

## ORIGINAL PAPER

**Psychometric Profile of Malaysian version of the Depressive, Anxiety and Stress Scale 42-item (DASS-42)***Ramli M<sup>1</sup>, Rosnani S<sup>2</sup>, Aidil Faszrul AR<sup>1</sup>*

<sup>1</sup>Department of Psychiatry, Kulliyah of Medicine, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia

<sup>2</sup>Kulliyah of Nursing, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia

**Abstract**

**Background:** The Malay short version of Depressive Anxiety and Stress Scale (DASS-21) has been widely used as a tool to measure psychological parameters in studies in Malaysia. The version has been found to be reliable for clinical and non-clinical populations. **Objectives:** To analyse and establish the psychometric properties of the Malay version of the DASS 42-item (BM DASS-42) among medical students. **Methods:** Concurrent forward and backward translations of original English DASS-42 were completed. Construct validity of the DASS-42 was established by looking at its exploratory factor analysis. Malay DASS-42 and Malay HADS were administered to a total of 411 medical students. **Results:** Reliability of DASS-42 revealed excellent Cronbach's alpha values of 0.94, 0.90 and 0.87 for depressive, anxiety and stress domains respectively. Construct validity yielded 38 items out of 42 items (90%) had good factor loadings of 0.4 and more. DASS and HADS were strongly correlated for both anxiety ( $r=0.87$ ) and depression ( $r=0.68$ ) domains. **Conclusions:** The BM DASS-42 had admirable psychometric properties among the tested population. Further studies are needed to verify these preliminary outcomes in other Malaysian subjects.

**Keywords:** Depressive, Anxiety, Stress, Malay, Validation

**Introduction**

The Depression Anxiety Stress Scales (DASS) has been translated in various languages including Malay language. It also has been widely used across the globe as a research tool to measure psychological aspects. By a single administration the

researchers would be able to gauge 3 main psychological domains namely depression, anxiety and stress. The original version of DASS is 42-item and DASS 21-item is a modified short version. The DASS-21 has been tested for various aspects of psychometric properties in different populations <sup>1, 2, 3</sup>. Ever since the

establishment of the Bahasa Malaysia (BM) DASS-21 validity, it has received overwhelming responses and it has been widely used in Malaysia. The questionnaire is simple and convenient to be administered to general population. The forty two items in this questionnaire are cultural free and that makes the test feasible to adapt to any cultures<sup>4,5</sup>.

Prior to the validation effort, we obtained the permission from the original author (Professor Dr. Peter Lovinbond, Professor of The School of Psychology University of New South Wales Australia) to develop BM DASS-42. The ultimate aim of this study was to produce a well adapted Bahasa Malaysia version of DASS-42 that can be used for Malaysian population.

## Methods

This research obtained an approval by The Ethics and Research committee Kulliyyah of Medicine International Islamic University Malaysia. The translation process was done according to guideline stipulated in US Census Bureau Guideline with 2 forward and 2 back translations by language and content experts<sup>6</sup>. The outcomes of previous DASS-21 translation were also integrated in the process. The finalized Bahasa Malaysia version (BM-DASS) was then tested for its reliability and validity. Reliability in this study is determined by good Chronbach alpha values and validity is by good factor exploratory analysis of all 42 items. The

Hospital Anxiety and Depression Scale (HADS) was also administered to look at its correlations with DASS-42. All medical students except students in final year were the study population in this study. Final year medical students were excluded due to academic reasons. A total number of 452 students were identified, 10 declined to participate, 29 subject forms were incomplete and 2 were international students whom do not communicate Malay language Hence the analysis was based on 411 students. The inclusion criterion is those proficient in Malay language. Participants were given a simple consent form, BM versions of DASS-42 and Hospital Anxiety Depression Scale (HADS). The subjects were ensured of the confidentiality of the questionnaires.

During the course of Malay DASS-42 administration, subjects were left without any interference. If subjects raise any queries about the terminology, a minimal explanation was given in accordance with the objectives of this study.

The HADS was developed by Zigmond and Snaith in 1983. HADS is a measure consists of 2 domains namely anxiety and depression<sup>7</sup>. The Malay version of HADS has been validated by various centres<sup>8,9</sup>. In this study, we examined the correlation between the domains of anxiety and depression in HADS and DASS.

## Results

**Table 1.** Socio-demographic data

|             | Number | %    | Total |
|-------------|--------|------|-------|
| <i>Race</i> |        |      |       |
| Malays      | 409    | 99.5 | 411   |
| Others      | 2      | 0.5  |       |

|               |     |      |     |
|---------------|-----|------|-----|
| <i>Age</i>    |     |      |     |
| 19-20         | 128 | 31.1 | 411 |
| 21-22         | 151 | 36.7 |     |
| 23-24         | 132 | 32.2 |     |
| <i>Gender</i> |     |      |     |
| Male          | 179 | 43.5 | 411 |
| Female        | 232 | 56.5 |     |

Table 1 shows almost all participants were Malays and they were well dispersed in their age groups and genders. The distribution was in accordance to university census.

The reliability of BM DASS-42 was based on the Cronbach's alpha values. The overall BM DASS Cronbach's alpha was 0.95, 0.92 for depressive domain, 0.87 for anxiety domain and 0.88 for stress domain.

**Table 2.** Component matrix of Exploratory Factor Analysis

|  | Domain     |         |        |
|--|------------|---------|--------|
|  | Depression | Anxiety | Stress |
| D3 tidak dapat mengalami perasaan positif    | .42        |         |        |
| D5 tidak bergerak ke mana-mana               | .40        |         |        |
| D10 tidak mempunyai apa-apa untuk diharapkan | .66        |         |        |
| D13 rasa sedih dan murung                    | .43        |         |        |
| D16 hilang minat dalam segala hal            | .61        |         |        |
| D17 tidak begitu berharga                    | .68        |         |        |
| D21 hidup ini sudah tidak bermakna           | .85        |         |        |
| D24 tidak dapat merasakan keseronokan        | .59        |         |        |
| D26 rasa duka dan tidak keruan               | .53        |         |        |
| D31 tidak bersemangat                        | .63        |         |        |
| D34 diri saya langsung tidak berharga        | .81        |         |        |
| D37 melihat tiada masa depan                 | .78        |         |        |
| D38 rasa hidup ini tidak bermakna            | .86        |         |        |
| D42 sukar untuk mendapatkan semangat         | .44        |         |        |
| A2 mulut terasa kering                       |            | .41     |        |
| A4 mengalami kesukaran bernafas              |            | .66     |        |
| A7 perasaan gementar                         |            | .60     |        |
| A9 keadaan yang menjadikan saya amat risau   |            | .34*    | .63    |
| A15 macam nak pengsan                        |            | .46     |        |
| A19 banyak berpeluh                          |            | .41     |        |
| A20 takut tanpa sebab                        |            | .52     |        |
| A23 sukar menelan                            |            | .61     |        |
| A25 sedar tindakbalas jantung                |            | .59     |        |
| A28 menjadi panik/cemas                      |            | .57     |        |
| A30 dihambat oleh tugas yang remeh           |            | .27*    | .65    |
| A36 rasa amat takut                          |            | .50     |        |
| A40 mungkin menjadi panik                    |            | .30*    | .52    |

|   |     |      |
|---|-----|------|
| A41 rasa menggeletar                            | .57 |      |
| S1 kesal/marah sebabkan perkara-perkara kecil   |     | .71  |
| S6 bertindak keterlaluan                        |     | .63  |
| S8 sukar untuk relaks                           |     | .45  |
| S11 mudah merasa kesal                          |     | .64  |
| S12 menggunakan banyak tenaga                   |     | .62  |
| S14 hilang kesabaran sekiranya saya dilambatkan |     | .71  |
| S18 rasa mudah tersentuh                        |     | .69  |
| S22 sukar ditenteramkan                         |     | .57  |
| S27 mudah marah                                 |     | .56  |
| S29 sukar untuk bertenang setelah rasa kesal    |     | .73  |
| S32 sukar bersabar pada gangguan                |     | .40  |
| S33 keadaan yang terlalu gementar               | .59 | .32* |
| S35 hilang pertimbangan                         |     | .55  |
| S39 saya semakin gelisah                        |     | .43  |

\*Poor factor loading (<0.4). Varimax rotation.

Before the factor analysis was done, we ran the Kaiser-Meyer-Olkin (KMO) analysis to look at the sampling adequacy. We obtained a good value of 0.95 which indicates the sample size is adequate.

The Principal Component analysis with Varimax rotation and Kaiser Normalization was done to look at the explanatory factor analysis. Table 2 shows all items in depression domain had good factor loading (>0.4). Three of items in Anxiety domain have poor factor loading which are item no 9, 30, and 40. All items in Stress domain had good values except item 33 which is having higher factor loading in anxiety domain.

The concurrent validity of DASS was determined by analysing the correlation with HADS. The Spearman's correlation for 2 domains in DASS & HADS was 0.68 for depression and 0.87 for anxiety.

## Discussion

The results in this study prove that DASS-42 Malay version is reliable in internal consistency as it has good Cronbach's alpha values for overall scale and in 3 domains in

DASS. The Cronbach's alpha values recorded in this study (0.94, 0.90 and 0.87 respectively for depressive, anxiety and stress domains) are superior when we compare with its Malay 21-item (short version). Two studies in the past on Malay short version showed the Cronbach's alpha values between 0.74 and 0.84 only<sup>4,5</sup>. However the Chronbach's alpha values of our study are comparable with the study done by the original authors (S.H. Lovibond and P.F. Lovibond) using DASS-42 item scale<sup>3</sup>.

The good psychometric properties of the Malay DASS-42 are further echoed by its validity analysis. When we ran the explanatory factor analysis using Varimax rotation without any domain force, we found the items were well suited to their respective domains except only 4 out of 42 items. Other 38 items had quite acceptable values of factor loading. This is a source of evidence that the Malay version is validated in the studied population.

In this study, we also examined the concurrent validity of Malay DASS-42 by looking at the correlations of domains in

DASS with HADS. Since Malay HADS has been validated to the Malaysian population and we used it as our reference for the purpose. Since the Spearman's correlation values between DASS and HADS are high, this indicates that the convergent and divergent validity were well predicted. The Malay DASS-42 showed good concurrent validity with HADS as the domains of depression and anxiety were strongly correlated. The values of 0.68 and 0.87 were obtained for depression and anxiety domain respectively. The correlation values in this study are better as compared to values obtained in a past study using Malay DASS short version (21 items) and HADS<sup>10</sup>.

In another study done on intensive care unit (ICU) patients to compare DASS and HADS, the correlation values obtained were 0.75 for depression and 0.66 for anxiety. Looking at the results of this study, the result conversely yielded better correlation on anxiety domain as compared to depressive domain<sup>11</sup>. The strong correlations between both anxiety and depression domains in HADS and DASS, suggest that the two instruments are virtually interchangeable in their role and ability. There was good agreement between the two tests, as shown in a study done by Nieuwenhuijsen et al<sup>12</sup>. However it is good to remind the readers that these 2 scales are not diagnostic tools to detect cases of depression or anxiety. Structured interview is still needed to detect the real cases based on the Diagnostic and Statistical Manual of Mental Disorders (DSM).

By looking at the nature of items in both DASS and HADS scales, we observe they are free of cultural element but fully loaded with somatic evaluation. Somatic evaluation is good for designing a scale for Asian population as this population has the tendency to exhibit psychological ailment

through somatic complaints. Nevertheless with regards to the aspect of gauging psychological disabilities among medically ill patients, these items are less suitable as physical complaints due to medical disease may mask the underlying psychiatric symptoms.

The results of our study suggest that the psychometric properties of Malay DASS-42 item are suited for the non-clinical population. The limitation of our study is that the findings cannot be generalized on the Malaysian population. Generalization of our will require more studies or replications on actual representative general Malaysian population. Similar results can be expected as most of other studies showed there was high internal consistency noted in both students and clinical populations<sup>13,14</sup>. In conclusion, the Malay version of DASS-42 has been translated with good quality and it is validated for this group of population. However to generalize it to Malaysian population, it needs more extensive studies on different groups of populations.

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### **Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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**Corresponding Author**

Dr. Ramli Musa

Associate Professor,

Department of Psychiatry, Kulliyah of Medicine,

International Islamic University Malaysia,

Jalan Hospital, 25150 Kuantan, Pahang, Malaysia

**Tel:** +609-571 6400

**Fax:** +609-5133 615

**H/P:** +6012-248 5076

**Email:** ramlidr@yahoo.com / drramli@iiu.edu.my