

ORIGINAL ARTICLE

VALIDATION AND PSYCHOMETRIC PROPERTIES OF BAHASA MALAYSIA VERSION OF THE DEPRESSION ANXIETY AND STRESS SCALES (DASS) AMONG DIABETIC PATIENTS

Ramli M¹, Salmiah M.A², Nurul Ain M²

¹ Department of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang Malaysia.

² Faculty of Pharmacy, University of Technology MARA, 40450 Shah Alam, Selangor, Malaysia.

ABSTRACT

Background: Having a validated questionnaire in any field would nurture a research path in that particular area. The aim of this study was to validate the Depression Anxiety Stress Scales 21-item (DASS-21) Bahasa Malaysia (BM) version among clinical subjects who were diabetic patients. **Objectives:** To determine the reliability and construct validity of the BM DASS by looking at internal consistency and confirmatory factor analysis respectively. **Methods:** The BM DASS was administered to a total of 153 diabetic patients. These patients were selected when they came to 15 retail pharmacies all over the Klang Valley. **Results:** The BM DASS-21 had very good Cronbach's alpha values of 0.75, 0.74 and 0.79, respectively for depression, anxiety and stress subscales. For construct validity, it also had good factor loading values for 17 out of 21 items (.31 to .75). **Conclusions:** The results of this study entrenched the evidence that the BM DASS-21 had excellent psychometric properties and therefore it is suitable to be used for the Malaysian clinical population.

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

Introduction

The Depressive, Anxiety and Stress Scale (DASS) is designed to measure depressive, anxiety and stress levels concurrently. The original version of DASS is 42-item. DASS 21-item is a modified and shorter version¹. It is a self-report instrument which requires

no special skills to administer. Each of the three subscales of DASS is intercorrelated with one another^{2,3}. The DASS-21 has been translated in various languages and validated in different populations. Currently there are a handful of validated questionnaires in Bahasa Malaysia (BM). An earlier study on BM DASS-21 showed that DASS-21 had

good psychometric properties for the Malaysian general population³. Further evidence is needed to look at psychometric properties of this version among clinical subjects in order to say that this BM version is also reliable to be used in clinical setting. In this study, the authors are focusing on the efforts of reliability and validity of this version among diabetic patients.

This project is part of a bigger project which is to determine the risks factors of depression and other psychiatric morbidities among diabetic patients by the Faculty of Pharmacy, University Technology of MARA (UiTM). Diabetic patients were chosen as it was proven that the occurrence of diabetes cases had increased for the past few years and it will keep on increasing in the future. The Second National Health and Morbidity Study in 1996 revealed that the prevalence of diabetes in Malaysia was 8.2%. This value had increased from the First National Health and Morbidity Study in 1986 which was reported as 6.3%⁴.

Methods

This is a multi-center cross sectional study. The process of translation and pre-test was done in a previous study in accordance to guidelines stipulated in the United State Census Bureau Guideline where 2 forward and 2 back translations were done in parallel by 2 medical and 2 language experts. The BM DASS-21 version used in this project is the same version used in the previous study. The translation of DASS-21 was not repeated in this project. The whole process of translation and validation of BM version is summarized in the past article³. A special permission from the original author of DASS (Professor Dr. 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. The population selected for validation purpose in this study was attendees of retail pharmacies in Klang Valley which comprises of five administrative parts: the Federal Territory of Kuala Lumpur, and the four districts of Hulu Langat, Gombak, Petaling and Klang in the state of Selangor. The pharmacies were identified through the list of retail pharmacies obtained from Pharmacy Division, Ministry of Health Malaysia. Copies of the questionnaire were distributed to 15 retail pharmacies all over the Klang Valley with the aim of getting the result that best represents the population of Klang Valley. A permission to circulate the questionnaire was obtained from the in-charged pharmacists as well as from the owners of the retails involved. The selection of the retail pharmacies was based on quota convenience sampling. All participants were ensured of the confidentiality and understood that the information gathered will only be used for research purposes. Various subjects were being approached from all ages, gender, ethnicity and socio-economic status. Heterogeneous participants were taken care of in the aspects of age, gender, race and socio-economic class. Composition of ethnic groups was tried to reflect the actual Malaysian population based on the Malaysian Statistic Department (2005) where 54.1% were Malays, 25% were Chinese, 7.5% were Indians and 13.2% from other races⁵.

The inclusion criteria for the subjects:

1. Age of the subjects was between 20 - 60 years old
2. Participants were all diabetes patients and able to give written consent.

The exclusion criteria of this study include:

1. Those who were not conversant in BM.

Results

A total of 300 copies of BM DASS were distributed to all the identified pharmacies but only 200 respondents agreed to participate or fulfilled the inclusion criteria. Out of 200 who answered the questionnaires, 67 were considered as drop out due to incomplete data and reasons provided in the exclusion criteria. Only 153 samples were available to undergo the analysis.

Table 1: Demographic profile of the subjects

Variable	N	%
Age (years old)		
20-40	31	20.3
41-50	24	15.7
51-60	98	64.0
Gender		
Male	75	49
Female	78	51
Race		
Malay	120	78.4
Chinese	16	10.5
Indian	17	11.1
Marital Status		
Single	4	2.6
Married	133	86.9
Divorced / widowed	16	10.5
Educational Level		
Primary School	23	15.0
PMR/SRP	25	16.4
SPM/SPMV/STPM	69	45.1
College Graduate	36	23.5
Employment Status		
Full-time	73	47.7
Part-time	7	4.6
Unemployed	32	20.7
Retired	41	26.8

Among the 153 subjects who participated in this study, 51% (n = 78) were female (Table1). The majority of the subjects were

in the age range of between 51 to 60 years old (62%). 78.4% of them were Malays, 10.5% were Chinese and 11.1% were Indians (Table 1). The subjects who participated in this study were heterogeneous in the aspect of socio-economy such as level of education, marital status and occupation.

For reliability, the internal consistency of this version revealed good Cronbach's alpha values. For depressive, anxiety and stress subscales, Cronbach's alpha values were 0.75, 0.74 and 0.79 respectively.

Validity was determined by Confirmatory Factor Analysis (CFA) and is summarized in Table 2. Table 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). All items except four had factor loadings of more than .30, which was good.

The correlation between depression and anxiety subscales was .41. A positive value indicated that there was a positive correlation between the two analyzed variables. This indicates that depressed subjects would also experience anxiety symptoms. The correlation between depression and stress subscales was .65 which is stronger. The correlation between Stress and Anxiety was .59. Positive correlation values imply that stress symptoms are intercorrelated with anxiety and depressive symptoms among the participants.

Table 2: Factor loadings based on confirmatory factor analysis for each item in BM DASS-21

Item	Subscales		
	Depressive	Anxiety	Stress
D3 perasaan positif (positive feeling)	.52		
D5 mendapatkan semangat (attaining initiative)	.62		
D10 tiada diharapkan (nothing to look forward to)	.61		
D13 sedih dan murung (down-hearted and blue)	.31		
D16 tidak bersemangat (unable to become enthusiastic)	.62		
D17 tidak berharga (no sense of worth)	.75		
D21 tidak bermakna (meaningless)	.18*		.48
A2 mulut kering (dryness of mouth)		.53	
A4 kesukaran bernafas (breathing difficulty)		.75	
A7 menggeletar (trembling)		.71	
A9 panik dan membodohkan (panic and making a fool)		.33	
A15 menjadi panik (close to panic)		.21*	.49
A19 tindakbalas jantung (action of heart)		.76	
A20 takut (scared)		.11*	.76
S1 sukar ditenteramkan (hard to wind down)			.36
S6 bertindak keterlaluan (over-react)			.37
S8 tenaga cemas (nervous energy)			.29
S11 semakin gelisah (getting agitated)			.41
S12 sukar untuk relaks (difficult to relax)			.31
S14 tidak dapat sabar (impatient)			.36
S18 mudah tersentuh (touchy)		.50	.04**

*Poor value

Discussion

This study managed to draw a conclusion that BM DASS-21 had good psychometric values for internal consistencies and confirmatory factor analysis. Results in this study yielded Cronbach's alpha values of 0.75, 0.74 and 0.79 respectively for depression, anxiety and stress subscales as compared to 0.84, 0.74 and 0.79 in the past study for the same version by Ramli et al, (2007)³. The only difference is a lower value for depressive subscale but exactly similar for anxiety and stress.

For exploratory factor analysis, items 15, 20 and 21 had poor outcomes in the current study. However, these items had good factor loadings in the previous study (.39-.62). Conversely, items 7 and 12 had modest factor loading in this study but had poor values in the previous study. The other interesting aspect that we observed in the exploratory factor analysis is that this study replicated the same result with the past study that among all items, item 18 had the poorest

factor loading value of 0.04 as compared to 0.20 previously. As described earlier, item 18 was more of a description of individual's personality rather than the psychological reaction toward an unpleasant experience [3]. Since both studies demonstrated similar findings, there is a strong indication to replace this item with other alternative. These findings were against our earlier perception that clinical subjects would draw an equivalence or better result as was seen in the other studies^{6,7}.

Correlations (inter-correlated) between scales obtained in this study (.41-.65) were slightly lower as compared to figures obtained in the previous study. Nevertheless, these figures were comparable with the study done by original authors (.54) [8]. This study confirmed the correlation between depressive symptoms and diabetes by using the DASS-21 scale. Consistent with previous studies, results from this study illustrated that depressive symptoms experienced by diabetes patients were significantly related to

anxiety and stress as suggested by Zhang et al in their studies involving Chinese patients with Type 2 Diabetes. Overall summarization of DASS-21 data proposed that Depression, Anxiety and Stress were significantly associated with each other and may coexist mutually⁹.

The correlation values showed that there are significantly high correlations between depression with both anxiety and stress scale. Therefore, from the correlation table above, it can be simplified that Depression, Anxiety and Stress were significantly associated with each other and may coexist in diabetes patients.

Again, this study also had a limitation in the aspect of study population as the Chinese were under represented. Similar pattern of under presentation is also found in other studies¹⁰. We noticed that there a substantial number of Chinese subjects selected had language barriers.

Conclusion and Recommendation

By completion of this recent study, we can say that BM DASS-21 is applicable not only for non-clinical subjects but also for clinical subjects, particularly diabetic patients. Further efforts on criterion validity of the BM DASS-42 and the DASS-21 are underway in which comparison is done with clinical diagnosis and the Hospital Anxiety and Depression Scale.

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Corresponding Author: Dr. Ramli Musa, Department of Psychiatry, Kulliyah of Medicine, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang Malaysia.

Email: ramlidr@yahoo.com

Tel No: (+609) 5716400 @ (+6012) 2484076

Fax No: (+609) 5716770