Psicothema

Psicothema 2021, Vol. 33, No. 1, 164-170
doi: 10.7334/psicothema2020.167

ISSN 0214 - 9915 CODEN PSOTEG

www.psicothema.com

Validation of the Generalized Anxiety Disorder Screener (GAD-7) in Spanish Pregnant Women

Cristina Soto-Balbuena[1], María de la Fe Rodríguez-Muñoz[2], and Huynh-Nhu Le[3]
[1] Hospital Central Universitario de Asturias, [2] UNED, and [3] George Washington University

Abstract

Background: Anxiety during pregnancy is one of the most common mental health problems and a significant risk factor for postpartum depression. The Generalized Anxiety Disorder-7 (GAD-7) is one of the most widely used self-report measures of anxiety symptoms available in multiple languages. This study evaluates the psychometric properties and underlying factor structures of the Spanish GAD-7 among pregnant women in Spain. **Method:** Spanish-speaking pregnant women (N = 385) were recruited from an urban obstetrics setting in Northern Spain. Women completed the GAD-7 and the anxiety subscale of the Symptom Checklist (SCL90-R) at three time points, once per trimester. The reliability, concurrent validity, and factor analyses were conducted to evaluate the psychometric properties and factor structure, respectively. **Results:** In the first trimester, the GAD-7 demonstrated good internal consistency (a = 0.89). GAD-7 is positively correlated with SCL90-R (anxiety subscale; r=0.75; p < 0.001). The proposed one-factor structure is found using exploratory factor analysis —FACTOR program — with Unweighted Least Squares procedure and optimal implementation of parallel analysis (GFI = 0.99). **Conclusions:** Health providers should screen for anxiety using the GAD-7 during pregnancy among urban Spanish-speaking samples to provide appropriate follow-up care.

Keywords: GAD-7, anxiety symptoms, pregnancy.

Resumen

Validación de la Escala de Cribado del Trastorno de Ansiedad Generalizado (GAD-7) en mujeres embarazadas españolas. **Antecedentes:** la ansiedad durante el embarazo es uno de los problemas de salud más comunes y un factor de riesgo para la depresión posparto. El Trastorno de Ansiedad Generalizada-7 es una de las medidas de autoinforme de síntomas de ansiedad más utilizadas en varios idiomas. Este estudio evalúa las propiedades psicométricas y la estructura factorial del GAD-7 español en mujeres embarazadas. **Método:** se reclutaron mujeres embarazadas (N = 385) de un entorno de obstetricia urbana en el norte de España. Las mujeres completaron el GAD-7 y la subescala de ansiedad del SCL90-R en tres puntos temporales. La fiabilidad, la validez concurrente y los análisis factoriales se realizaron para evaluar las propiedades psicométricas y las estructuras factoriales, respectivamente. **Resultados:** en la primera toma de medidas el GAD-7 demostró una buena consistencia interna (a = 0.89). GAD-7 se correlaciona positivamente con SCL90-R (subescala de ansiedad; r = 0.75; p <0.001). Mediante análisis factorial exploratorio – programa FACTOR, extracción de factores de mínimos cuadrados no ponderados, análisis paralelo con implementación óptima – se obtiene una estructura unifactorial (GFI = 0.99). **Conclusiones:** los profesionales deberían evaluar la ansiedad usando el GAD-7 durante el embarazo entre muestras urbanas de habla hispana para brindar atención adecuada.

Palabras clave: GAD-7, síntomas ansiedad, embarazo.

Anxiety during pregnancy is one of the most common problems in obstetrics settings, with prevalence rates ranging from 15% to 23% (Fairbrother et al., 2015; Sinesi et al., 2019; Soto et al., 2018). This high prevalence has led to growing attention in research (Robertson et al., 2014) and clinical guidelines (National Institute for Health and Care Excellence Guidelines [NICE]) over recent years. Prenatal anxiety is one of the most important risk factors for developing both prenatal depression (Robertson et al., 2004) and postpartum depression (Enatescu et al., 2014). Research has also documented that prenatal anxiety is associated with adverse health consequences, including spontaneous abortion, preeclampsia, placental abruption, premature birth, low birthweight and lower mental development scores in infants (Ding et al., 2014). Prenatal anxiety also adversely affects the quality of the mother-infant relationship (Farré-Sender et al., 2018; Gómez-García et al., 2020). Therefore, the high prevalence and negative consequences associated with prenatal anxiety warrant screening for anxiety symptoms using psychometrically sound measures as proposed by the American College of Obstetricians and Gynecologists (ACOG, 2007); Clinical Practice Guidelines (Beyondblue, 2011); The Healthy Child Program (Department of Health, 2009), and the Nice Guidelines (NICE).

Moreover, the psychometric properties of anxiety instruments should be examined during the perinatal period and in multiple languages (García-Campayo et al., 2010; Goodman et al., 2014).

Although clinical diagnostic interviews are the optimal method of assessment for anxiety disorders, self-report rating scales are often preferred in busy clinical practice and research because

Received: May 13, 2020 • Accepted: August 27, 2020
Corresponding author: Maria de la Fe Rodriguez-Muñoz
Facultad de Psicología
UNED
28040 Madrid (Spain)
e-mail: mfrodriguez@psi.uned.es

of their brevity. In a recent systematic review of anxiety scales used in pregnancy (Sinesi et al., 2019), the Generalized Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006) stands out as one of the most important instruments to measure anxiety. The GAD-7 includes 7 items measuring symptoms of generalized anxiety disorder and has been recommended as brief screening measure for perinatal anxiety (NICE, 2019; Simpsons et al., 2014). The GAD -7 (Spitzer et al., 2006) was created using criteria established by the American Psychiatric Association (APA) in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, APA, 1994), which remain the same in the updated DSM-5 edition (APA, 2013). The GAD-7 has been shown to have good psychometric properties across different contexts (e.g., general population: Lowe et al., 2008; primary care: Jordan et al., 2017; Ruiz et al., 2011; e.g., psychiatric: Kertz, et al., 2013; Sousa et al., 2015), or languages (e.g., English: Simpson et al., 2014; Spanish: García-Campallo et al., 2010; Zhong et al., 2015).

The psychometric properties and factor structures of the GAD-7 have been examined among pregnant samples in multiple languages and across diverse countries. Simpson et al. (2014) analyzed the sensitivity and specificity of the GAD-7 compared to the Edinburgh Postnatal Depression Scale (EDPS; Cox et al., 1987) and the 3 items from the EPDS that measures anxiety (EDPS-3A) in a sample of English-speaking pregnant women. Results showed that the psychometric properties of the GAD-7 were slightly better than those of the EDPS and the EDPS-3A in this population. However, despite the good psychometric properties of the instrument, its factor structure has been inconsistent among competing models (Doi et al., 2018). Specifically, some studies reported that the confirmatory factor analyses result in a unidimensional structure of the GAD-7 among Spanish speaking pregnant women (Zhong et al., 2015) and in other populations (e.g., clinical and general population: García-Campayo et al., 2010; clinical sample: Johnson et al., 2019, and general population: Löwe et al., 2008). Yet other studies found that the GAD-7 is comprised of two factors (an excessive worry and a somatic tension/autonomic arousal) in the general population (Portman et al., 2011).

To our knowledge, there is only one study that has examined the psychometric properties and factor structure of the GAD-7 in a Spanish-speaking, rural, pregnant, Peruvian sample who was at high risk due to having economic problems, unemployed or with a poor health during pregnancy (Zhong et al., 2015). This study found that the reliability of the GAD-7 was good (Cronbach's alpha = 0.89) and one-factor structure of the GAD-7 was confirmed by exploratory and confirmatory factor analysis.

The goal of the present study was to examine the psychometric properties and the factor structure of the GAD-7 in a sample of women receiving prenatal care in an obstetrics setting in an urban sample in Spain. Given that both a one-factor structure (García-Campayo et al., 2010; Johnson et al., 2019; Löwe et al., 2008; Zhong et al., 2015) and a two-factor structure (Portman et al., 2011) have been found, we examined which of these structures would best fit our sample.

Method

Participants

The sample included 385 pregnant women. Based on convenience sampling, the women were recruited from the obstetrics department at the Hospital Universitario de Asturias, one of the public health centers in the Principado de Asturias, Spain. The study was approved by the ethics committees (REF.N. 18/18). Each participant completed a set of questionnaires in a private setting while waiting to for her ultrasound during each of the three trimesters.

The inclusion criteria were as follows: (a) pregnant, (b) receiving medical services at each hospital, (c) sufficient comprehension of the Spanish language (reading, writing) to provide consent, and complete surveys. There were no other exclusion criteria.

Of the total of 664 women contacted (Figure 1), 385 (57.9%) agreed to participate in the study in the first trimester of pregnancy (Time 1; see Figure 1).

As show in Table 1, at baseline, participants were on average 33 years old. The majority of participants were married (62.7%), employed (72.3%), and born in Spain (90.5%) . Regarding the participants' level of academic studies, the majority (50.5%) had a university education, 26.6% had secondary education, 20.6% had primary education, and 2.3% had basic education. Regarding the number of previous children, the majority (59.4%) were having their first baby, and 36.8% has only one child. Related to obstetrics data, primiparous women comprised 51.1% of the sample, 8.8% had previous cesarean section, 23.1% reported cases of having prior abortions, and 6.9% reported using assisted reproduction techniques with the current pregnancy.

Lost to follow-up participants analysis

Of the 385 who completed measures in the first trimester (Time 1), 286 (74.2%) completed measures at Time 2, and 261(67.8%) completed measures at Time 3. In examining the sociodemographic characteristics of women who did not complete the follow-up time points versus compared to those who completed all the three measurements, the results showed no significant differences with respect to age ($t = -1{,}087$, $p =< 0.072$), origin ($\chi^2 = 1.277$, $p =< 0.258$), marital status ($\chi^2 = 3.184$, $p =< 0.304$), schooling completed ($\chi^2 = 1.653$, $p =< 0.294$), or employment status ($\chi^2 = 0.417$, $p =< 0.519$). There were also no differences with regard to whether they were first-time mothers ($\chi^2 = 0.891$, $p =< 0.345$) or if the pregnancy resulted from assisted reproduction techniques ($\chi^2 = 0.008$, $p =< 0.927$). Of the participants who failed to complete follow-up, 8 lost the pregnancy due to miscarriages, whereas the remaining pregnant women declined to participate due to lack of time or lack of interest in participating in the study. We also examined studied whether there were differences in symptoms of anxiety between the pregnant women who completed the study ($M = 4.03$, $SD = 4.2$) and those who left the study ($M = 3.9$, $SD = 4.06$). The results between the two groups showed no significant differences ($t = -.192$, $p =< 0.848$).

Instruments

Sociodemographic data. This questionnaire included age, marital status, education level, employment, and country of birth.

Generalized Anxiety Disorder 7-item Scale (GAD-7; Spitzer et al., 2006) consists of 7 items measuring symptoms of generalized anxiety. The GAD-7 consists of 7 items with Likert-response formats (0 to 3 points), yielding a value in the response range from 0 to 21 points (Spitzer et al., 2006). The GAD-7 has been validated in the general population in Spain (García-Campayo et al., 2010). In this study, pregnant women completed the GAD-7 in a short time period (approximately 3 minutes). Cronbach's alpha in the

first trimester was 0.89, 0.88, and .89 in the first, second, and third trimesters, respectively.; in the second trimester, it was 0.88; and in the third trimester, it was 0.89

The *Symptom Checklist-90-Revised* (SCL-90-R, Spanish version; Derogatis, 2002) includes 90 items, grouped into nine subscales, measuring self-reported levels of discomfort subject. This measure has been used in previous studies with pregnant women in Spain (Romero-González et al., 2018). In this study, the anxiety subscale was used and includes 10 items.; Items are scored on a 5-point Likert-scale (0 to 4), yielding a value in the response range from 0 to 40 points. Cronbach's alpha for this subscale was 0.91, 0.90, and 0.90 in the first, second, and third trimesters, respectively.

Procedure

Participants were informed of the study's purpose (to understand the psychological well-being of pregnant women and mothers), provided written consent for the study, and completed several questionnaires while waiting for their prenatal appointment. Each participant completed a set of questionnaires in a private setting while she waited for her first ultrasound during the first, second and third trimester (times 1 to 3, respectively).

Data Analysis

The internal consistency of the GAD-7 was assessed using McDonalds' Ordinal Omega with Factor Program and polychoric correlations. The concurrent validity was assessed by examining the correlation between the GAD-7 and the anxiety subscale of the SCL-90R across the three time points. The factor structure of the GAD-7 was examined in Exploratory Factor Analysis (EFA) and Confirmatory Factor Analyses (CFA) at the first trimester (Bryant & Yarnold, 1995). EFA was performed using the Factor Program, with Unweighted Least Squares procedure and optimal implementation of parallel analysis. Based on the results of the EFA, CFA was run using SPSS Analysis of Moment Structures (AMOS). To correctly evaluate the fit of a model, researchers recommend using multiple indexes (Kline 1998). One of the relevant indexes to assess the fit of a model when working with large samples is the standard chi-square, a parsimonious measure of fit obtained from

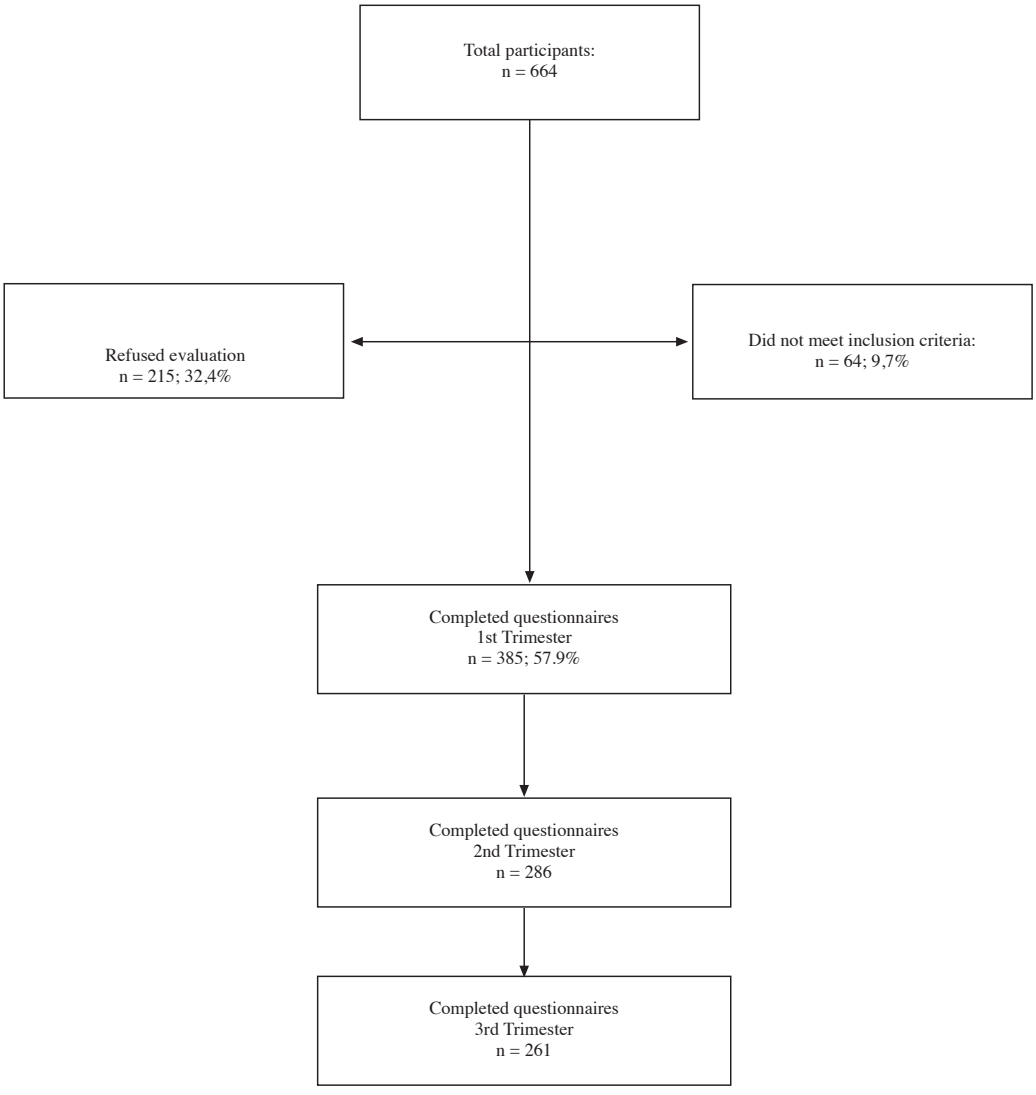

Figure 1. Participants

Table 1
Demographic characteristics (n = 385)

	N	M	SD	Minimum	Maximum
Age		33.5	4.51 4.451	16	45
	N	**%**			
Marital status					
Single	29	7.6			
Married	245	63.7			
Cohabitating	109	28.2			
Separated / Divorced	2	0.5			
Education					
No schooling	9	2.3			
Primary	79	20.6			
Secondary	102	26.6			
University	195	50.5			
Origin					
Spanish	248	90.5			
Immigrants	37	9.5			
Employment situation					
Employed	273	72.3			
Unemployment	107	27.7			
Children					
0	236	59.4			
1	146	36.8			
3 or up to 3	3	0.9			

the ratio of the chi-square value and the degrees of freedom. The fit is considered acceptable when this ratio is less than 5 (χ^2 /df:; good fit ≤ 2.00; Ullman & Bentler, 2001, acceptable fit ≤ 5.00:; Taylor et al., 1995). The root mean square error of approximation (RMSEA: acceptable fit ≤ 0.08; good fit ≤ 0.05; (Kline, 1998), and the GFI (Hoyle & Panter, 1995), range from 0 to 1 and those that are considered suitable models exceed 0 .9. Additionally, two incremental fit indexes—the comparative fit index (CFI; good fit ≥ 0.90; Bentler, 1990) and the normed fit index (NFI; good fit ≥ 0.90; Kline, 1998) —should also be taken into account.

Results

Reliability and Validity evidence based on GAD-7 internal structure

Individual item means, standard deviations, item-total correlations, and Cronbach's alphas with items removed are presented in Table 2. The corrected item-total correlation was > 0.35, which is adequate and significant (Cohen & Manion, 1989).

The internal consistency of the GAD-7 was high in the first trimester (MacDonald's Ordinal Omega=0.93). An examination of the response categories of the seven items on the GAD-7 indicate that overall, results were equally distributed across all answer categories for each item. There was a slight tendency towards a floor effect in questions 5 (restlessness) and 7 (fear of something bad will happen), with an 83.4% and a 69.3% accumulation of answers on the lowest rating ("not at all"). All the items' skewness and kurtosis are showed on table 2.

The correlation between the GAD-7 items ranged from 0.86 to 0.51 (table 3).

The correlations of the GAD-7 among the three trimesters were statistically significant and moderate (1st and 2nd trimester: r = .66, p < 0.001; 1st and 3rd trimester: r = .52, p < 0.001; 2nd and 3rd trimester: r = .57, p < 0.001). These results show the high temporal reliability of the GAD-7 in a population of pregnant women.

EFAs were run using the FACTOR program (Lorenzo-Seva & Ferrando, 2006). EFA for one factor—the most common used structure of the scale — was performed (Kaiser-Meyer-Olkin (KMO) test = 0.89 , Bartlett's sphericity test, χ^2 = 2.226, df = 21, p < .0001) with Unweighted Least Squares (ULS) procedure for factor extraction and using the polychoric matrix because Mardia's multivariate kurtosis test was significant (36.016, p < .0005). Optimal implementation of parallel analysis (Horn, 1965; Timmerman et al., 2011) was carried out to determine the most appropriate number of factors. The results of this analysis recommended extracting a single factor because the percentage of explained variance was greater than the percentage of explained variance of the random data in the case of the first variable (see table 4).

The Root Mean Square of Residuals (RMSR) was low (0.045) which is a good fit according to (.0505, Kelley's criterion), for an acceptable model (Kelley, 1935). The, Weighted Root Mean Square Residual (WRMR) = 0.0478 (values under 1.0 have been recommended to represent good fit; Yu & Muthen, 2002). The GFI was 0.99 and the CFI was 0.99. Factor loadings of the items ranged from 0.70 to 0.90 (see table 2).

A confirmatory factor analysis (CFA) testing the one-factor structure was conducted using AMOS . The model fit was standard, □ χ^2/df = 4.86; CFI = 0.96, GFI= 0.99, NFI= 0.95, except for the RMSEA = 0.98, p < .001 (see table 5). However, it´s important to considering that to correctly evaluate the fit of a model, researchers recommend using multiple indexes to evaluate model fit (Kline, 1998; Rial et al., 2006).

Table 2
GAD-7 Item Means, Standard Deviations, Item-Total Correlations, Cronbach's Alpha with Item Removed, Factor Loadings, and Communality

Item	Symptom	M	SD	Skewness	Kurtosis	r[a]	α[b]	Factor loading	Communality
1	Feeling nervous, anxious, or on edge	0.75	0.76	0.92	0.68	0.81**	0.87	0.89	0.86
2	Not being able to stop or control worrying	0.55	0.78	1.44	1.60	0.83**	0.87	0.90	0.99
3	Worrying too much about different things	0.70	0.80	1.12	0.87	0.85**	0.86	0.88	0.89
4	Trouble relaxing	0.54	0.75	1.45	1.67	0.83**	0.87	0.74	0.81
5	Being so restless that it's hard to sit still	0.20	0.50	2.83	9.02	0.64**	0.89	0.74	0.73
6	Becoming easily annoyed or irritable	0.83	0.85	0.86	0.10	0.72**	0.89	0.70	0.58
7	Feeling afraid as if something awful might happen	0.42	0.74	1.96	3.527	0.76**	0.88	0.77	0.64

Table 3
Polychoric correlations of the GAD 7 scale items

Item	1	2	3	4	5	6	7
1	1						
2	0.81	1					
3	0.75	0.86	1				
4	0.75	0.75	0.78	1			
5	0.51	0.61	0.68	0.69	1		
6	0.57	0.54	0.63	0.64	0.60	1	
7	0.65	0.70	0.64	0.67	0.60	0.54	1

Table 4
Optimal implementation of parallel analysis: Percentage of variance of real data and of the randomly generated data

	Real data % of variance	Randomly Generated Data of random % of variance
1	81.413	36.42
2	6.77	27.99
3	6.25	22.19
4	3.08	17.02
5	2.13	13.04
6	0.33	8.9

Note: 500 sets of random correlation matrices

The concurrent validity of the GAD-7 is shown by its significant correlation with the anxiety subscale of the SCL-90-R, suggesting that the GAD-7 is a valid measure of anxiety symptoms among pregnant women in Spain. The temporal reliability of the GAD-7 after the second and third trimesters was high, supporting its construct validity.

We also examined the factor structure of the GAD-7. Using exploratory (parallel analysis) and confirmatory factor analyses were evaluated to determine the relative fit of these models. These results suggest that the GAD-7 is best represented by a one-factor structure, which is a better fit in comparison with two-factor structure. This result is consistent with previous research among pregnant women (Zhong et al., 2015) and in the general population (Löwe et al., 2008; García-Campayo et al., 2010; Johnson et al., 2019; Löwe et al., 2008).

This factor, being an essentially cognitive symptom, would not be affected by the physical and physiological changes of pregnancy. This pregnancy-specific factor might improve clinicians' ability to design prevention interventions program during pregnancy, and since excessive worry is essentially a cognitive symptom, it could be argued (Sinesi et al, 2019) that it is less susceptible to the physical and physiological changes of pregnancy and remains an indicator of anxiety in pregnancy, as it is in the general population (Sinesi et al, 2019).

The authors of the scale (Spitzer et al., 2006) and Garcia-Campallo (2010) suggest a relationship between the GAD-7 and disability in several area of daily life. A woman with a high score should be referred to mental health providers in order to prevent or treat prenatal anxiety.

Therefore, the GAD-7 could help health professionals design interventions appropriate to the perinatal context related to these aspects and that include universal concerns related to the birth experience (Peñacoba-Puente et al., 2011) or other cognitive impairments related with pregnancy and the postpartum period.

This study has several strengths, including a large sample size that examined the GAD-7 longitudinally and the execution of a rigorous analytic plan. To our knowledge, this is the first study to examine the psychometric properties of the GAD-7 among pregnant women in Spain in an urban sample in Spain. The study of psychometric properties in the Spanish context makes this scale potentially relevant for measuring anxiety in pregnant women.

Despite these strengths, this study has several limitations. First, we did not use other anxiety measures (neither a self-report measure nor a diagnostic interview for anxiety), due to time and resource constraints. This situation did not allow us to utilize a cut-off point and maximize the sensitivity and specificity. Another limitation is could be that the GAD-7 measures only general aspects of anxiety, but there are other types of anxiety disorders that pregnant women can have (e.g., obsessive compulsive disorder or panic disorder) that are not captured by this measure. We recommend

Table 5
Goodness-of-Fit Indices for the one-factor structure of the GAD-7

Model	χ^2	χ^2/df	RMSEA	CFI	NFI	GFI	AIC	ECVI	PNFI
One-Factor	68.149	4.867	0.098	0.962	0.953	0.997	110.149	0.273	0.477

Validity evidence based on relations to SCL-90R

Across the three time periods, the correlations between the GAD-7 and SCL-90-R were statistically significant and moderately high (1st trimester: $r = .75$, $p < .001$; 2nd trimester: $r = .79$, $p < .001$; 3rd trimester: $r = .74$, $p < .001$).

Discussion

The GAD-7 has been recommended as a brief screening measure for anxiety and has good psychometric properties among English-speaking pregnant women (NICE, 2019; Simpson et al., 2014). The present study is the first to examine the psychometric properties (reliability, concurrent validity) and factor structure of the GAD-7 in a sample of Spanish-speaking pregnant women in Spain. Regarding reliability, the GAD-7 has good internal consistency across the three trimesters in pregnancy and with good concurrent validity. This result supports the homogeneity of the scale and the contribution of all the items to the measurement of anxiety symptoms. These results are consistent with previous studies demonstrating good reliability (e.g., high internal consistency) among an English-speaking samples (Löwe et al., 2008; Johnson et al., 2019; Löwe et al., 2008; Simpson et al., 2014) and a Spanish-speaking samples (Zhong et al., 2015; García-Campayo et al., 2010).

that providers use Our proposal is to use this questionnaire to first screen for as the first screening measure for anxiety, as suggested by the NICE Guidelines (NICE, 2019), and then use more specific ones based on the results obtained, if warranted. In future research, more specific studies are needed that screen for multiple anxiety disorders concurrently to determine which specific anxiety symptoms (general anxiety, also it will be interesting to establish what exactly is measuring GAD7, anxiety, pregnancy-specific anxiety or a combination of both) are most relevant during pregnancy. Relatedly, understanding the unique dimensions of the anxiety, the role that cognitive symptoms play throughout the pregnancy period, can provide clinicians additional information to provide appropriate interventions for perinatal women and reduce the negative consequences of prenatal anxiety in mothers and their babies. The use of psychometrically sound assessment tools like the GAD-7 and the means to adequately interpret its results will allow the development of public health policies that promote the health of pregnant women and their families and ensure preventive, ethical, and efficient care.

In summary, the GAD-7 showed excellent psychometric properties. It can be used as a brief screener and should therefore be incorporated into standard practice of care for pregnant women. This research bridges a gap in the application of research findings on the psychometric properties of the GAD-7 for clinicians working with antenatal women who are at risk of developing anxiety symptoms.

References

American College of Obstetricians and Gynecologists (2007). *Guidelines for Perinatal Care*, Sixth Edition. ACOG.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorder* (5ª Ed.). Washington: American Psychiatric Publishing.

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorder* (4a. ed). Washington: American Psychiatric Publishing.

Bentler, P.M. (1990). *Comparative fit indexes in structural models*. *Psychological Bulletin*, *107*(2), 238-246. https://doi.org/10.1037/0033-2909.107.2.238

Beyondblue (2011). *Clinical practice guidelines for depression and related disorders*. *A guideline for primary care health professionals*. Beyondblue: The National Depression Initiative.

Bryant, F.B., & Yarnold, P.R., (1995). Principal-components analysis and exploratory and confirmatory factor analysis. In L.G. Grimm, P.R. Yarnold, *Reading and understanding multivariate statistics* (pp. 99-113) . American Psychiatric Association.

Cohen, L., & Manion, L. (1989). *Research methods in education* (3rd Ed). Routledge

Cox, J.L., Holden, J.M., & Sagovsky, R. (1987). Detection of Postnatal Depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry, 150,* 782-786. https://doi.org/10.1192/bjp.150.6.782

Department of Health (2009). *The Healthy Child Programme*. *Pregnancy and the first five years of life*. Department of Health.

Derogatis, L.R. (2002). SCL-90R: *cuestionario de 90 síntomas revisado* [Symptom Checklist-90-Revised]. Manual técnico. TEA.

Ding, XX., Wu, YL., Xu, SJ., Zhu, RP., Jia, XM., Zhang, SF., Huang, K., Zhu, P., Hao, JH., & Tao, FB.(2014). Maternal anxiety during pregnancy and adverse birth outcomes: A systematic review and meta-analysis of prospective cohort studies. *Journal of Affective Disorders, 159,* 103-110. https://doi.org/10.1016/j.jad.2014.02.027

Doi, S., Ito, M., Takebayashi, Y., Muramatsu, K., & Horikoshi, M. (2018). Factorial Validity and Invariance of the 7-Item Generalized Anxiety Disorder Scale (GAD-7) Among Populations With and Without Self-Reported Psychiatric Diagnostic Status. *Frontiers in Psychology*, *9*, 1741. https://doi.org/10.3389/fpsyg.2018.01741

Enatescu, V. R., Enatescu, I., Craina, M., Gluhovschi, A., Papava, I., Romosan, R., Marian, C., Oprea, A., & Bernad, E. (2014). State and trait anxiety as a psychopathological phenomenon correlated with postpartum depression in a Romanian sample: A pilot study. *Journal of Psychosomatic Obstetrics and Gynaecology, 35*(2), 55-61. https://doi.org/10.3109/0167482X.2014.914491

Fairbrother, N., Young, A.H., Janssen, P., & Tucker, M. (2015). Depression and anxiety during the perinatal period. *BMC Psychiatry, 15,* 206. https://doi.org/10.1186/s12888-015-0526-6

Farré-Sender, B., Torres, A., Gelabert, E., Andrés, S., Roca, A., Lasheras, G., Valdés, M., & García-Esteve, L. (2018). Mother-infant bonding in the postpartum period: Assessment of the impact of pre-delivery factors in a clinical sample. *Archives of Women's Mental Health, 21*(3), 287-297. https://doi.org/10.1007/s00737-017-0785-y

García-Campayo, J., Zamorano, E., Ruiz, M. A., Pardo, A., Pérez-Páramo, M., López-Gómez, V., Freire, O., & Rejas, J. (2010). Cultural adaptation into Spanish of the generalized anxiety disorder-7 (GAD-7) scale as a screening tool. *Health and Quality of Life Outcomes, 8,* 8. https://doi.org/10.1186/1477-7525-8-8

Goodman, J.H., Cheanusky, K.L., & Freeman, M.P. (2014). Anxiety disorders during pregnancy, a systematic review. *The Journal of Clinical Psychiatry, 75*(10), 1153-1184. https://doi.org/10.4088/JCP.14r

Gómez-García, J. A., Rojas-Russell, M. E., Serrano-Alvarado, K., Juárez-Castelán, M. A., Huerta-Ibáñez, A., & Ramírez-Aguilar, M. (2020). Intención de Lactar exclusivamente con Leche Materna: Un Estudio Basado en la Teoría de la Conducta Planeada. *Clínica y Salud, 31*(1), 13-20. https://doi.org/10.5093/clysa2019a20

Horn, J. L. (1965). A rationale and technique for estimating the number of factors in factor analysis. *Psychometrika, 30*, 179-185. https://doi.org/10.1007/BF02289447

Hoyle, R.H., & Panter, A.T. (1995). Writing about structural equation models. In R.H. Hoyle (Ed.), *Structural equation Modelling: Concepts, Issues and Applications* (pp. 159-176). Sage.

Johnson, S.U., Ulvenes, P.G., Oktedalen, T., & Hoffart, A. (2019). A Psychometric properties of the General Anxiety Disorder 7-ítems (GAD-7) scale in a heterogeneous psychiatric sample. *Frontiers in Psychology, 10,* 1713. https://doi.org/10.3389/fpsyg.2019.01713

Jordan, P., Shedden-Mora, M. C., & Löwe, B. (2017). Psychometric analysis of the Generalized Anxiety Disorder scale (GAD-7) in primary care using modern item response theory. *PloS one, 12*(8), e0182162. https://doi.org/10.1371/journal.pone.0182162

Kelley, T. L. (1935). *Essential traits of mental life*. Harvard studies in education (Vol. 26). Harvard University Press.

Kertz, S., Bigda-Peyton, J., & Bjorgvinsson, T. (2013). Validity of the Generalized Anxiety Disorder-7 scale in an acute psychiatric sample. *Clinical Psychology & Psychotherapy, 20*(5), 456-464. https://doi.org/10.1002/cpp.1802

Kline, R.B. (1998). *Principles and practice of structural equation modeling*. (3rd Ed). Guilford Press.

Lorenzo-Seva, U., & Ferrando, P.J. (2006). FACTOR: A computer program to fit the exploratory factor analysis model. *Behavior Research Methods, 38*(1), 88-91. https://doi.org/ 10.3758/bf03192753

Löwe, B., Decker, O., Müller, S., Brahler, E., Schelberg, D., Herzog, W., & Herzberg, PY. (2008). Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. *Medical Care, 46*(3), 266-274. https://doi.org/10.1097/MLR.0b013e318160d093

National Institute for Health and Care Excellence Guidelines (2020). Antenatal and Postnatal Mental Health, Clinical management and Service Guidance. https://www.nice.org.uk/guidance/cg192

National Institute for Health and Care Excellence Guidelines (2020). Identifying and assessing mental health problems in pregnancy and the postnatal period. https://pathways.nice.org.uk/pathways/antenatal-and-postnatal-mental-health/identifying-and-assessing-mental-health-problems-in-pregnancy-and-the-postnatal-period

Peñacoba-Puente, C., Carmona, F.J., & Marín, D. (2011). Pregnancy worries: A longitudinal study of Spanish women. *Acta Obstetricia et Gynecologica Scandinavica, 90*(9), 1030-1035. https://doi.org/10.1111/j.1600-0412.2011.01208.x

Portman, M.E., Starcevic, V., & Beck, A.T. (2011). Challenges in assessment and diagnosis of generalized anxiety disorder. *Psychiatric Annals, 41*(2), 79-85. https://doi.org/ 10.3928/00485713-20110203-06

Rial, A., Varela, J., Abalo, J., & Lévy-Mangin, J.P. (2006). Análisis factorial confirmatorio [Confirmatory Factors Analysis]. In J.P. Lévy-Mangin, & Varela, J. (Ed.), *Modelización con estructuras de covarianzas en ciencias sociales* (pp. 119-154). Netbiblo.

Robertson, F., Grace, S., Wallington, T., & Stewart, D.E. (2004). Antenatal risk factors for postpartum depression, a synthesis of recent literature. *General Hospital Psychiatry, 26*(4), 289-295. https://doi.org/10.1016/j.genhosppsych.2004.02.006

Romero-González, B., Caparrós-González, R.A., Strivens-Vílchez, H., & Peralta-Ramírez M.I. (2018). ¿Puede el índice de masa corporal pregestacional relacionarse con el estado psicológico y físico de la madre durante todo el embarazo? [Can the pregestational body mass index be related to the mother's psychological and physical state throughout the pregnancy]. *Nutrición Hospitalaria, 35,* 332-339. http://dx.doi.org/10.20960/nh.1192

Rubertsson, C., Hellström, J., Cross, M., & Sydsjö, G. (2014). Anxiety in early pregnancy: Prevalence and contributing factors. *Archives of Women's Mental Health, 17,* 221-228. https://doi.org/10.1007/s00737-013-0409-0

Ruiz, M. A., Zamorano, E., García-Campayo, J., Pardo, A., Freire, O., & Rejas, J. (2011). Validity of the GAD-7 scale as an outcome measure of disability in patients with generalized anxiety disorders in primary care. *Journal of Affective Disorders, 128*(3), 277-286. https://doi.org/10.1016/j.jad.2010.07.010

Simpson, W., Glazer, M., Michalski, N., Steiner, M., & Frey, BN. (2014). Comparative efficacy of the generalized anxiety disorder 7-item scale and the Edinburgh Postnatal Depression Scale as screening tools for generalized anxiety disorder in pregnancy and the postpartum period. *The Canadian Journal of Psychiatry, 59*(8), 434-440. https://doi.org/10.1177/070674371405900806

Sinesi, A., Maxwell, M., O'Carroll, R., & Cheyne, H. (2019). Anxiety scales used in pregnancy. Systematic review. *British Journal of Psychiatry Open*, *5*(1), e5. https://doi.org/10.1192/bjo.2018.75

Soto-Balbuena, C., Rodríguez-Muñoz, M.F., Escudero, A., Barriendos, F., & Le, H.N., & Pmb-Huca, Grupo (2018). Incidence, prevalence and risk factors related to anxiety symptoms during pregnancy. *Psicothema, 30*(3), 257-263. https://doi.org/10.7334/psicothema2017.379

Spitzer, R.L., Kroenke, K., Willians, J.B., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder, the GAD-7. *Archives of Internal Medicine, 166* (10), 1092-1097. https://doi.org/10.1001/archinte.166.10.1092

Sousa, T.V., Viveiros, V., Chai, M.V., Vicente, F.L., Jesus, G., Carnot, M.J., Gordo, A.C., & Ferreira, P.L. (2015). Reliability and validity of the Portuguese version of the Generalized Anxiety Disorder (GAD-7) scale. *Health and Quality of Life Outcomes, 13,* 50. https://doi.org/10.1186/s12955-015-0244-2

Taylor, S., & Todd, P.A. (1995). Understanding information technology usage: A test of com- peting models. *Information Systems Research, 6,* 144-176. https://doi.org/10.1287/isre.6.2.144

Timmerman, M. E., & Lorenzo-Seva, U. (2011). Dimensionality assessment of ordered polytomous items with parallel analysis. *Psychological Methods, 16*(2), 209-220. https://doi.org/10.1037/a0023353

Ullman, J.B., & Bentler, P.M. (2001). *Structural equation modelling*. (2 Edition). Handbook of Psychology.

Yu, C., & Muthen, B. (2002, April). *Evaluation of model fit indices for latent variable models with categorical and continous outcomes*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, L.A.

Zhong, Q.Y., Gelaye, B., Zaslavsky, A.M., Fann, J.R., Rondon, M.B., Sánchez, S.E., & Williams, M.A. (2015). Diagnostic Validity of the Generalized Anxiety Disorder -7 (GAD-7) among pregnant women. *PLoS One, 10*(4), 30125096. https://doi.org/10.1371/journal.pone.0125096