety and depression symptoms (3). In a previous study of patients with social anxiety disorder, the relationship between ADA, social anxiety, and depression symptoms, and sensitivity to rejection by others was examined using structural equation modeling (1). Results showed that ADA was directly affected by sensitivity to rejection by others and indirectly affected via depression and social anxiety symptoms. Moreover, depression symptoms had a direct positive effect on ADA, whereas social anxiety symptoms had an indirect effect on ADA via depression symptoms.

Table 1
Diagnostic criteria of anxious-depressive attack (1)

A. Anxious-depressive attack occurs suddenly and recurrently regardless of one's situation in various mental disorders.
B. The following symptoms proceed in descending order, but symptom no. 4 is elective.
1. Abrupt surge of intense discomfort consisting of mixed emotions of anxious and depressive nature with or without being moved to tears. A peak comes within several seconds or less than a minute.
2. Intrusive rumination including mostly negative memories, consisting of mainly recent or past adverse events (flashbacks) or rarely worry, which continues for several tens of minutes to several hours.
3. Prominent agitation, unrest, or loneliness that occurs during rumination and was very violent and inappropriate to ruminative contents.
4. Various coping behaviors to manage intense discomfort occasionally appear
C. Physical symptoms, e.g., shortness of breath and palpitations, are extremely modest.
D. The disturbance is not attributable to the direct psychological effects of any stress, physiological effects of a substance, or a neurological or other medical condition.
E. The disturbance is not better explained by another neuropsychiatric disorder (e.g., panic disorder, posttraumatic stress disorder, non-epileptic seizure, frontal epilepsy, intermittent explosive disorder, anxious distress specified for depression, sudden emotional excitement of schizophrenia, or Ataque de nervios).

The prevalence of ADA in new patients visiting clinics for solely anxiety and mood disorders was estimated as 16.88% (4), which indicates that ADA is not a rare symptom complex. Furthermore, patients who have ADA are generally refractory and require treatment for ADA (2, 3). However, a scale has not been yet developed to measure the severity of ADA symptoms. Such findings have called for the development of a scale to measure ADA symptom severity that can be used in clinical trials. Therefore, the present study aimed to develop the Anxious-Depressive Attack Severity Scale (ADAS). We examined the reliability and validity of the ADAS by correlating the scores with severity of depression, anxiety, anxious depression, and social anxiety symptoms.

2. Methods

2.1. Measures

The ADAS was developed to assess the severity of ADA symptoms. We developed seven items based on the diagnostic criteria of ADA (Table 1) to measure the severity of ADA symptoms. Items included four symptoms (sudden intense feelings of anxiety or depression, intrusive rumination of regretful memories or future worries, emotional distress due to painful thoughts, and coping behaviors to manage emotional distress), ADA frequency, ADA duration, and pain during an ADA. The seven items are listed in Table 2. The ADAS was administered using the structured interview method.

Table 2
Original items of the Anxious-Depressive Attack Severity Scale

1	Have the sudden unpleasant emotions occurred without any events? How severe are the abrupt emotions in the anxious-depressive attack?
2	Did your past memories automatically come out following the emotional attacks? How do those memories come back to you? Which one is closer to you, whether the memory comes back to you slowly, or your memory comes out one after another? And if you want to stop remembering that memory, can you stop it?
3	Did you have unpleasant emotions with remembering such past events? How severe was the emotional distress?
4	Did you take any action to avoid such a painful experience?
5	How frequent were anxious-depressive attacks in the last two weeks?
6	What was the average duration of anxious-depressive attacks during the last two weeks?
7	What was the average pain of the whole anxious-depressive attacks during the last two weeks?
Items 1, 2, 3, and 7 are rated on a 4-point Likert scale (0 = none, 1 = mild, 2 = moderate, and 3 = severe); item 4 is rated on a 5-point Likert scale (0 = none, 1 = coping by oneself, 2 = coping with others, 3 = coping by substance intake or escape behavior, 4 = aggressive behavior, substance dependence, or other); item 5 is rated on a 4-point Likert scale (0 = none, 1 = once or twice a week, 2 = three or four times a week, and 3 = five or more times a week); item 6 is rated on a 4-point Likert scale (0 = none, 1 = within 60 minutes, 2 = 60 to 180 minutes, and 3 = 180 minutes or more)	

During the ADAS interview session, five psychological batteries were also administered. The Hamilton Depression Rating Scale (HAM-D: 5, 6) consists of 17 items and is one of the most widely used scales for the assessment of depression symptoms. The scale covers the whole spectrum of depressive symptoms, which includes affective, cognitive, and somatic symptoms. Items are scored from 0 to 4 (absent, mild or trivial, moderate, and severe) or 0 to 2 (absent, slight or doubtful, and clearly present). The total score ranges from 0 to 54, with higher scores representing greater severity of depressive symptoms.

The Hamilton Anxiety Rating Scale (7, 8) consists of 14 items and is one of the most widely used scales for assessing anxiety symptoms in research settings. Items are scored from 0 to 4 (not present, mild, moderate, severe, and very severe). The total score ranges from 0 to 56, with higher scores indicating greater severity of anxiety symptoms.

The Quick Inventory of Depressive Symptomatology (QIDS: 9, 10) measures nine symptom domains of depression. The total score ranges from 0 to 27, with higher scores representing higher severity of depression symptoms.

The Anxious Depression Scale (ADS; 11) measures anxious depression symptoms in patients with depressive disorder with atypical features. It is a self-reported measure comprising 20 items and consists of 4 factors: behavioral/emotional symptoms, physical symptoms, aggressive emotions, and nonaggressive emotions. Items are scored from 1 to 4 (not at all, sometimes, mostly, and very much) and the total score ranges from 20 to 80.

The Liebowitz Social Anxiety Scale (LSAS; 12, 13) was originally developed as a clinician-administered scale to assess the range of social interactions and performance situations feared by patients to help diagnose social anxiety disorder. It was subsequently validated as a self-report inventory comprising 24 items, which are each scored on two 4-point Likert scales for level of fear and frequency avoidance during situations, such as “telephoning in public.” The total score ranges from 0 to 144.

2.2. Participants

Participants were outpatients who had visited the Akasaka and Yokohama clinics of Warakukai Medical Corporation.

Patients who had visited the clinic and were aged ≥ 16 years were eligible to participate in the study. Exclusion criteria included high suicide risk, severe physical illness, and significant cognitive impairment.

After obtaining written informed consent, 242 outpatients participated in a survey.

Of these 242 outpatients, 54 patients (10 men and 44 women) were confirmed to have experienced ADA according to the diagnostic criteria of ADA (Table 1). The age of participants ranged from 16 to 78 years, with a mean age of 33.67 (standard deviation [SD] = 13.17) years.

This study was approved by the ethics committee of the first author’s affiliated institution.

2.3. Statistical analyses

First, an exploratory factor analysis (EFA) using principal component analysis (Promax rotation) was conducted to determine the factor structure of the ADAS. Second, item-total correlation and McDonald's ω^2 coefficients for the ADAS were computed to examine reliability. Third, to examine the criteria-related validity of the ADAS, we computed Pearson's correlation coefficients between the ADAS and the HAM-D, HAM-A, QIDS, ADS, and LSAS. SPSS version 25 (IBM Corp., Armonk, NY, USA) was used to conduct the EFA and correlation analyses. R version 4.0.2 was used to compute McDonald's ω^2 coefficients.

3. Results

3.1. EFA

The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was .639, which indicated that the data were appropriate for factor analysis (14). Bartlett's test of sphericity was significant ($p < .01$). The eigenvalues of the first, second, third, fourth, and fifth components were 3.01, 1.31, 1.12, .60, and .54, respectively. Based on scree plot and the Kaiser criterion, the most interpretable solution was the two-factor model. The results of the EFA showed that the ADAS had a two-factor structure with five items in the first factor (severity of ADA symptoms) and two items in the second factor (ADA frequency and coping behaviors; Table 3).

Table 3
Results of the exploratory factor analysis

		Factor loadings		Mean(SD)	Item-total correlations
		I	II		
I	Severity of ADA symptoms	$\omega_t = .83$			
3	Emotional distress against the painful thoughts	.95	-.12	2.22(1.11)	.79**
2	Intrusive rumination of regretful memories or future worries	.94	-.17	2.15(1.12)	.77**
7	Pain of ADA	.66	.05	2.33(.75)	.61**
1	Sudden intense feelings regarding anxiety or depression	.61	.26	2.52(.67)	.64**
6	Duration of ADA	.51	.27	1.67(.78)	.62**
I	ADA frequency and coping behaviors	$\omega_t = .49$			
5	ADA frequency	.01	.80	1.91(.85)	.45**
4	Coping behaviors to manage the emotional distress	-.01	.79	1.69(1.48)	.55**
** $p < .01$					

3.2. Item-total correlations and internal consistency

The results of the item-total correlation analyses showed that there were moderate to strong positive correlations between the total score and each item of the ADAS ($r = .45-.79$, $p < .01$) (Table 3).

Furthermore, McDonald's ω_t coefficients were high for the overall scale and first factor ($\omega_t = .78$, $\omega_t = .83$) and low for the second factor ($\omega_t = .49$).

3.3. Criterion-related validity

The ADAS total score was significantly and positively correlated with HAM-D, HAM-A, QIDS, ADS, and LSAS scores ($p < .05$; Table 4). The first factor of the ADAS showed significant and positive correlations with HAM-D, QIDS, ADS, and LSAS scores ($p < .05$), but not with the HAM-A score. The second factor of the ADAS showed significant positive correlations with HAM-D and HAM-A scores ($p < .05$), but not with QIDS, ADS, and LSAS scores.

Table 4
Correlations between the ADAS and other measures

		Mean	SD	HAM-D	HAM-A	QIDS	ADS	LSAS
				(N = 53)	(N = 52)	(N = 54)	(N = 50)	(N = 53)
1	ADAS	14.48	4.34	.43**	.27*	.38**	.47**	.27*
2	Severity of ADA symptoms	10.89	3.49	.34**	.17	.35**	.48**	.33**
3	ADA frequency and coping behaviors	3.59	1.93	.33**	.29*	.22	.20	.02
** $p < .01$, * $p < .05$								
ADAS, Anxious Depression Attack Severity Scale; HAM-D, Hamilton Depression Rating Scale; HAM-A, Hamilton Anxiety Rating Scale; QIDS, Quick Inventory of Depression Symptomatology; ADS, Anxious Depression Scale; LSAS, Liebowitz Social Anxiety Scale								

4. Discussion

The goal of the present study was to develop the ADAS and examine its reliability and validity. The EFA showed that the ADAS had a two-factor structure: severity of ADA symptoms factor (five items) and ADA frequency and coping behaviors factor (two items). Furthermore, the correlation coefficients between each item and the total score ranged from .45 to .79. McDonald's ω coefficients of the ADAS for the overall scale and first factor were higher than .75, which indicated high internal consistency. However, the ω coefficient for the second factor was low. There were only two items in the second factor, which may have contributed to the low ω coefficient.

The criterion-related validity of the ADAS was assessed by examining whether or not the ADAS scores correlated with clinical indices that are associated with ADA. The ADAS showed significant positive correlations with the severity of depression, anxiety, anxious depression, and social anxiety symptoms, and this result is similar to those observed in previous studies (1–3). Hence, the ADAS had a criterion-related validity. These findings suggested that the ADAS is a reliable and valid tool for assessing the severity of ADA.

In previous studies, the importance of treating ADA and the need for a tool for assessing ADA has been highlighted (2, 3). Descriptive statistics showed that many patients had moderate to severe ADA symptoms. This suggests that these patients need treatment for ADA. The ADAS will enable accurate assessment of the degree of ADA symptoms and would be a useful screening tool for patients in need of treatment for ADA.

However, further improvement of ADAS is required. The number of items in the second factor (ADA frequency and coping behaviors) needs to be increased in order to improve internal consistency. Once

this is achieved, cross-validity should be assessed in a larger sample of patients. In addition, conducting a longitudinal study to evaluate the sensitivity of the ADAS would be useful.

5. Conclusions

In the present study, we developed the ADAS, which was determined as a reliable and valid instrument for assessing the severity of ADA; however, internal consistency was insufficient for the second factor. The ADAS can be a valuable tool for use in clinical trials of ADA.

Abbreviations

ADA	
Anxious-depressive attack	
ADAS	
Anxious-Depressive Attack Severity Scale	
HAM-D	
Hamilton depression rating scale	
HAM-A	
Hamilton anxiety rating scale	
QIDS	
Quick inventory of depressive symptomatology	
ADS	
Anxious depression scale	
LSAS	
Liebowitz social anxiety scale	
SD	
Standard deviation	

Declarations

Ethics approval and consent to participate

This study was approved by the ethics committee of the first author's affiliated institution.

Consent for publication

Written informed consent was obtained from all participants prior to their enrollment in the study.

Availability of data and materials

Detailed data are available from the corresponding authors upon reasonable request.

Competing interests

The authors have no competing interests to declare.

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Not applicable.

Authors' contributions

HK prepared ADAS and organized the study. Data collection was performed by SN, HK, SM, and NK. SN and HK designed the methods and wrote the first draft of the manuscript. IF revised the draft of the manuscript. All authors approved the final version of the manuscript.

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Note

The ADAS is available upon request to the sixth author (kai@fuanclinic.com).

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