

Original Research Article

Adaptation and validation of the Arabic version of the COVID-19 anxiety scale

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ABSTRACT

Background: Marked dysfunctional psychological consequences of COVID-19 necessitate an invention of new tailored scales that can assess and monitor these manifestations. Coronavirus Anxiety Scale (CAS) is new reliable and validated scale constructed to measure COVID-19-related anxiety. Objectives were to make a well-structured CAS Arabic version and to assess its validity.

Methods: Sousa and Rojjanasriratw scale adaptation guidelines were followed for CAS translation to Arabic language and a survey of sociodemographic data, CAS and validated COVID-19 fear scale Arabic-version distributed to cross-sectional university students' sample. Internal consistency, factor analysis, average variable extracted composite reliability, Pearson correlation, and mean differences were calculated.

Results: 233 students responded to the survey, and 44.6% were female. Cronbach's alpha was 0.94, item-total correlations 0.891-0.905 and inter-item correlations 0.722-0.805. The factor analysis test showed one factor that explains 80.76% of the cumulative variances, average variance extracted 0.80 and composite reliability 0.95, and the two scales' correlation r-value was 0.472. No significant difference between the scales regarding the score means when compared. The independent t-test showed no differences in means within each identified sociodemographic group.

Conclusions: The translated Arabic version of CAS has high internal consistency reliability and convergent validity values, and factor analysis addressed unidimensional measures. So, the Arabic CAS version is a reliable and valid version that maintains the original English scale reliability and validity properties.

Keywords: Arabic-version, CAS, COVID-19, Saudi Arabia, validation

INTRODUCTION

Since the World Health Organization (WHO) declared the coronavirus (COVID-19) as a pandemic on March 11, 2020, the mortality and morbidity of this novel virus have still increased. So far, more than two hundred and twenty-four million (224,511,226) confirmed cases as have been infected, and over four million (4,627,540) confirmed deaths with highly contagious rates occurred worldwide.¹ Saudi Arabia reported the first case on the second of

March 2020. Until 8th of June, 2022 there was 772,269 COVID-19 confirmed cases, and 9,158 deaths.²

COVID-19 and its associated consequence had a significant impact on social life that affected both physical and psychological health of society. Many countries worldwide have taken steps that changed their social and economic status completely.³ The international restriction of traveling, the enforced quarantine to countless numbers of people, lockdowns with limitation

of social interactions, fear of having the infection or to cause death to close family members, the emergency crises in the hospitals due to outbreak, and the negative impact of media and news which cover the information about COVID-19; all are causes that end up with psychological distress.⁴ The government of Saudi Arabia enforced bundles of preventive and precautionary policies to encounter the pandemic and to limit transmission of the infection. Twenty-four hours of lockdown with staying-at-home restrictions has restricted all access routes, suspended international and domestic flights, closed national borders, and temporarily closed the two holy mosques for Umrah and visiting.⁵ Also, the COVID-19 vaccine was provided to all citizens and residents, and access to all public places or services was restricted to vaccinated people.⁶

As the COVID-19 pandemic is ongoing, mental effects sequels among the general population should be addressed. Recent studies have significantly shown increased anxiety, fear, stress, and depression rates higher than usual before the pandemic, which would give the priority and significance to design specific screening tools which would help health professionals and researchers to screen populations. CAS is a validated screening tool to evaluate unhelpful anxiety. USA, Bangladesh, Turkey, Portugal, and Spain have all verified CAS.⁷⁻¹⁶ The current study aimed to make a well-structured CAS Arabic version and assess its validity.

METHODS

Translation process

We followed the Sousa and Rojjanasrirat recommended protocol during translation, adaptation, and validation of CAS.¹⁶ The scale was first translated into Arabic by two separate translators. Then we compared the two translated versions and developed an initial Arabic translated version. Arabic language linguists reviewed the merged version from language perspectives; although, no significant input or changes have been added. After that, two bilingual speakers did blind English backward translations of the drafted Arabic scale. The second English version was synthesized by comparing the two back-translated versions. The study team distributed the pre-final Arabic version to twenty University students and ten faculties; and asked them to rate the scale items' clarity and comprehension of their meaning. The pilot sample subjects addressed the clarity of scale phrases and their meanings. Ten psychiatrists, family physicians, and psychologists confirmed the face validity of the final scale draft. The COVID-19 Anxiety Scale is free to translate and use because it is in the public domain (Corona Anxiety Project, 2020).

Subjects and survey

Cross sectional research was conducted to assess the psychometric properties of the COVID-19 anxiety scale

(CAS) in the Saudi society. An online survey was designed and distributed among students at the University of Bisha, KSA, through e-mails and WhatsApp groups. The survey started with an informed consent statement request, and the anonymity of respondents was guaranteed. The survey consisted of general sociodemographic variables, a validated Arabic-version of COVID-19 fear scale for convergent validity evaluation and an Arabic version of CAS. Data was collected through Google documents from January 10, 2021, to January 25, 2021.

CAS

A five-item tool was found to be sensitive and specific for diagnosing anxiety and non-anxiety (90% sensitivity and 85% specificity). This scale was tested in two replicates and showed a high degree of validity and reliability ($\alpha=0.92$ and 0.93).^{3,12,19,20} It was valuable and valid for clinical research practice.

Fear of COVID-19 scale

A self-rated seven-item tool with high item correlation, internal consistency, and acceptable reliability.^{20,21} The Arabic-version of the COVID-19 fear scale was previously validated by with Cronbach's alpha 0.88, item-total correlations 0.57 to 0.74, and inter-item correlations between 0.35 and 0.66 indicating an adequate internal consistency.²² As well as significant correlations with the psychological distress as HADS-D ($r=0.56$, $p<0.001$), HADS-A ($r=0.66$, $p<0.001$), and HADS-T ($r=0.66$, $p<0.001$) were described. In the present study, Cronbach's alpha was 0.88, the correlation between items ranged from 0.322 to 0.791, and item-total correlations between 0.736 and 0.807. Bartlett's test was significant with a p value <0.001 and $df=21$, also KMO was 0.838. Factorial analysis extracted two factors that explain 75.1% of the cumulative variances, factor loadings lying between 0.707 and 0.821, average variant extracted (AVE) 0.589, and CR 0.901. ANOVA addressed no difference between different items means of the scale with p value=0.072. All current measurements supported what was described by.²²

Statistical analysis

We analysed the data through the IBM SPSS twentieth version. Cases with missed values in the survey were excluded from the analysis. The sociodemographic distribution of the participants was analysed and described in percentages as well, as the age was presented as mean $\pm$ standard deviation (SD). Cronbach's alpha for internal consistency, Bartlett's test of sphericity, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), and factorial analysis were calculated.

The average variance extracted (AVE) and composite reliability were also considered. Analysis of variance (ANOVA) and Pearson correlation coefficients was used

to analyse the relations between different items in the same scale and between the means of different scales.

Also, the means of different scales' scores that were received from other sociodemographic groups were compared using an independent t-test. Pearson correlation coefficients between different sociodemographic parameters and means of different scales were considered. The study approved by The University of Bisha national research and ethics subcommittee (reference number: UBCOM/H-06-BH-087).

RESULTS

Sociodemographic description

The overall number of participants was 253 university students. Although, the final included responses after exclusion of incomplete answers were 233. Males represented 57.9% of the participants, and 42.1% were female, and 44.6% of students were ≤ 25 years old, while 55.4% of them were > 25 years old.

Thirty percent of students had previous positive COVID-19 screening tests, and 71.7% of them addressed that at least one of their family members got COVID-19

infection. Sociodemographic distribution is summarized in Table 1.

CAS

Internal consistency reliability

The Cronbach's alpha coefficient of the CAS showed a very high degree of reliability (0.94). Moreover, item-total correlations for the CAS were significant, ranging between 0.891 (item 4) and 0.905 (item 1). Also, inter-item correlations for the CAS ranged between 0.722 (between items 2 and 3) and 0.805 (between items 3 and 5).

Factor structure

Bartlett's test of sphericity and the Keiser-Meyer Olkin measurement of sampling adequacy (KMO) were calculated to identify the factor structure. Bartlett's test was significant with a p value < 0.001 and $df=10$, also KMO was 0.888.

Factorial analysis extracted one factor that explains 80.76% of the cumulative variances with factor loadings between 0.907 and 0.89.

Table 1: Sociodemographic characters (N=233).

Parameter	Number	Percent
Age (mean$\pm$SD)	25.5 $\pm$ 4.41	
Gender		
Male	135	57.9
Female	98	42.1
Faculty		
Medical	165	70.82
Non-medical	68	29.18
Social status		
Married	18	7.73
Non-married	215	92.27
History of chronic disease		
Positive	49	21.03
Negative	184	78.97
Previous history of anxiety		
Yes	97	41.63
No	136	58.37
History of COVID-19 positive test		
Yes	71	30.47
No	162	69.53
family member or colleagues had COVID-19 positive test		
Yes	167	71.67
No	66	28.33
Family member or colleague death due to COVID-19 infection?		
Yes	69	29.61
No	164	70.39

Table 2: Results summary.

Item	Mean±SD	Factor loadings	Item-total correlation	Inter-item correlations			
				2	3	4	5
Item-I: I felt dizzy	0.652±0.672	0.907	0.905	0.80	0.78	0.73	0.76
Item-II: I had trouble falling asleep	0.661±0.714	0.894	0.896		0.72	0.77	0.72
Item-III: I felt paralyzed	0.640±0.675	0.901	0.899			0.74	0.81
Item-IV: I lost interest	0.657±0.697	0.890	0.891				0.76
Item-V: I felt nauseous	0.678±0.722	0.901	0.903				

Convergent validity

Convergent validity is usually accepted when the average variance extracted (AVE) is ≥ 0.50 , and composite reliability (CR) is ≥ 0.70 [23,24]. When calculated for CAS, it showed 0.80 for AVE and 0.95 for CR. Data regarding the CAS scale is presented in Table 2.

Scales correlation

Convergent validity was also assessed by correlating the overall scores of CAS with the COVID-19 fear scale. Generally, they expressed moderate to strong positive correlations in the expected direction, which supports their validity. Pearson correlations r-value was 0.474 which was significant at p value < 0.001 .

Scales mean differences analyses

No significant difference found between the scales means of scores when compared by ANOVA. An independent t-test was used to compare between types of answers within each identified group (e.g., male and female) within the sample.

DISCUSSION

The translation and validation process of CAS followed the scientific steps in different cultural mental health research as recommended by Sousa and Rojjanasriratw, which address cultural varieties and maintain the original psychometric properties of the tool.¹⁶

Through applying the standardized reliabilities and validities measures, the Arabic translation version of CAS is a reliable and valid version of the original CAS. It has high internal consistency (Cronbach's alpha coefficient 0.94), item-total correlations ranging between (0.891-0.905) and inter-item correlations (0.722-0.805) values. These scores are consistent with CAS original and replication analysis studies (Cronbach's alpha coefficient 0.92 and 0.93), although higher than some other languages validation studies scores (range between 0.70-0.80).^{3,12,13,25}

Factor analysis test showed one factor that explains 80.76% of the cumulative variances, which proves the unidimensional nature of the scale, which corresponded

to similar results in the previous validation studies. Moreover, the average variance extracted (0.80) and composite reliability (0.95) score high, which addresses a good convergent validity of the Arabic-version.

In addition, good construct convergent validity was supported by moderate to strong correlation between CAS Arabic-version and Arabic-version of COVID-19 fear scale. Scales means show no significant differences when comparing between sociodemographic variables.

There are a few limitations which need to be addressed. Subjects of the survey were students and from one university, which may reflect on the use of questionnaires on populations with different sociodemographic variables. Furthermore, we used convenient cross-sectional sampling rather than random.

The study used an electronic survey, so those who don't have internet access may not respond. The cut-off point for the Arabic version had not been identified. However, these limitations are not major ones that limit the use of the questionnaire since the original and some other languages version addressed these issues.

CONCLUSION

The translated Arabic-version of the coronavirus anxiety scale is a reliable and valid version that maintains the original English version's reliability and validity properties. Internal consistency and convergent validity of this version are high, which promotes the uses of this version in evaluating dysfunctional COVID-19 related anxiety.

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Conflict of interest: None declared

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