Letter to the editor

Generalized anxiety disorder scale (GAD-7) has adequate psychometric properties in Colombian general practitioners during COVID-19 pandemic

Dear Editor,

Generalized anxiety disorder (GAD) is a mental disturbance characterized by an excessive and uncontrollable worry. Its global lifetime prevalence is 3.7%, being higher in high-income countries [1]. GAD impacts public health, some population groups are at higher risk for developing it, especially health professionals. Psychological demands, work overload, lifestyle, dissatisfaction with work environment and job burnout could explain greater GAD in physicians. These situations worsened during the COVID-19 pandemic [2]. Several instruments have been developed to identify patients with GAD. The seven-item Generalized Anxiety Disorder Scale-7 (GAD-7), has been positioned as a clinically useful scale with adequate psychometric properties [3]. It has been validated in different countries, languages and populations [4–6]. The factorial structure analysis of the GAD-7 scale has shown mixed results during validations. Some authors [7,8] propose that data fits better in the two-factor structure while others have found a single-factor model as a better option [4–6]. To our knowledge and considering the reviewed literature, evaluations about the psychometric characteristics of the GAD-7 scale were not found in general practitioners. Therefore, we carried out a study which aimed to evaluate the factorial structure and the reliability of GAD-7 in a sample of Colombian general practitioners during COVID-19 pandemic.

A cross-sectional study was performed to evaluate the reliability and validity of the GAD-7 scale, it was approved by the ethics committee of the Clínica Santa Cruz de Bocagrande Cartagena, Colombia (act 05-2018). Participants were general practitioners working during March 2020 in an outpatient or hospital setting at any level of complexity of care in public or private institutions. They were informed of the study by social networks and emails, their participation consisted of completing an electronic form in June 2020, which asked about sociodemographic characteristics and applied the GAD-7 scale (adapted Spanish version) [5]. The latter has seven questions with Likert-type response options: zero (never), one (less than half of the days), two (more than half of the days) and three (almost every day). The scale has a total score between 0–21, for this analysis, a score of ten or higher indicate possible GAD [3]. To determine the scale's internal consistency, Cronbach's alpha and McDonald's omega were estimated, for both, coefficients between 0.70 and 0.79 indicate acceptable internal consistency, 0.80–0.89 is considered good, and $\geq$ 0.90 indicate excellent internal consistency [9]. A Confirmatory Factor Analysis (CFA) was carried out to determine whether the one- or two-factor solution proposed by other studies fits this sample.

531 Colombian general practitioners were included, they had a mean age of 33 years old and 59.5% were men. The identified mean score for the GAD-7 was 9.5 ± 5.2 in women and 6.4 ± 5.0 in men. Generalized anxiety symptoms with clinical significance were greater in women compared with men, 48.4% vs 26.0%, respectively. The internal consistency of the scale with Cronbach's alpha was 0.99 and 0.90 with McDonald's omega. The goodness of fit indicators showed that the one-factor structure had a good fit: Root Mean Square Error of Approximation (RMSEA): 0.03 (90% CI; 0.01–0.06), Bentler's Comparative Fit Index (CFI): 0.99 and Tucker–Lewis index (TLI): 0.99. Table 1 presents factor loadings of each item of the GAD-7 scale.

For this sample of Colombian general practitioners working during de COVID-19 pandemic, the GAD-7 scale showed adequate internal consistency. The estimated coefficients (above 0.90) suggest that the scale possess reliability, which is in agreement with the obtained values in the original study of this scale (Cronbach's $\alpha = 0.92$) [3,9]. García-Campayo et al. [5] in 212 adults informed a Cronbach's alpha of 0.94 for the GAD-7 scale. Likewise, the goodness of fit indicators allows us to affirm that the single-factor solution showed a good fit. In the literature, differences according a one- or two-factor structure had been found, it seems that commonly the scale shows a one-factor structure in community settings and a two-factor model in clinical samples [4,6–8]. Those who propose a bifactorial model such as Beard et al. [7] and Kertz et al. [8], argue that items 1,2,3 and 7 refer to cognitive manifestations while items 4,5 and 6 represents physical aspects like restlessness and irritability. Other authors state that factor structure differences could be due to the existence of three GAD subtypes (excessive worry, somatic tension or autonomic excitation, and a combined subtype) or because different demographic characteristics and cultural factors [9,10].

The limitations of the study are related to the inability to analyze criterion validity due to the lack of comparison with a gold standard. Further studies about validity and reliability of the scale in similar populations from other countries are warranted, as well as more robust models are needed to study construct validity and compare it with a structured interview to assess criterion validity. Additionally, psychometric properties of the scale were estimated in a well-defined population, the results cannot be extrapolated to the general Colombian population, just for general practitioners participating in the study. Therefore, studies that determine the psychometric characteristics in the general Colombian population are needed. In conclusion, we found adequate psychometric properties of GAD-7 scale, which allow us to recommend it as a screening tool for early identification of possible

Table 1

Factor loads of each item.

GAD-7 items[a]		Factor loads	S.E
1	Feeling nervous, anxious or on edge?	0.847	0.016
2	Not being able to stop or control worrying?	0.687	0.025
3	Worrying too much about different things?	0.893	0.012
4	Trouble relaxing?	0.855	0.016
5	Being so restless that it is hard to sit still?	0.861	0.015
6	Becoming easily annoyed or irritable?	0.756	0.021
7	Feeling afraid as if something awful might happen?	0.808	0.018

S.E: standard error, all factor loads had a significant p value (<0.001).

[a] Over the last 2 weeks, how often have you been bothered by any of the following problems?

GAD, avoiding future implications and quality of life deterioration in Colombian general practitioners.

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