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TRANSLATION, ADAPTATION, AND VALIDATION OF DEPRESSION, ANXIETY, AND STRESS SCALE (DASS-42) IN SINDHI LANGUAGE

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ABSTRACT

Background: *The last decade has observed a conspicuous rise in the prevalence of mental health disorders especially anxiety and depression which is a serious threat to a public health concern.*

Objective: *The current study aimed to translate and adapt the original version of the Depression, Anxiety, and Stress Scale (DASS-42) in the Sindhi language and confirm the factor structure.*

Methodology: *The data was collected from the students of the University of Sindh ranging between 18 to 35 years using convenient sampling. The study employed quantitative research design and was completed in three phases i.e. translation, cross-validation, and confirmation of the factor structure of the translated version. The forward and Back translation method was used to translate the assessment ensuring semantic and conceptual equivalence. Pilot testing was performed on 30 participants and the final assessment procedure included 200 participants. The statistical analyses were conducted using SPSS and AMOS.*

Results: *The results indicated that both versions had reliabilities above acceptable ranges. CFA supported the employed model of DASS-42 however, some challenges were observed suggesting further need for exploration.*

Conclusion: *The factor structure and overall research data results revealed that the translated tool was a reliable and valid instrument in Sindhi culture.*

Keywords: *Depression, Anxiety, Stress, Sindhi culture, Forward and Back Translation, Confirmatory Factor Analysis*

INTRODUCTION

The last decade has observed a conspicuous rise in the prevalence of mental health disorders especially stress, anxiety, and depression which is a serious threat to public health concern[1]. Developed by Lovibond[2], the Depression, Anxiety, and Stress Scale (DASS-42) is a commonly used tool for measuring these constructs. It had a Likert-type response format with a 0-3 score range where 0 indicated never and 3 indicated always. This scale utilized the tripartite model which explained the distinctive features of depression and anxiety and how a common factor (stress) is associated with both constructs mentioned above[3].

As DASS-42 is in English, those who are not native speakers of Sindhi or are not well adept in English language cannot understand the test items thus

indicating a need for a translated tool into Sindhi language. Because of this cultural maladjustment, these psychological constructs, as they are experienced by the Sindhi community were not effectively captured. The main objective of this research was to translate and adapt the DASS-42 into Sindhi, thereby providing a psychometrically ensured instrument for assessing depression, anxiety, and stress among Sindhi-speaking individuals. According to the reported statistics in the past decade, Sindh was considered as one of those provinces of Pakistan where the literacy rate was below the benchmark, hence this study targeted Pakistani Sindhi community for this research[4].

By doing so, this research seeks to enhance the accuracy of mental health diagnoses and contribute to the development of targeted interventions for this population. It is necessary to account for the language and cultural nuances unique to this group. It has also been translated into the Urdu language with acceptable reliability and validity ensuring the success of the theoretical model of DASS-42 among the Urdu-speaking community of Pakistan[5]. This study adds to the continuous endeavor to improve mental health evaluations in non-Western contexts, with the ultimate goal of improving the well-being of people in these communities.

The term depression is generally the defining feature of hopelessness, anhedonia, dysphoria, and in some cases self-harm[6]. Anxiety includes the symptoms of excessive apprehension, lack of concentration, muscle tension, and irritability. It also leads to physiological changes such as palpitations, sweating, dryness of the mouth[7]. Stress is the term that was first coined by Selye as he described that traumatic neuroses lead to severe or chronic stress. Stress is an appraisal of threat, combined with excessive production of adrenaline which results in excessive feelings of anxiety. Stress is the main environmental risk factor for psychiatric and psychological illnesses which makes people more vulnerable to depression and other mental diseases[8].

METHODOLOGY

Objectives

1. To translate original version of DASS-42 in Sindhi version
2. To establish the psychometrics and cross validation of the translated version
3. To confirm factor structure of Sindhi version of DASS-42

Sample

The study utilized a quantitative research design employing convenient sampling to recruit participants who volunteered for the research. The data was collected from the students of the University of Sindh ranging between 18 to 35 years of age (adults). Two samples were selected and pre-assessment was conducted as a pilot study to ensure the psychometrics of English version on 30 participants who were fluent in both English and Sindh. The next assessment of translated version was conducted on a sample of 200 participants. The assessment included both genders i.e. males and females.

Instruments

The participants were provided a consent form to ensure that they are fully aware of their rights of anonymity, confidentiality, right to withdraw, and no harm. Demographic performa was provided which included age, gender, marital status, education, and occupation. The main scale used for the current study was Depression, Anxiety, and Stress scale (DASS-42) both in English and Sindhi.

Procedure & Statistical Analyses

The study was conducted in three phases i.e. translation, cross-validation, and confirmation of the factor structure of the translated version. In the first phase, permissions were sought from the author DASS-42 to translate and from ethical committee to perform the research. Forward and back translation method was used by strictly following the standard criteria[9]. For this purpose, seven bilingual experts were approached who were fluent in English and Sindhi language (2 English experts, 2 Sindhi experts, and 3 PHD holders in Psychology). The panel was briefed regarding the nature of the study and was requested to ensure conceptual and semantic equivalence of the scale.

To ensure the precision and accuracy of the translation, five other experts were asked to translate the Sindhi items back to English. Finally, for the critical evaluation of the scale, a panel of five bilingual experts (n = 5) was requested. The modifications recommended by the panel were kept in consideration and then items were translated as well as finalized in tryout. In the second phase, permission to collect data was obtained from the HOD and data was collected from a sample of 200 participants (English and Sindhi version for test re-test reliability). In the third and final phase of the

study, 200 more participants were targeted for the data collection using Sindhi version of the scale. Confirmatory factor analysis using AMOS version 26 was conducted to confirm the theoretical model used in the current study. To estimate the model fit, the metrics used were Chi-square, the Incremental Fit Index (IFI), the Goodness of Fit Index (GFI), the Comparative Fit Index (CFI), the Standardized Root Mean Square (SRMR), and the Root Mean Square Error of Approximation (RMSEA).

RESULTS

Table 1

Cronbach's Alpha and Pearson Correlation of DASS-O and DASS-S (N = 200)

Scales	K	α	1
DASS-O	42	.92	.98**
DASS-S	42	.90	-

*Notes: DASS-O = Depression, Anxiety, and Stress Scale Original Version, DASS-S = Depression, Anxiety, and Stress Scale Sindhi Version, k = no. of items, α = Cronbach's Alpha Reliability, **p<0.01*

Table 1 highlights the Cronbach alpha reliability of the original version and translated version. According to Cook and Beckman[10], the current scale had reliability above the acceptable range (0.60). Furthermore, the Pearson correlation analysis of both versions indicated that the original and Sindhi versions were significantly positively correlated with each other at a confidence interval of 99%.

Table 2

Descriptive and Bivariate Correlations among Study Variable and Subscales (N = 200)

Variables	*k*	*M*	*SD*	*α*	*Skew*	*Kurt*	2	3	4
DASS	42			.90			.90**	.86**	.88*
DEP	14	22.2	13.1	.83	-.42	-1.08	_	.67**	.69**
ANX	14	15.6	13.9	.81	.24	-1.3	_	_	.66**
STR	14	12.8	13.5	.86	.46	-1.2	_	_	_

*Note: DASS = Depression, Anxiety and Stress Scale, DEP = Depression, ANX = Anxiety, STR = Stress, k = no. of items, Skew = Skewness, Kurt = Kurtosis, α = Alpha, **p<0.01*

Table 2 indicates descriptive statistics of DASS-42 along with its subscales. A total of 42 items were present in the scale whereas, 14 items were present in each of the subscale. All of the reliabilities were in acceptable range. The distribution of the data was normal[11] as shown by the values of skewness and kurtosis ranging between +2 and -2. Moreover, the correlations between all of the variables indicated that study variables had a significant positive association with each other. The significance level was built at **p< 0.01 with a confidence interval of 99%.

Table 3

Model Fit Indices for the Factor Structure of DASS-42 and its Subscales (N = 200)

Variables	*X^2/df*	*Factors*	*Factor Loadings*	*GFI*	*IFI*	*CFI*	*SRMR*	*RMSEA*
DASS	4.5	3	.78 - .93	.76	.82	.89	.06	.09
DEP	2.09	1	.78 - .92	.91	.97	.98	.02	.07

ANX	2.64	1	.87 - .93	.89	.96	.97	.02	.08
STR	2.79	1	.89 - .92	.88	.97	.97	.02	.07

Note: X^2/df = Chi Square to Degrees of Freedom Ratio, CFI = Comparative Fit Index; IFI = Incremental Fit Index; GFI= Goodness of Fit Index; SRMR = Standardized Root Mean Square; RMSEA = Root Mean Square Error of Approximation.

Table 3 shows model fit indices for confirmatory factor analysis of DASS-42 and its subscales i.e. depression, anxiety, and stress. The values in the table are included for the modified model after closer to 1, however value for RMSEA and SRMR should be less than 0.08, and factor loadings should be above .30. The higher-order factor model (DASS) did not fit well to the data however the separate factor models of subscales fit well to the data according to model fit parameters.

applying error co-variances. According to the criteria[12], the fit indices CFI, GFI, and IFI should be

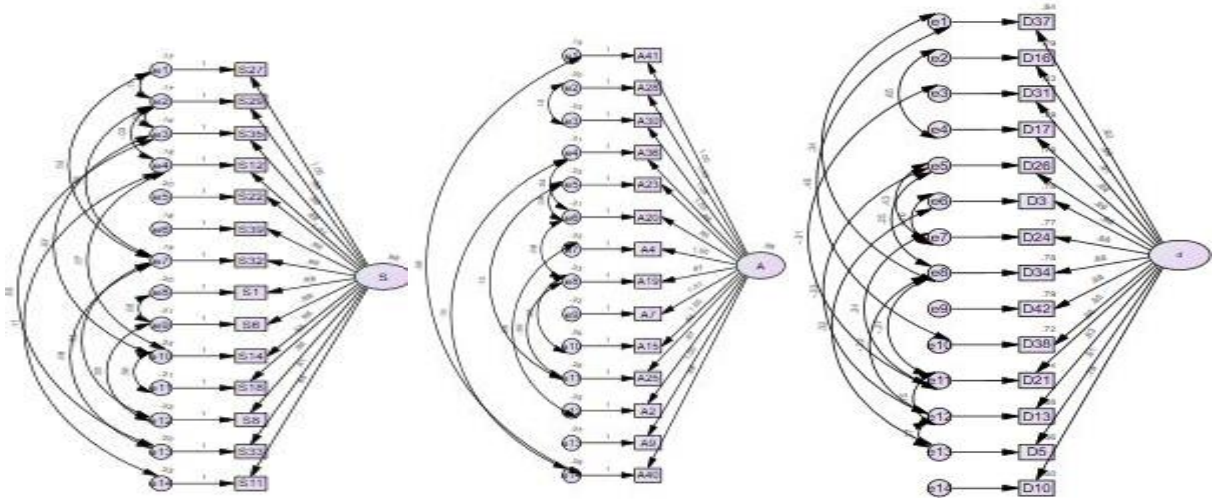

Figure 1

CFA models for Depression, Anxiety and Stress Subscales with Error Co-Variances

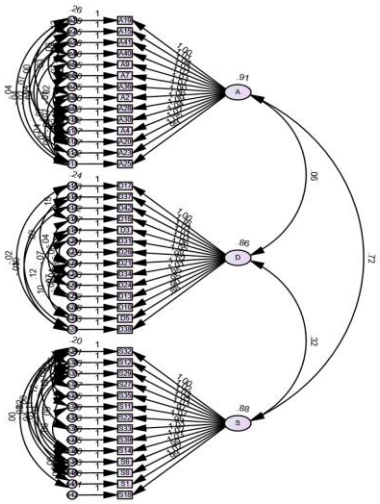

Figure 2
CFA Higher-Order Model of DASS-42 with error co-variances

DISCUSSION

A plethora of research exists that supports the notion that depression, anxiety, and stress are one of the leading causes of decreased quality of life[13,14]. There are many tools available to assess these psychological problems but all of them were developed in Western culture and using those tools without confirming the validity in Asian culture could lead to over diagnosis or underdiagnoses. For this reason, the present research translated and adapted a well-known screening tool DASS-42 into the Sindhi version to provide a psychometrically ensured scale for effective use with the Sindhi natives.

The study recruited students from a renowned educational institute of Sindh and collected data. The study was completed in three phases i.e. translation, validation, and factor confirmation. The reliability analysis of the study variables indicated that the translated version is consistent with the original version as shown in Table 1. It indicated that the translated version was a reliable measure of the constructs as it reproduced consistent results in the Pakistani context as well. A previous study collected data from Asian countries and found that DASS is a reliable measure of depression, anxiety, and stress in various populations and across different cultures[15].

The second table highlighted the descriptive statistics of the study and the results showed that the data had a normal distribution and no outliers were present in the study. This might be because the sample contained students and mainly a nonclinical population. Moreover, depression, anxiety, and stress subscales had a positive relationship with each other. This was also concluded in the study conducted with Covid-19 patients. As all of the variables are considered negative and are associated with adverse outcomes, hence, a positive relationship was observed[16].

The final step was to confirm the three-factor structure of the translated version. The theoretical backing of the study relied on the tripartite model which states that DASS would give three factors as a whole and on a subscale level, one factor would be extracted from each. The present study was consistent with the original theme as three factors were extracted at a higher level and one factor was extracted from each subscale. The factor loadings were all above .30 indicating a good fit. A discrepancy was observed in the present results and previous literature. When the models were drawn separately for each subscale, the model parameters fit the indices and showed that the model fit the present data well. However, when a higher-order model was drawn for the complete tool, the results showed that some of the model indices were not in an acceptable range. A study[17] was conducted on a Thai sample that encountered a similar validity issue where DASS was unable to determine the discriminant validity of the three subscales and the justification provided was cultural differences

regarding the understanding of the constructs. This could be due to the reason that DASS-42 on a scale level is more complex and broad as compared to the subscales that measure a single latent construct. As the scale captures a broader construct, some of the factors might be loading on the other scale leading to varied results. Moreover, a lack of literature in the Pakistani community regarding the translation of this tool into native languages was observed. This concluded that due to high reliability and factor loadings, this instrument can be used with the relevant population however, more research is required to understand the model, especially in the Pakistani community.

Limitations and Future Directions

As the study sample was 200, future researchers could replicate the present study with a large sample size to tackle the model fitness issues. The present research was based on students of a single university which is not generalizable to the whole Sindhi community, however, future research can focus on a broader sample. The clinical population would be useful in further research so that the clinical utility of DASS-42 in the Pakistani context would be established. As some of the model fit indices were not in an acceptable range, this issue could be explored and tackled with diverse populations, bigger sample sizes, and different research methodologies.

Conclusion

The DASS-42 was effectively translated and modified into Sindhi by the current study, offering a psychometrically adequate tool for evaluating mental health in Sindhi-speaking communities. The study verified that, in line with the original English version, the translated version maintains a high level of reliability. The tripartite model of depression, anxiety, and stress was validated by the confirmatory factor analysis; nevertheless, several difficulties with the higher-order model were noted, indicating the need for additional research. However, to guarantee wider application, future investigations ought to think about reproducing this study with bigger, more varied samples including clinical populations, and delving deeper into the factor structure within the framework of Pakistani culture. This study adds to the continuous endeavor to improve mental health evaluations in non-Western contexts, with the ultimate goal of improving the well-being of people in these communities.

Conflict of Interest: None declared.

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