Depression, anxiety and stress scale: Reliability and validity of Hindi adaptation

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Depression Anxiety and Stress scale (DASS) developed by Lovibond and Lovibond, 1995 is one of most widely used scale in clinical and nonclinical population in across the globe including India. DASS items reliably grouped in to depression, anxiety and stress subscale and have high reliability and validity. Present study was aimed to obtain reliability and validity of Hindi adaptation of Depression, Anxiety and Stress scale. Scale was translated by the bilingual experts followed by forward and back translation process final version was adopted for the study. A total 427 volunteers those who were bilingual included in the study. Hindi adaptation of DASS showed comparable reliability and validity score. Chronbach alpha for entire scale .83, factor loading ranged from .20 to .88 of Hindi version which was found comparable with original scale. The result demonstrate Hindi version of DASS reliable and valid instrument to use in clinical and nonclinical population. Hindi adaption of the DASS scale could be used in Indian clinical and non-clinical settings.

Keywords: depression; anxiety; stress; Hindi adaptation

The Depression Anxiety Stress Scale (DASS) is a promising 42-item self-reported measurement scale of depression, anxiety, and stress (Lovibond & Lovibond, 1995). Theoretically, the DASS corresponds with the tripartite model of anxiety and depression (Clark & Watson, 1991). This model suggests that anxiety and depression have both shared and unique features. Depression is uniquely characterized by low positive affect and anhedonia, while anxiety has physiological hyperarousal as a unique feature. Depression and anxiety have a non-specific factor of general distress in common. This tripartite view has been supported in a variety of studies, including factor analytic studies by Watson et al. (1995a, 1995b), and Endler, et al (2003), which revealed three separate variables (general distress, anhedonia vs. positive effect, and somatic anxiety).

Based on their review of psychometric literature some researchers have concluded that earlier measures of anxiety and depression involve overlapping contents and correlate with one another quite highly (Clark, 1989; Moras, et al., 1992). Further, the trait version of the State-Trait Anxiety Inventory (STAI-T; Spielberger, 1983) is at least as sensitive to symptoms of depression as it is to symptoms of anxiety (Beiling, et al., 1998). The Beck Anxiety Inventory (BAI; Beck & Steer, 1990) has been found to overlap less with measures of depression compared with other anxiety measures (Beck et al., 1988). However, the BAI items also tend to overlap almost exclusively with the panic attack symptoms and do not adequately capture other important features of anxiety, such as worry, agitation, and muscle tension (Antony et al., 1998; Cox et al., 1996). The Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995) may hold more promise for distinction between anxiety and depression, as well as between symptoms of physical arousal and symptoms of generalized anxiety (e.g., tension or agitation). Factor analytic studies with nonclinical (Lovibond & Lovibond, 1995) and clinical samples (Antony et al., 1998; Brown et al., 1997; Clara et al, 2001; Crawford & Henry, 2003;

Nieuwenhuijsen et al., 2003) have confirmed that the DASS items can be reliably grouped into three scales: (a) Depression (DASS-D), (b) Anxiety (DASS-A), and (c) Stress (DASS-S). The Depression Scale includes items that measure symptoms typically associated with dysphoric mood (e.g., sadness or worthlessness). Anxiety Scale, like the BAI, includes items that are primarily related to symptoms of physical arousal, panic attacks, and fear (e.g., trembling or faintness). Finally, Stress Scale includes items that measure symptoms such as tension, irritability, and a tendency to overreact to stressful events symptoms that are not assessed by the BAI. The survey of available literature regarding psychometric properties of DASS indicates that all of these studies used English version of the scale with English speaking participants. This situation raises a question about the external validity of the findings of these studies. Thus, the present research focused on the question whether the previous findings pertaining to the reliability and validity as well as simple factor structure of DASS can be generalized to participants for whom English is a second and sometimes third language. The purpose of the present research was to translate DASS in to Hindi language and obtain reliability and validity for further use in clinical and nonclinical population.

This paper describes the Hindi adaptation and standardization of the Depression Anxiety and Stress Scale (DASS) Lovibond & lovibond (1995). The study was conducted in order to meet the need of assessment tool measuring depression anxiety and stress among a large population of India whose measure known language is Hindi. We developed Hindi version of DASS following all the steps such as forward and backward translation, testing item equivalence with bilingual sample. There are very few Hindi scales available to measure depression anxiety and stress so present study in an attempt to provide a tool of assessment of above domains.

Aim of the study

DASS is available in different languages but it's not available in Hindi so present study was aimed to make a Hindi translation and standardization of Hindi version of DASS.

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Original scale

The DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. The DASS was constructed not merely as another set of scales to measure conventionally defined emotional states, but to further the process of defining, understanding, and measuring the ubiquitous and clinically significant emotional states usually described as depression, anxiety and stress. The DASS should thus meet the requirements of both researchers and professional clinicians.

Each of the three DASS scales contains 42 items, divided into subscales 3 of 14 items with similar content. The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, and lack of interest/involvement, anhedonia, and inertia. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items.

Translation

Translation was done from the English version after seeking permission from the Lovibond P. (Psychology Foundation of Australia). Guidelines as provided by the author's team were followed for the translation. Firstly, the scale was translated into Hindi by two independent (bilingual) linguistic experts, and this resulted in development of versions 1 and 2 of the scale. Then both the (bilingual) linguistic experts discussed each item with the subject experts and version 3 was reached. This version 3 was then back-translated into English by two other linguistic experts. This step resulted in the version 4. This version 4 was then compared with the original scale and points of disagreement were discussed with subject experts. Language was again modified and a Hindi version 5 was created. This scale was applied on 30 patients to assess the ease of understanding. They were encouraged to report any difficulty that they had faced in understanding any of the items. Wherever the patients reported any difficulty, the issue was discussed with the linguistic experts and appropriate change was made to keep the language closest possible to the original scale. Finally, version 6 was created. This final version was used for the present study.

Method

Participants

As per ethical committee's recommendation sample size was 400, so for taking care of the refusal in the second stage we selected a total number of 450 volunteer participants by using systematic random sampling. The participants of the study were bilingual and taken from three cities of India. Out of 450 approached volunteers we got responses from 427 volunteers and final result was done on the basis of final participants. Sample selection was multi stage and in the first stage Ranchi was selected where three mental hospitals exits and its known for the treatment and management of psychiatric disorders and well being of the patients. In the second stage Allahabad and Pune were selected randomly from the list of 12 major cities of country those are known for their education centers. Within the

Ranchi there were two groups were one was mental health professional and second was English medium school student. The first group 45 male and 25 female mental health professionals (psychiatrist psychiatric social worker, clinical psychology, consultant and post graduate student of all three stream) who gave their consent for participation were taken and second group was made by the random selection of 94 volunteers who were studying in Batcher courses of technology in 4 different colleges who gave consent for participation in the study. From the city of Pune 153 participants from (79 male and 74 female management professionals) from three management colleges and 110 graduate and post graduate students from Allahabad (various department of university). Their age ranged between 19 to 49 years (M = 25.16, SD 5.30). The selection was based on the comprehension of both English and Hindi languages, selected participants were formally educated in English medium (mode of instruction and evaluation), informed consent was taken from participants who were willing to participate in study. The participants were asked to complete the original English version of DASS; following completion of English version after one week Hindi version was administered.

Procedure

Present study was divided in two part first we applied English version of DASS was on 450 volunteers from the various educational institutes without any information about the second version. After one week of this assessment we applied the Hindi version of DASS on all participants those are in the first assessment. After the completing data collection we started its analysis and we found few of them were miss the information and few didn't return the questionnaire. Finally 427 samples were found accurate and were included for analysis.

Results

Participants

The mean age of participants were 25.16 years (SD = 5.30). 76.81% among them were male and 23.19% were female. The majority of the participants (36.3%) were educated up to post graduation. 92% of the participants were never married, majority of them were belong to Hindu religion, very less people from other religion were participants of the study. 67.7% were living in joint family and 32.3% were in nuclear family. Majority (74.7%) of the respondents was from urban background and 64.4% were student.

Table:1 Mean, Standard Deviation, & alpha coefficient for DASS English and Hindi

Sub-scale	English		Hindi	
	Mean (SD)	Alpha	Mean (SD)	Alpha
Depression	7.34 (5.37)	.841	7.34 (5.18)	.835
Anxiety	5.17 (3.86)	.868	5.21 (3.77)	.858
Stress	7.60 (4.76)	.807	7.63 (4.64)	.804

Table No. 2: Factor Loading of Depression Anxiety and Stress Scale Hindi Adaptation Depression

Item	1	2	3
I felt down hearted and blue	.633		
I felt sad and depressed	.482		
I could see nothing in the future to be hopeful about	.631		

I felt that I had nothing to look forward to	.539
I felt that life wasn't worthwhile	.671
I felt I was pretty worthless	.609
I felt I wasn't worth much as a person	.540
I felt that I had lost interest in just about everything	.322
I was unable to become enthusiastic about anything	.308
I couldn't seem to experience any positive feeling at all	.205
I couldn't seem to get any enjoyment out of things I did	.485
I just couldn't seem to get going	.335
I found it difficult to work up the initiative to do things	.621

Reliability

The findings of language equivalence indicated that correlation between the Hindi and English forms of the DASS was high (.83 (p<.001), for entire scale, .83 (p<.001) for depression, .85 (p<.001) for anxiety, and .80 (p<.001) for stress). Also the correlation coefficients between the scales were depression-anxiety r =.70, depression-stress r =.75, and anxiety-stress r =.73. Findings also demonstrated that item-total correlations ranged from .51 to .75. The internal consistencies of the DASS were determined using Cronbach

alpha coefficient, for the entire scale was .83, and for depression, anxiety and stress were .83, .85, and .80 respectively.

In order to establish factorial validity a PCA with oblique rotation was conducted. A PCA is applicable when the Kaiser-Meyer-Olkin of sampling of adequacy is greater than .50 (Cureton and D' Agostino, 1993) and the Bartlett test of sphericity is significant with p < .05 (Backhaus etal., 2008). In our analysis the KMO reached .70, indicating the moderate degree of common variance among the variables. The Bartlett test of sphericity was significant (p = .000), indicating that variables are uncontrolled in the population, or in other words correlation matrix is an identity matrix each variable correlates perfectly with itself (r = 1.00), but has no correlation with other variables (r = 0.00). A principal component analysis (PCA) with oblique rotation was carried out to determine if the measure's underlying factor structure is same as in the original work of DASS. In the sense of confirmatory analysis we fix the number of factors on three and expected item to load in same manner as in the work of the Hindi validated version. A commonly used rule specifies that only item with factor loading exceeding .40 should be considered but as per the original scale factor loading .20 have considered (ford et al., 1986). Before calculating the PCA, we reversed polarity of inverse formulated items. The amount of total variance explained by three factors was nearly 48%. Factor loadings ranged from .39 to .88 for depression, from .59 to .78 for anxiety, and from .56 to .82 for stress.

Anxiety

I was aware of the action of my heart in the absence of physical exertion (e.g., sense of increase heart rate, heart missing a beat)	.509
I perspired noticeably (e.g., sweaty hands) in the absence of high temperatures or physical exertion	.521
I was aware of the dryness of my mouth	.461
I experience breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	.275
I had difficulty in swallowing	.297
I had a feeling of shakiness (e.g., legs going to give way)	.435
I experienced trembling (e.g., in the hands)	.433
I was worried about situations in which I might panic and make a fool of myself	.575
I found myself in situations that made me so anxious I was most relieved when they ended	.272
I feared that I would be thrown by some trivial but unfamiliar task	.558
I felt that I was close to panic	.544
I felt terrified	.346
I felt scared without any good reason	.323
I had a feeling of faintness	.449

Stress

I found it hard to wind down	.62	
I found it hard to calm down after something upset me	.35	
I found it difficult to relax	.62	
I felt that I was using a lot of nervous energy	.33	
I was in a state of nervous tension	.68	
I found myself getting upset rather easily	.51	
I found myself getting upset by quite trivial things	.24	.228
I found myself getting agitated	.70	
I tended to overreact to situations	.41	
I felt that I was very irritable	.227	.496
I felt that I was rather touchy	.352	
I was intolerant of anything that kept me from getting on with what I was doing	.582	
I found myself getting impatient when I was delayed in any way (e.g., lifts, traffic lights, being kept waiting)	.204	
I found it difficult to tolerate interruptions to what I was doing	.405	

Discussion

The purpose of this study was to translate DASS into Hindi and to examine its psychometric properties. The result of the study demonstrate that the reliability of score of the Hindi adopted version are similar to English version. The scales adopted in Hindi have also shown fair alpha score which is comparable with that of original DASS form in English as well as with study sample. Factor loading also have ranged as per the original DASS factor score. Overall findings demonstrated that this scale had acceptable and fairly high validity and reliability scores and that it may be used as an efficient instrument in order to assess emotional states of university students. So it can be said that DASS is a reliable and valid measure of the constructs it was intended to assess however, the present study did not used the Hindi adopted version on participants from clinical setting so it would be better if the same version will be administered among clinical population and further attain discriminant validity in order to apply scale in clinical population.

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