ORIGINAL ARTICLE

Translation, validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS)

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Abstract

Background: Up to date, there are handful questionnaires that have been validated in Bahasa Malaysia (BM). This study aimed to translate the Depression Anxiety Stress Scales 21-item (DASS-21) and measure its psychometric properties. *Objectives*: To determine the construct validity and acceptability of the DASS, BM. *Methods*: Two forward and backward translations were done in BM in accordance to guideline, and its validation was determined by using confirmatory factor analysis. A total of 263 subjects were selected by systematic random sampling to represent Malaysian population for reliability and validity purposes. *Results*: The BM DASS-21 had very good Cronbach's alpha values of .84, .74 and .79, respectively, for depression, anxiety and stress. In addition, it had good factor loading values for most items (.39 to .73). Correlations among scales were between .54 and .68. *Conclusions*: BM DASS-21 is correctly and adequately translated to Bahasa Malaysia with high psychometric properties. Further studies are required to support these findings.

Key words: *depression, anxiety, stress, reliability, validity, Bahasa Malaysia*.

Introduction

The Depression Anxiety Stress Scales (DASS) have been translated and in various languages and validated in different populations. The original version of DASS is 42-item. DASS 21-item is a modified and shorter version [1]. In this study, the authors focused on the effort of translating the DASS-21 into Bahasa Malaysia (BM) and eventually validated this version. The scoring of 21-item requires the users to time 2 of total score 21-item to suit the original 42-item. It is not a diagnostic questionnaire but rather as a severity measurement (dimensional rather than a categorical) [2]. DASS is suitable to be used in any clinical or non-clinical settings [3]. The questionnaire is easy and simple to administer to general population without any special training is needed. Unlike certain psychometric tests, by only using this questionnaire, researchers would be able to gauge levels of depression, anxiety and stress at the same time. Almost all 21 items in this questionnaire are relatively cultural free as none of its item mentioned any aspects on certain culture or religion. The effort of translation and validation of Bahasa Malaysia version were focused on DASS-21 before further development of BM DASS-42. Furthermore, DASS-21 is less been studied across the globe.

This study aimed to translate and validate the 21-item of DASS and to produce a well adapted BM version of 21-item DASS for

Malaysian population.

Methods

Study design

This is a randomized multi-center cross sectional study. The process of translation, pre-test and validation of this project is summarized in figure 1.

A special permission from the original author of DASS (Peter Lovinbond) was also acquired before the commencement of this study. Informed consent was obtained from the participants after the nature of the procedure was fully explained.

Translation process of the DASS

Translation process was according guideline stipulated in US Census Bureau Guideline where 2 forward and 2 back translations were done in parallel by 2 medical and 2 language experts. This method was done to ensure the translated version would be grammatically sounded and the terms used were correct. At the same time, meanings and contents of original DASS were well preserved.

After the reconcilement of the two forward and back translations, sentence revision was done by all experts involved in the translation in meetings. Good translations were reflected by production of two English back translations which almost similar to original English version. At the end of this process, we produced a harmonized version of BM DASS-21 (BM-H).

Harmonized BM version was tested in a small group of people before authors embarked on real major validation study. Pretest was done on eight respondents with an objective to identify any flaws in harmonized version, which might affect the comprehension of the subjects. At the end of pre-test, we produced finalized BM version on DASS-21 (BM-DASS).

Validation study

The finalized BM version (BM-DASS) then was tested for its reliability and validity. Reliability in this study was determined by its internal consistency by looking at Cronbach's alpha values. Confirmatory factor analysis was used to ensure the validity of this BM-DASS by having acceptable factor loadings (>.4).

Selection of clinics and respondents

Study population of this study was a general population with age range between 14 to 55 years. The subjects were selected from 3 government clinics in Klang Valley area. A special permission was obtained from regional Ministry of Health authority. The selection of the clinics was done based on a few considerations. First, the attendees or patients that utilize these clinics should represent the composition of Malaysian population. Which means the location of clinic should not be in the areas that were highly dense with certain ethnic groups. It should not be at private clinics where certain economic class would affordable to acquire the treatment. At the same time, the convenience would also play an important factor. Participants were given information and consent forms prior to the study. Heterogeneous participants were taken care of in the aspects of age, gender, race and socio-economic class.

Selection of the subjects was also done at randomization where every third patients registered at the counter were chosen. A total of 263 subjects with various age groups and ethnicity were enrolled in this study. Composition of ethnic groups was tried to reflect the actual Malaysian population. Based on Malaysian Statistic Department (2005) where 54.1% were Malays, 25% were Chinese, 7.5% were Indians and 13.2% from other races [4].

Questionnaires

1. Demographic questionnaire: age, gender, ethnicity and level of education.
2) Finalized BM DASS-21Version.
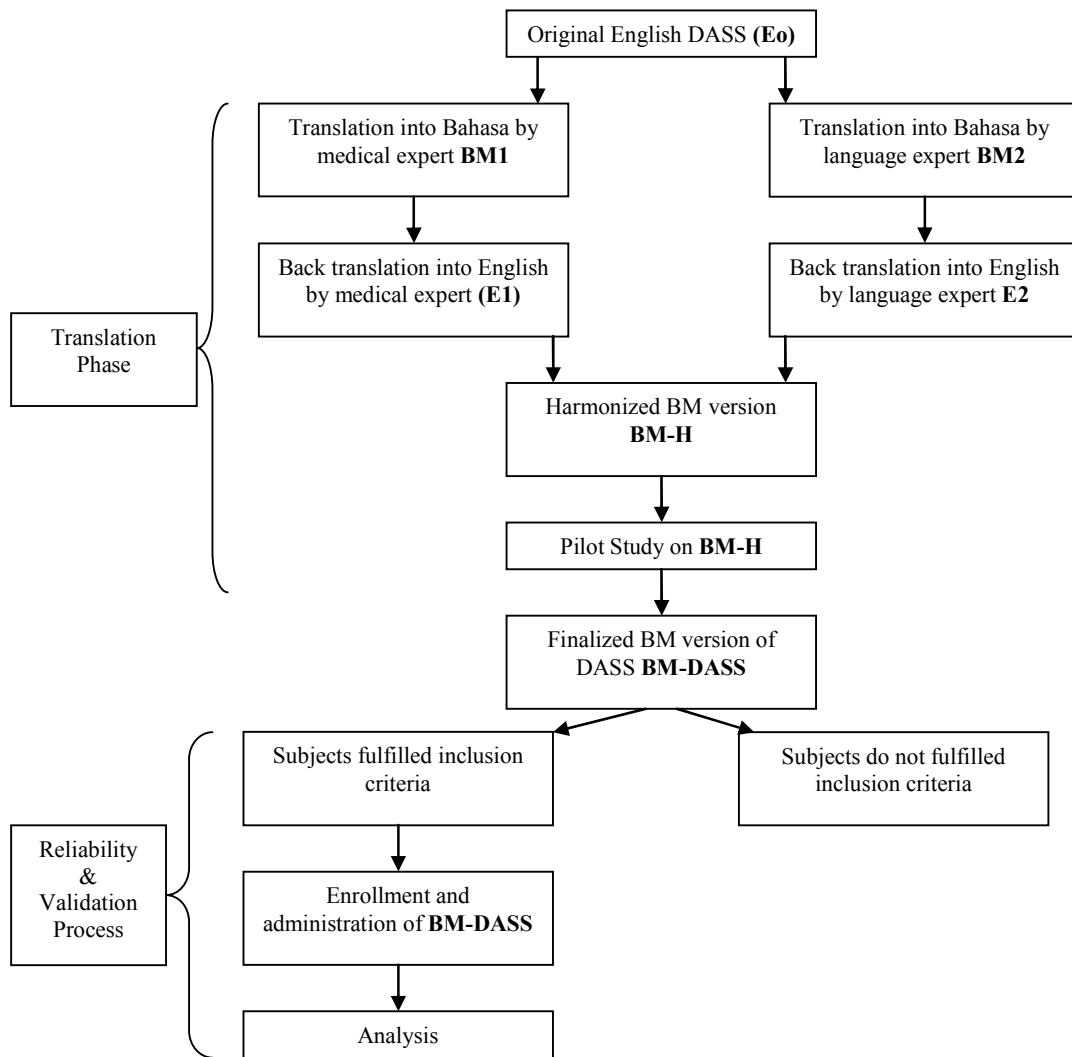
Figure 1: Overview of the whole process of cross-cultural adaptation and the validation of the DASS

.
The questionnaire was self-administered for the participants to answer. It took the maximum of 10-15 minutes for completion.

BM language fluency test.
In this study author created a simple BM language fluency test that can be administered on the spot, less time consuming and easy to assess. It involved building up a short sentence based on 3 words. This test required good grammar and wide knowledge of BM vocabulary in order to create a good sentence.

Steps taken to ensure the accuracy of responses
During the course of BM DASS questionnaire administration, the subjects should be left without any interference especially from facilitators of the project. If subjects raise any queries about the terminology, they should be explained as minimal as possible to maintain the objective of this study and it should be recorded. In actual process, author recorded only 8 subjects (3% of the total subjects) needed guidance

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in answering a few items.

Inclusion and exclusion criteria
1) Inclusion criteria:
   a) The age of the subjects was between 14 to 55 years.
   b) They must be proficient in BM.
2) Exclusion criteria:
   a) Subjects with any forms of cognitive impairments such as dementia and mental retardation would be excluded.
   b) Those were not able to give informed consent
   c) Subjects who were illiterate and had problem to understand BM and failed a short BM fluency test.

Results
Reliabilities of Bahasa Malaysia version DASS-21.
The reliabilities (internal consistencies) of BM DASS-21 were determined by looking at Cronbach's alpha values. Cronbach's alpha value for overall items was very good .904 (CI 95%). For depression, anxiety and stress scales the values were .84, .74 and .79 respectively.

Table 1 shows Malays and females were dominant in the aspects of ethnicity and gender. Chinese was underrepresented in this study as compared to actual population based on Malaysian Statistics Department Census (2005).

Validity test
The construct validity was evaluated by using confirmatory factor analysis. Factor loadings of 0.4 or more were considered good.

Tables 2 shows factor loadings for confirmatory factor analysis (CFA) of each item in BM DASS-21. From this table, it proved that BM DASS-21 managed to delineate its items into 3 main categories (depression, anxiety and stress). Three items had factor loadings less than .30. Among all items, item 18 was the poorest factor loading value (.20). This item "mudah tersentuh" (*I felt that I was rather touchy*) did not cross culturally sensitive to gauge stress level but rather had high factor loading for anxiety (0.65).

Items 7 and 12 had moderate factor loadings; .29 for anxiety and stress scale respectively. In comparison between depressive, anxiety and stress scales, depressive items were generally had good factor loadings (.51 to .73) as compared to other scales.

Correlations between scales were in the range of .54 and .68. There were high correlations between stress items with both depression and anxiety scales (.65 and .68 respectively).

Table 1: Socio-demographic data

	Number	%	Total
Age			
18-29	97	36.9	
30-39	115	43.7	
40-55	51	19.4	263
Race			
Malays	204	77.6	
Chinese	30	11.4	
Indians	27	10.3	
Others	2	0.8	263
Gender			
Male	100	38.0	
Female	163	62.0	263

Table 2: Item-total statistics

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1-S	15.41	75.53	.58	.894
Q2-A	15.53	77.62	.33	.902
Q3-D	15.87	76.61	.52	.896
Q4-A	16.14	77.75	.45	.897
Q5-D	15.38	74.92	.56	.895
Q6-S	15.57	76.67	.46	.898
Q7-A	15.83	77.18	.39	.899
Q8-S	15.20	74.93	.53	.896
Q9-A	15.37	75.20	.48	.897
Q10-D	16.03	76.48	.53	.896
Q11-S	15.62	73.30	.71	.891
Q12-S	15.62	74.38	.67	.892
Q13-D	15.63	74.39	.63	.893
Q14-S	15.45	75.98	.49	.897
Q15-A	15.83	75.20	.66	.893
Q16-D	15.82	76.14	.53	.896
Q17-D	16.19	76.42	.60	.894
Q18-S	15.21	76.13	.43	.899
Q19-A	15.78	76.11	.49	.897
Q20-A	16.00	77.26	.50	.897
Q21-D	16.35	79.24	.50	.897

Discussion

Despite randomization in the selection of the subjects, this study had limitation in the aspect of study population. Its study population did not reflect the actual Malaysian population. Chinese were under represented as only 10% contributed to total population as compared to 25% according to Malaysian Statistic Department [4].

There are a few explanations to these outcomes. Firstly, the utilizing of government or public clinics is normally among Malays and Indians, Chinese generally are at a higher economic status and prefer to go to private clinics as they can afford the service costs. Secondly, we noticed that there were a large number of Chinese subjects selected during the randomization refused to participate or had language barriers. However, we did not have the exact percentage of the refusals.

Internal consistencies found in this study (.84, .74 and .79) were slightly low as compared to other studies; .92, .84 and .91 for DASS-21 Spanish version, .88, .82 and .90 for English DASS-21 in UK population and .81, .73 and .81 obtained by original author [5-7]. Retrograde analysis of three items (items 7, 12 and 18), which had poor factor loadings, revealed that these items were commented in pre-test as easy to comprehend but less specific to measure as purposed. Such as item 18 "mudah tersentuh" (*I felt that I was rather touchy*) was rather described the personality of an individual rather than psychological reaction toward unpleasant experience.

Correlations (inter-correlated) between scales obtained in this study (.54-.68) were slightly lower as compared to figures ob-

Table 3: Factor loadings based on confirmatory factor analysis for each item in BM DASS-21.

Item summary	Subscale		
	Depression	*Anxiety*	*Stress*
D3 perasaan positif (positive feeling)	.67		
D5 mendapatkan semangat (work up initiative)	.73		
D10 tiada diharapkan (nothing to look forward)	.56		
D13 sedih dan murung (down-hearted and blue)	.51		
D16 tidak bersemangat (unable to become enthusiastic)	.75		
D17 tidak berharga (wasn't worth)	.62		
D21 tidak bermakna (meaningless)	.57		
A2 mulut kering (dryness of mouth)		.65	
A4 kesukaran bernafas (breathing difficulty)		.55	
A7 menggeletar (trembling)		*.29*	.52
A9 panik dan membodohkan (panic and make fool)		.52	
A15 menjadi panik (close to panic)		.39	
A19 Tindakbalas jantung (action of heart)		.52	
A20 takut (scared)		.62	
S1 sukar ditenteramkan (hard to wind down)			.64
S6 bertindak keterlaluan (over-react)			.72
S8 tenaga cemas (nervous energy)			.58
S11 semakin gelisah (getting agitated)			.42
S12 sukar untuk relaks (difficult to relax)	.53		*.29*
S14 tidak dapat sabar (intolerant)			.56
S18 mudah tersentuh (touchy)		.65	*.20*
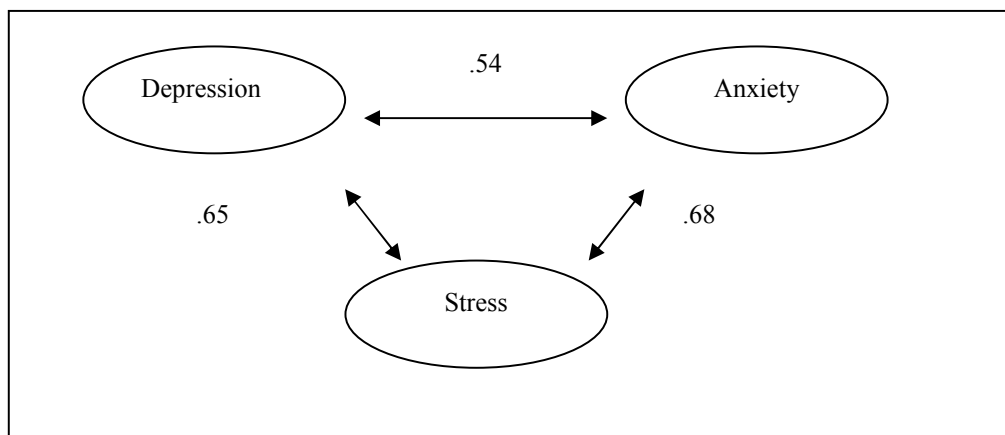
Figure 2: Correlation between the scales

Table 4: Statistical summary for each scale in BM DASS-21.

	Mean	Median	Standard deviation
DASS- 21			
Depression	4.2	3.0	3.4
Anxiety	5.0	5.0	3.3
Stress	7.4	7.0	3.7
Total score	16.5	15.0	9.1

tained in a study done by Crawford [3] where values of .74 to .77 were recorded and comparable with study done by original authors (.54) [7]. It was also documented that there were moderate inter-correlations (.5-.7) between the scales [1]. The correlations found in this study support the idea that 3 scales in DASS are inter-correlated, but we are not sure their actual relationships. These correlations can be causal in nature, such as genetic and other predisposing factors, or overlapping symptoms [7].

A comparison with clinical diagnosis would be interesting to be explored further since DASS anxiety scale is corresponded to various anxiety disorders in Diagnostic and Statistical Manual of Mental Disorders (DSM IV), the DASS stress scale corresponds closely to symptom criteria for GAD and the DASS depression scale corresponds closely to the mood disorders [1]. Theoretically, the stress symptoms are even overlapping between these entities [8]. Result of this study supports the tripartite model proposed by Clark and Watson. This is also inclining with original DASS theory where autonomic arousal is referring to anxiety where as hopeless and anhedonia are for depression. In this study, items such as "unable to become enthusiastic" (tidak bersemangat) and "wasn't worth" (tidak berharga) contributed high factor loadings for depression. There was also the presence of third dimension in the items, which was distinct from depression and anxiety. This was referring to stress subscale. Stress items would have loaded modestly on both

for anxiety and depression factors, rather than forming a separate factor as they in fact do [7]. Factor analysis of this study supports this idea.

In developing a new instrument for Asian population, there is a high tendency that people express their psychological disabilities through somatic complaints as compared to western populations [9]. Prominent somatic complaints were not only noticed for depressive symptoms but also for stress and anxiety [10]. Author feels that any instrument intends to be used in Asian population should be culturally adapted and emphasized on somatic symptoms rather psychological in nature. These include body weakness and lethargic for depression which were not tested in this study. Breathing difficulty, dryness of mouth and action of heart items loaded quite good values in confirmatory factor analysis for anxiety in this study. These items are in autonomic arousal subscale of anxiety.

The present study is providing a preliminary milestone to the future development of BM DASS-21 version where some changes may be needful to achieve better results. Future research work is needed to look at other aspects for instance establishment of criterion validity BM DASS-21 where we can compare DASS scores with clinical diagnosis or with questionnaires that have been validated in Malaysian population such as Hospital Anxiety and Depression Scale. Other aspect is to look at psychometric properties among clinical samples and development of BM DASS-42. So far, we can say that BM DASS-21 is applicable for non-clinical population in Malaysia but not really for clinical samples. We would aspect it would be an equivalence or better result for clinical sample as proven in the previous studies [5,6].

This BM version may only applicable in west part of Malaysia and may not be for East Malaysia populations such as Kelantan, Terengganu, Sabah and Sarawak states

where they have different dialects.

Acknowledgement

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