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Short Communication

Validation of the Coronavirus Anxiety Scale (CAS) and its Divergence from COVID-19 Perceived Health-Related Issues in Iranian Students

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Abstract

Introduction: Anxiety is one of the most common mental disorders during the COVID-19 pandemic. The aims of the present study were ~~(a)~~ to investigate the psychometric properties and to explore the factorial structure of the Coronavirus Anxiety Scale (CAS), ~~(b)~~ to explore association of CAS scores with COVID-19 Perceived Health-Related Scale scores, and ~~(c)~~ to examine sex differences.

Method: This was a cross- sectional study. A convenience sample of 241 students enrolled in a variety of courses at Iran University of Medical Sciences, Tehran, Iran, in July 2021 was selected. The CAS and COVID-19 related health Scale were administered to students. The data were analyzed with descriptive statistics, Pearson correlation coefficients and principal component analysis (PCA), using SPSS version 26.

Results: Cronbach's α was 0.81 for the CAS. One factor was extracted labeled "Coronavirus Anxiety". CAS scores correlated negatively (r=-.054) with COVID-19 Perceived Health-Related Scale scores. The men and women did not differ significantly in scores.

Conclusion: The CAS had good psychometric properties in the present sample. This study provides evidence for the usefulness of the CAS for assessing COVID-19 anxiety in students and in non-clinical settings.

Keywords: Coronavirus Anxiety Scale (CAS), Health, COVID-19 pandemic, University students, Iran

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Introduction

The Coronavirus Disease-2019 (COVID-19) epidemic has had an impact on physical and mental health, for example by increasing somatic symptoms, anxiety and depression. The COVID-19 anxiety can continue even after the pandemic has subsided. [1,2] Iran is one of the more severely affected countries according to the World Health Organization (WHO) [3], with a total of 7,627,186 known cases and 146,811deaths (1707/million population) as of 13 April, 2024.[4] The COVID-19 pandemic has impacted all daily activities and on the physical health, mental health, and self-efficacy in health-related matters of Iranians. [2,5]

Students are one of the vulnerable groups during the COVID-19 pandemic. The investigation of mental health, including COVID-19 anxiety in university students, can have major implications for health care services and mental health policies for this group. [1,5,6,7,8] Few studies have examined the Coronavirus Anxiety Scale (CAS) 's [9] properties in Middle Eastern student populations, and none have explored its relationship with perceived health in this context. The present study can fill this gap.

The aims of the present study were ~~(a)~~ to investigate the psychometric properties and to explore the factorial structure of the Coronavirus Anxiety Scale (CAS), ~~(b)~~ to explore association of CAS scores with COVID-19 Perceived Health-Related Scale scores, and ~~(c)~~ to examine sex differences.

Methods

This was a cross- sectional study. A total sample of 241 volunteer university students who were resident in nine student dormitories at the Iran University of Medical Sciences, Tehran, Iran in July 2021 was recruited. This was a convenience sample, as only some students were present at the dormitories while other students were not permitted on the premises due to the prevalence of COVID-19 at

that time. The required sample size had been calculated using Cochran's formula. Inclusion criteria were to have been studying at Iran University of Medical Sciences for at least one year. Exclusion criteria were guest, transfer, and international students. The CAS and COVID-19 Perceived Health-Related Scale were administered to students.

This study was performed in line with the principles of the Declaration of Helsinki. Approval was obtained from the Institutional Review Board (without committee's reference number) at Iran University of Medical sciences, Tehran, Iran, for the study. This Institutional Review Board approved the study and this procedure without code of ethics. The reason was being in critical situation of COVID-19 pandemic. All students provided verbal informed consent. In the questionnaire, the first question was, "According to the above explanation, do you agree to participate in the study?" The scales completed by participants who responded "Yes" were included in the study. The data were collected between 25 July 2021 and 15 August 2021.

Measurements

The Coronavirus Anxiety Scale (CAS). The CAS, developed by Lee [9], is a 5-item self-report scale used for assessing physiologically-based symptoms that are aroused with coronavirus-related information and thoughts (henceforth, COVID anxiety). Using a 5-point time anchored scale (0 = "not at all," 4 = "nearly every day over the last 2 weeks"), participants rate how frequently they experience each anxiety symptom. [10] The total score ranges from 0 to 20, with a higher score indicating more COVID anxiety. A typical item for the CAS is "I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus."

The COVID-19 Perceived Health-Related Scale. It is a self-report scale consisting of 6 questions used for assessing COVID-19 perceived health-related symptoms. The participants indicate how they perceive their current health-related components compared to before the COVID-19 outbreak using a 5-point Likert scale ranging from Much worse (0), to Much better (4). The total score ranges from 0 to 24, with a higher score indicating better perceived health related to COVID-19. [11]

In the present study, the Farsi versions of the CAS [9], and COVID-19 Perceived Health-Related Scale [11] were used. The data were analyzed with descriptive statistics, Pearson correlation coefficients and principal component analysis (PCA), using SPSS version 26.

Results

The mean age of the students was 24.8 years (SD = 3.5); 67.5% were female; and the majority of students (37.1%) were studying in a general physician (GP) program. The mean total score of the CAS was 0.70 (SD = 1.72). Mean scores on CAS items ranged from 0.09 (SD = .40) to 0.19 (SD = .51). Cronbach' α was 0.81 for the CAS. The item-total correlations ranged from 0.64 to 0.86 (significant at the.01 level) for the CAS. Kaiser-Meyer-Olkin Measure of Sampling Adequacy for the CAS was 0.694. The Bartlett's Test of Sphericity Chi-Square was 534.160 (df = 10, $P < .001$) for the CAS. One factor was extracted for the CAS (Factor loadings > .5, 59.30% of total variance), labeled "Coronavirus Anxiety". The sex-related difference in the CAS was not significant (mean for women 0.72, SD = 1.75; and mean for men 0.67, SD = 1.65, t = 1.08, $P > .05$). The CAS negative correlated -.054 with COVID-19 Perceived Health-Related Scale ($P > .05$).

Discussion

The aims of the present study were to investigate the psychometric properties and to explore the factorial structure of the Coronavirus Anxiety Scale (CAS), to explore the association of CAS scores with the COVID-19 Perceived Health-Related Scale scores, and to examine sex differences.

Results showed that Cronbach's α was 0.81, indicating high reliability. One factor was extracted labeled "Coronavirus Anxiety". These findings are consistent with previous studies. [9, 10]

The CAS scores correlated negatively with COVID-19 perceived health-related scores. These findings are consistent with previous studies. [6, 7, 8] A key finding was absence of a meaningful association between coronavirus anxiety and self-reported pandemic-related health, suggesting these constructs may operate independently in this population. It could be that for these medical students, health perceptions are based on clinical knowledge, while anxiety is driven by media/social factors. It seems the CAS measures something more specific ("physiologically-based symptoms") that is distinct from general health worry.

The men and women did not differ significantly in scores. This study found no sex differences on CAS scores, consistent with [8], but inconsistent with [7] who found females scored higher than males on the fear of COVID-19. This contradictory finding may be partly due to use of a different scale and differences in in sample sizes.

The present study had some limitations. First, it is based on a convenience sample of university students, and the findings were based only on students from Iran University of Medical Sciences. Second, this is a cross-sectional design. Third, the use of a novel, non-validated health scale limits the interpretability of the correlation. Fourth, it was the lack of other similar measures as indicators used to confirm theoretical consistency (concurrent and criterion validities). These limitations could be used as possibilities for future works.

Conclusion

The CAS had good psychometric properties in the present sample. This study provides evidence for the usefulness of the CAS for assessing coronavirus anxiety in students and in non-clinical settings. The use of the CAS for measuring COVID-19 anxiety in student populations, is encouraged. The students experienced COVID-19 anxiety. Therefore, appropriate policy-making and psychological interventions are necessary to promote their mental health. The independence of anxiety and COVID-19 perceived health-

related suggests that screening tools like the CAS capture unique distress not identified by general health inquiries. Mental health support for students should therefore target pandemic-specific anxieties directly.

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Conceptualization: Mahboubeh Dadfar
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Writing–review & editing: Mahboubeh Dadfar, David Lester

Competing Interests
The authors declare that they have no conflict of interest regarding the publication of this paper.

Ethical Approval
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