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ORIGINAL PAPER

Detecting Anxiety in Pregnancy: Validation of the Anxiety Subscale of the Edinburgh Postnatal Depression Scale (EDS-3A) in Spanish Women

Alba Val[1] · M. Carmen Míguez[1]

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Abstract

Anxiety is one of the most common mental health disorders during pregnancy, therefore, screening instruments are needed. The Edinburgh Postnatal Depression Scale (EPDS) is one of the most widely used self-report measures. However, it has an anxiety subscale (EDS-3A) which has so far been validated in only a few countries. The aim of this study is to validate the EDS-3A as a screening instrument to detect anxiety during pregnancy in Spanish women. A cross-sectional study was carried out with a total sample of 317 pregnant women. Anxiety was assessed using the EDS-3A and the DSM-5 Structured Clinical Interview (SCID-5). The area under the ROC curve (AUC), sensitivity, specificity, the positive predictive value (PPV) and the negative predictive value (NPV) were evaluated. The optimal cut-off point of the EDS-3A, according to the SCID-5, to detect generalized anxiety during pregnancy, was 7 or higher (AUC 0.82, sensitivity of 61.5%, specificity of 86.3%, PPV of 38.7% and NPV 94.1%). The prevalence of anxious symptoms found with the EDS-3A was 19.6%. The prevalence of GAD was 12.3%. The EDS-3A is an adequate instrument for screening anxiety in Spanish pregnant women. It can be considered a useful tool in clinical practice in the field of perinatal mental health given its characteristics of free availability, easy administration and brevity.

Keywords Prenatal anxiety · Anxiety subscale of the Edinburgh postnatal depression scale (EDS-3A) · Pregnancy · Validation · Screening · Prevalence

Highlights

- Anxiety during pregnancy is associated with consequences for mothers and children, therefore, it is necessary instruments for screening.
- We validated the EDS-3A as a screening instrument to detect generalized anxiety during pregnancy in Spanish women.
- The prevalence of generalized anxiety has been analyzed by using a screening instrument and a clinical interview, showing that anxiety is very common during pregnancy.
- EDS-3A is an adequate tool for identifying anxiety symptoms in Spanish pregnant women.
- The same instrument (EPDS) allows for rapid detection of anxious and depressive symptoms during pregnancy.

Anxiety is one of the most common mental health disorders during pregnancy (Falah-Hassani et al. 2017). Dennis et al. (2017) found that between 18.2 and 24.6% of pregnant women, assessed in 34 countries from different continents, presented anxious symptoms during pregnancy, and 4.1% met the criteria for generalized anxiety disorder (GAD). In Europe, Val & Míguez (2023) found that during pregnancy anxiety symptomatology ranged from 7.7 to 36.5% and GAD from 0.3 to 10.8%. In Spain, the prevalence of anxiety during pregnancy, obtained with self-reporting screening tools, is estimated to range from 5.3 and 32.7% (Motrico et al., 2022; Soto-Balbuena et al., 2018; Vázquez & Míguez, 2021). Regarding other Spanish-speaking countries, a study conducted in Mexico (Juarez-Padilla et al.

✉ M. Carmen Míguez
mcarmen.miguez@usc.es

[1] Department of Clinical Psychology and Psychobiology, Faculty of Psychology, Universidade de Santiago de Compostela, 15782 Santiago de Compostela, Spain

2020) reported a prevalence of anxiety during pregnancy of 21.0%, and in Peru (Salgado Contreras et al., 2023) was found that 24.7% of pregnant women experienced moderate-severe anxiety.

Additionally, it is associated with various consequences for mothers, including an increased probability of developing postpartum depression (Míguez et al., 2017), a greater risk of preeclampsia, obstetric complications, and bonding problems (Alipour et al., 2012; Farré-Sender et al., 2018; Field, 2017; Henrichs et al., 2023). As for newborns, it is associated with lower gestational age, lower birth weight and poor cognitive development, among others (Ding et al., 2014, Sanchez et al., 2013).

The high prevalence and possible adverse effects of the presence of prenatal anxiety have given rise to a growing interest in its detection in clinical guidelines for care in the perinatal period. This justifies the need to have assessment instruments with good psychometric properties to detect prenatal anxiety, as proposed by the American College of Obstetricians and Gynecologists (ACOG, 2007), the Clinical Practice Guidelines (Beyondblue, 2011), the Healthy Child Program (Department of Health, 2009), and the NICE Guidelines (National Institute for Health and Care Excellence Guidelines, 2020).

Despite the fact that clinical diagnostic interviews are the optimal assessment method for anxiety disorders, self-reports are preferred in clinical practice due to their brevity and the fact that their application does not require highly specialized professionals. In a systematic review of scales to assess anxiety in pregnancy (Sinesi et al., 2019), the anxiety subscale of the EPDS (Cox et al., 1987) stands out as it is the self-report instrument for screening postpartum depression most widely used on an international level. Different studies (Austin et al., 2022; Loyal et al., 2020; Matthey, 2008; Matthey et al., 2013a; Phillips et al., 2009; Swalm et al., 2010; Smith-Nielsen et al., 2021; Toler et al., 2018) have confirmed the existence of the EPDS anxiety subscale, the EDS-3A, and have examined its psychometric properties in pregnant and postpartum women.

Since the EPDS was created to assess postpartum depression, most studies that have used the EDS-3A to assess anxiety have also focused on the postpartum period (e.g., Buhagiar et al., 2025; Fellmeth et al., 2022; Matthey, 2008; Matthey et al., 2013a; Phillips et al., 2009; Smith-Nielsen et al., 2021; Toler et al., 2018). However, the EPDS has also been validated in multiple countries and cultures for use in pregnancy (e.g., Adewuya et al., 2006; Husain et al., 2014; Mukasa et al., 2024; Töreki et al., 2013; Zeng et al., 2025), which has made it possible to observe that the cut-off points established for detecting depression during pregnancy vary with respect to postpartum, depending on the culture and the trimester (Vázquez & Míguez, 2019).

On the other hand, some of the few studies that have used the EDS-3A to assess the presence of anxiety during pregnancy have used the validated cut-off point in the postpartum period to identify whether women present high levels of anxiety (e.g., Adhikari et al., 2021; Lautarescu et al., 2022; Loyal et al., 2020). The use of validated cut-off points for postpartum may not be appropriate for detecting anxiety during pregnancy, as scores may vary according to the perinatal period and therefore may affect the number of women who are classified as anxious. For this reason, it is important that validated cut-off points are used for each moment of the perinatal period. In addition, to date no study has proposed a specific cut-off point for each trimester.

Among the few studies that have validated the use of the EDS-3A during the prenatal period, cross-cultural variation is also appreciated, obtaining different cut-off points ranging from ≥4 (Swalm et al., 2010) to ≥6 (Adhikari et al., 2021), although the methodology used by these studies varies from one to another. For example, in Australia, Swalm et al. (2010) used the 75th percentile to establish the cut-off point. The percentile measure was also used by Matthey et al. (2013b), but in this case they used the 85th percentile, which implied a cut-off point of ≥5. In contrast, in Canada, Adhikari et al., (2021) used the cut-off point established to detect postpartum anxiety according to the DSM-IV diagnostic criteria established by Matthey (2008). Therefore, there is a need for the EDS-3A to be validated in all countries and in each trimester of pregnancy so that it can be used adequately as an instrument to detect prenatal anxiety. In addition, it should be noted that the EPDS is the most widely used screening instrument in clinical practice during pregnancy and postpartum. Therefore, its use would allow screening not only for depression, but also for anxiety in the perinatal period.

In Spain, Vázquez & Míguez (2019) have validated the use of the EPDS as an instrument to assess depression during the prenatal period. A cut-off point was established to detect depression during pregnancy, as well as the optimal cut-off points to detect depression in the different trimesters, demonstrating that these vary depending on the trimesters. At present, no EDS-3A validation has been conducted in Spanish pregnant women. As a result, the aim of this study was to validate the EDS-3A as a tool to detect anxiety in Spanish pregnant women, and to propose a possible specific cut-off point for each trimester, as well as a general cut-off point for the whole pregnancy.

Method

Participants

The study sample is made up of a total of 317 Spanish pregnant women (northwest of Spain) who were recruited when they attended their pregnancy check-ups with their

midwife, in the first (n = 168), second (n = 75) and third trimester (n = 74). The inclusion criteria were: having a pregnancy with a normal risk status, being 18 years of age or older and participating voluntarily in the study.

The age range of the sample is from 18 to 42 years old (M = 33.72, SD = 5.03). Most of the participants were married or living with their partner (82.3%), were primiparous (62.5%) and 54.3% had university studies. Regarding the employment situation, 66.6% of the sample was working, and 83.6% had planned the pregnancy.

Instruments

Sociodemographic and Obstetric-gynecological Questionnaire

An ad hoc questionnaire was elaborated for this study, which included information about sociodemographic variables, obstetric history and current pregnancy.

Edinburgh Postnatal Depression Scale (EPDS)

The EPDS (Cox et al. 1987) is a 10-items self-reported questionnaire initially developed to identify postnatal depression, which asks how women have felt in the last 7 days, although it has also been validated for use in pregnancy (Vázquez & Míguez, 2019). Although this scale was not initially designed to detect anxiety, different studies (e.g., Heller et al., 2022; Lautarescu et al., 2022; Sari et al., 2021; Smith-Nielsen et al., 2021) have found that three items (item 3 'I have blamed myself unnecessarily when things went wrong´; item 4 'I felt anxious or worried for no good reason´; item 5 'I have felt scared or panicky for no good reason´) can detect anxiety in women during the perinatal period. This subscale is known as the Edinburgh Depression Scale - Anxiety Subscale (EDS-3A). Each of the three items has four response options. The total score of the subscale ranges from 0 to 9.

In the present study, Cronbach´s alpha for this subscale was 0.79, 0.76 y 0.78 in the first, second and third trimesters, respectively. Cronbach´s alpha in pregnancy was 0.78.

Structured Clinical Interview for DSM-5 (SCID)

The SCID (First et al., 2015) is a semi-structured interview that determines formal diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). To diagnose generalized anxiety, the subject needs to have had anxiety on most days in the last 6 months in at least three contexts of your daily life and show 3 of the 6 anxiety symptoms that are described in the manual. Our decision to adopt the SCID-5 as a "gold standard" versus the self-reported EPDS is because it is widely used in clinical practice as well as in research studies, including EDS-3A validation studies (e.g., Matthey, 2008; Matthey et al., 2013a, Phillips et al. 2009).

Procedure

A cross-sectional study was carried out. The collection of the sample took place between September 2021 and January 2023. The health centers midwives reported the of the research to the women and requested their collaboration. Subsequently, the women were contacted by telephone and they were again informed verbally and in writing about the objective and methodology of the study. Once informed consent was signed, the different questionnaires were administered individually. The interviews and completion of the questionnaires were carried out in the first, second or third trimester, depending on the gestational age of the woman. First trimester women were assessed between 4–16 weeks of gestation (M = 9.06, SD = 2.99); in the second trimester between 17 - 27 (M = 21.23, SD = 3.64) weeks and in the third trimester of pregnancy, between 28- 40 (M = 33.08, SD = 2.96) weeks.

The clinical interview was carried out personally by telephone by a psychologist who had previously received training in the application of the SCID-5. The questionnaires were sent electronically. The average evaluation time was 30 min. The participants did not receive any type of incentive/compensation for their participation. The study was approved by the Clinical Research Ethics Committee of Galicia (Spain).

Data Analysis

The data was analyzed using SPSS Statistics version 23 (PASW Statistics for Windows, SPSS Inc., Chicago, IL, USA), and a significance level of $p < 0.05$ was applied.

Sensitivity and specificity of the EDS-3A to detect generalized anxiety according to the DSM-5 criteria were calculated using receiver operating characteristic curves as well as positive predictive values (PPVs) and negative predictive values (NPVs). To obtain the most optimal result for predicting the presence of anxiety, different trimester-specific cut-off points were calculated for the EDS-3A. Likewise, a cut-off point for overall pregnancy was calculated. The predetermined criterion for selecting the most appropriate cut-off point was the choice of an optimal balance between sensitivity and specificity, provided that neither of these values was less than 60%. Next, the best NPV associated with the aforementioned sensitivity and specificity values was taken into account.

Results

The prevalence of generalized anxiety disorder according to the SCID-5 for the whole pregnancy (Fig. 1) was 12.3% (n = 39); and 9.5% (n = 16) in the first trimester, 18.7% in the second (n = 14) and 12.2% (n = 9) in the third (Fig. 2).

The mean scores on the EDS-3A for each trimester of pregnancy were 4.43 (SD = 2.27), 4.93 (SD = 2.21), and 4.86 (SD = 2.17), respectively. For the entire gestational period, the mean EDS-3A score was 4.65 (SD = 2.24).

As can be seen from the receiver operating characteristics results in Tables 1 and 2, the area under the curve ranges from 0.59 to 0.92. The ROC curves indicate that the questionnaire significantly discriminates (or predicts) in the first two trimesters, but not in the third ($p > 0.05$). This means that the result obtained for this third trimester is not reliable. As a consequence of its predictive capacity in the first two trimesters, it is also capable of discriminating throughout the pregnancy. This is because the questionnaire predicts in most of the evaluation moments (2 of the 3 trimesters).

The overall cut-off point of the EDS-3A for pregnancy was 7 or more (Table 1). The trimester-specific EDS-3A cut-off score that obtained the best combination of sensitivity, specificity, PPV, and NPV for anxiety was 6 or higher in the first trimester of pregnancy and 7 or higher in the second and third trimester (Table 2). With a cut-off point of 6 or more in the first trimester, 87.5% of women with generalized anxiety were detected. With a cut-off point of 7 or more in the second and third trimester, 85.7 and

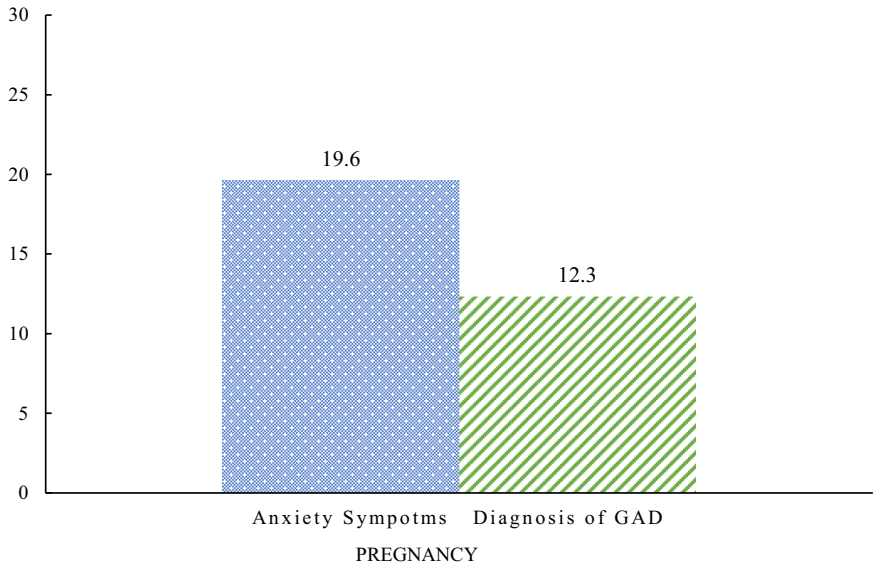

Fig. 1 Prevalence of anxiety with specific cut-off point obtained for EDS-3A and with SCID- 5 (GAD) in pregnancy

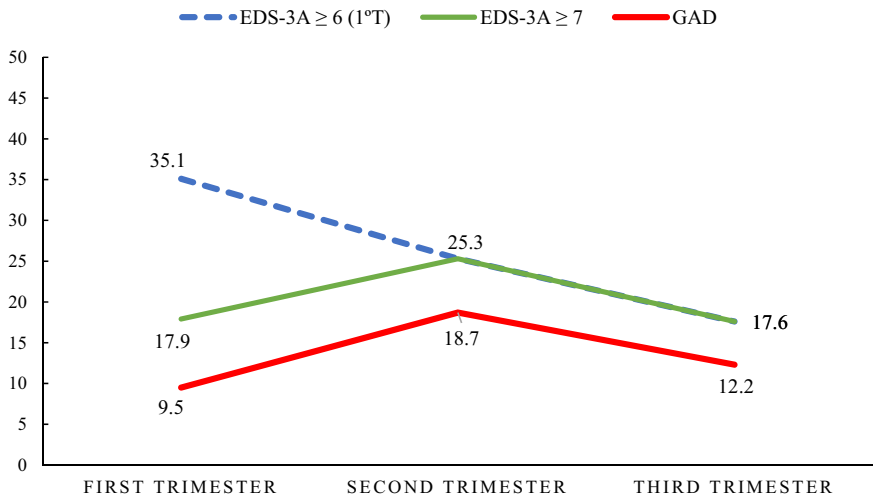

Fig. 2 Evolution of prevalence anxiety with specific cut-off points obtained by the EDS-3A for each trimester with the SCID-5 and evolution of GAD

Table 1 Sensitivity, specificity, positive and negative predictive values and Youden index for different EDS-3A cutoff points for anxiety during pregnancy

Pregnancy	EDS-3A Cutoff	Spec. (%)	Sens. (%)	IY	PPV (%)	NPV (%)	AUC (95% CI)
	≥5	47.1	89.7	1.37	19.2	97.0	0.820 (0.750–0.890)
	≥6	82.1	61.5	1.47	24.8	96.3	
	≥7	**86.3**	**61.5**	**1.48**	**38.7**	**94.1**	
	≥8	50.0	41.0	1.36	53.3	92.0	

Bold values: the cut-off point that obtains the best values at each point in time

EDS-3A Edinburgh postnatal depression scale-anxiety subscale, *Spec* specificity, *Sens* sensitivity, *IY* youden index, *PPV* positive predictive value, *NPV* negative predictive value, *AUC* area under the curve, *CI* confidence interval

Table 2 Sensitivity, specificity, positive and negative predictive values and Youden index for different EDS-3A cutoff points in the first, second and third trimester for anxiety

	EDS-3A Cutoff	Spec. (%)	Sens. (%)	IY	PPV (%)	NPV (%)	AUC (95% CI)
First trimester	≥5	50.1	100	1.52	17.8	100	0.863 (0.789–0.937)
	≥6	**70.4**	**87.5**	**1.58**	**23.7**	**98.2**	
	≥7	86.2	56.3	1.42	56.3	94.9	
	≥8	95.4	37.5	1.33	46.2	93.5	
Second trimester	≥5	42.6	1.00	1.43	28.6	100	0.927 (0.854–1.00)
	≥6	65.6	92.9	1.58	38.2	97.6	
	≥7	**88.5**	**85.7**	**1.74**	**63.2**	**96.4**	
	≥8	98.4	57.1	1.56	88.9	90.9	
Third trimester	≥5	41.5	55.6	0.97	11.6	87.1	0.590 (0.384–0.795)
	≥6	52.3	55.6	1.08	13.9	89.5	
	≥7	**84.6**	**33.3**	**1.18**	**23.1**	**90.2**	
	≥8	90.8	22.2	1.13	25.0	89.4	

Bold values: the cut-off point that obtains the best values at each point in time

EDS-3A Edinburgh postnatal depression scale-anxiety subscale, *Spec* specificity, *Sens* sensitivity, *IY* youden index, *PPV* positive predictive value, *NPV* negative predictive value, *AUC* area under the curve, *CI* confidence interval

33.3% of women with generalized anxiety were detected, respectively. Finally, with a cut-off point of 7 or more, 61.5% of women with generalized anxiety during pregnancy were detected. On the other hand, with these EDS-3A cut-off points (≥6; ≥7; ≥7), the prevalence of anxious symptoms (Fig. 2) was 35.1% (n = 59) for the first trimester, 25.3% % (n = 19) for the second and 17.6% (n = 13) for the third. For pregnancy in general (Fig. 1) the prevalence was 19.6% (n = 62).

Taking the 85th percentile as a reference, we have observed that the cut-off points coincide with those obtained by the ROC curves, with the exception of the one obtained for the first trimester. In this trimester, according to the ROC curves, the cut-off point would be ≥6 and the percentile indicates a cut-off point of ≥7.

Regarding the evolution of anxiety, it varies depending on the measurement instrument used, that is, the clinical interview or the self-report questionnaire (Fig. 2). It should be noted that the choice of one cut-off point or another in the self-report measure, considerably varies the number of women identified as anxious. Specifically, if the cut-off point found for pregnancy in general, as in the second and third (≥7) is used in the first trimester, we would obtain the same trajectory as with the clinical interview. The highest anxiety peak would be in the second trimester, followed by the third and, finally, the first.

Discussion

The objective of this study was to validate the EDS-3A as a screening tool to detect anxiety during pregnancy in Spanish women and to propose a possible specific cut-off point for each trimester of pregnancy, as well as a general cut-off point for pregnancy. Although the EPDS has been validated to be used in pregnancy for the detection of depressive symptoms in multiple countries and cultures (e.g., Adewuya et al., 2006; Husain et al., 2014; Töreki et al., 2013; Vázquez & Míguez, 2019), it has rarely been used to assess anxiety during pregnancy, since most of the

studies that have used the EDS-3A to assess anxiety have focused on the postpartum period (e.g., Fellmeth et al., 2022; Matthey, 2008; Matthey et al., 2013a; Phillips et al., 2009; Smith-Nielsen et al., 2021; Toler et al., 2018).

In this study, the specific cut-off points of the EDS-3A to detect anxiety were 6 or more for the first trimester of pregnancy and 7 or more for the second and third trimesters, respectively. Likewise, a cut-off point of 7 or more was established for pregnancy in general. According to the data provided by different studies (e.g. Fellmeth et al., 2022; Matthey, 2008; Phillips et al., 2009; Smith-Nielsen et al., 2021; Toler et al., 2018), the cut-off points to detect anxiety during postpartum are similar to those found to detect anxiety during pregnancy (Adhikari et al., 2021; Matthey et al., 2013b; Swalm et al., 2010), ranging between 4 and 6. However, the cut-off points proposed for pregnancy in this study are higher, ranging between 6 and 7. This may be due, in part, to the methodology used to establish the cut-off points, since the studies that indicated a cut-off point to measure anxiety during the prenatal period have either been based on data provided by percentiles (Matthey et al., 2013b; Swalm et al., 2010), or they have adopted the cut-off point established for the postpartum period (Adhikari et al., 2021). However, in the present study, a diagnostic clinical interview has been applied. Another factor that could have affected the increase in the cut-off point is the social moment in which the data collection was carried out, marked by the COVID pandemic and the outbreak of the war in Ukraine. During the interviews, most of the women reported being very concerned about the social situation and how it could affect their family, the economic situation and the future of their children. This would increase the probability of scoring positive on the items of the EDS-3A, since these are very generic questions that do not measure specific aspects of pregnancy. It would be interesting to have other studies that use the EDS-3A as a self-report measure in this same context, to be able to compare the data and find out how this social situation has affected women in other countries.

On the other hand, in this study, the best cut-off point for the first trimester was lower than that found for the second and third trimesters and pregnancy in general. This same pattern was found by Vázquez & Míguez (2019) when they validated the EPDS as an instrument to assess depression during pregnancy. Likewise, they also obtained the same cut-off point for the second and third trimester of pregnancy and for pregnancy in general. This pattern in the cut-off points may be due, in part, to the fact that the first trimester of pregnancy is the time when there is a higher risk of miscarriage. For this reason, women may experience higher levels of both anxiety and sadness. Therefore, it is important to consider the trimester in which the validation was performed, since the prevalence of anxiety can fluctuate during the course of the pregnancy. As a consequence, the optimal cut-off point of EDS-3A may also be different.

Regarding the sensitivity and specificity of the EDS-3A during pregnancy to establish an optimal cut-off point, our study obtained the lowest values in the third trimester. In fact, the ROC curves indicate that the questionnaire does not discriminate (or predict) in the third trimester ($p > 0.05$). This means that the result obtained for this third trimester is not reliable. These results contrast with those found in Australia by Austin et al. (2022), who check if the EDS-3A had good psychometric characteristics to be used as a screening instrument during the third trimester of pregnancy. Using the SAGE-SR (Screening Assessment for Guiding Evaluation-Self-Report) they established a cut-off point of ≥5, with better results in sensitivity and specificity than those obtained in the present study. Although in this study, the instrument used to establish the cut-off point (SAGE-SR) is a self-report instrument and, therefore, it is difficult to make a comparison with the data obtained in our study with the DSM-5 clinical interview.

In the present study, the PPVs were low for the first and third trimesters. The main consequence of a low PPV is the increased false positive rate. In fact, Austin et al. (2022) also obtained low PPV levels in their study. As a result, more clinical interviews will be conducted than are necessary to confirm the diagnosis of anxiety. However, this would not be a problem, since it does not imply an additional emotional burden for women or high costs for health services. In contrast, the NPVs obtained in this study at all possible cut-off points and in all trimesters of pregnancy were high, ranging between 90 and 100. These values are similar to those obtained in other EDS-3A validation studies during pregnancy (Austin et al., 2022), and mean that 90 to 100% of women identified as healthy by the EDS-3A do not suffer from an anxiety disorder, and so it allows us to rule out the disease with greater certainty.

In terms of the prevalence rates found, it is important to differentiate between the prevalence obtained with the clinical interview or with the self-report instrument. In this investigation, a prevalence of GAD of 12.3% during pregnancy has been obtained. In a review carried out by Val & Míguez (2023) on the prevalence of GAD during pregnancy in Europe, it found that it ranges between 0.3 and 10.8%. The data found in the present study with the SCID-5 slightly exceed this range. It is important to note that some studies (e.g. Andersson et al., 2003; Borri et al., 2008 Coelho et al., 2011; Sutter-Dallay et al., 2004) only collected data from a specific moment of pregnancy, making it difficult to observe how anxiety evolves throughout the prenatal stage, or provide data on the prevalence of anxiety for general

pregnancy. Also, not everyone has used the SCID-5 as a clinical interview. For example, Martini et al. (2013), in Germany, used the Composite International Diagnostic Interview (CIDI), obtaining a GAD prevalence of 1.3, 0.3, and 1.8% during the first, second, and third trimesters, respectively. These findings are lower than those found in our study for the different trimesters of pregnancy (9.5, 18.7, 12.2%). It is also important to note that in the study by Martini et al. (2013) the clinical interview was applied by different professionals, which may influence the results obtained. Outside the European continent, in Australia, Matthey et al. (2013b) used the Mini International Neuropsychiatric Interview, obtaining a prevalence of 14% for a diagnosis of anxiety during pregnancy, with panic, agoraphobia, social phobia, obsessive-compulsive disorder, post-traumatic stress disorder, and generalized anxiety disorder being evaluated. These results are slightly higher than those found in our study for pregnancy in general (12.3%). However, the data from this study do not indicate the percentage separately for each anxiety disorder, so it is not possible to know what the prevalence of GAD is.

Regarding the evolution of GAD, in this study we observed that the highest prevalence was obtained in the second trimester, as with the EDS-3A, followed by the third and, finally, the first trimester. Unfortunately, we lack studies that provide prevalence data throughout the different trimesters in order to make a comparison.

Studies that provide data on the prevalence of anxiety using the EDS-3A are scarce. In fact, in Europe we only found the Cena et al. (2021) study in Italy, in which they used the EDS-3A (≥6) together with the STAI-E (≥40) to assess anxiety during the third trimester of pregnancy. They obtained a prevalence of anxiety of 19% (criterion: surpassing the cut-off point in any of the scales). Outside the European continent, Matthey et al., (2013b) in Australia found a prevalence of 21.3%, using the 85th percentile (≥5) as a reference. Adhikari et al. (2021), in Canada, using the cut-off point of ≥6, indicated for postpartum by Matthey (2008), found a prevalence of 19.2%. The prevalence of anxious symptoms found in our study with the EDS-3A was 19.6%, for a cut-off point of ≥7, data similar to that found in the aforementioned studies. Analyzing the prevalence by trimester, this study found a prevalence of 35.1% for a cut-off point of ≥6 in the first trimester, and 25.3 and 17.6% for a cut-off point of ≥7 in the second and third trimester, respectively. It is important to point out that depending on the cut-off point to be used, the prevalence can vary greatly. For example, if in our sample we use the same cut-off point in the first trimester as in the rest of the pregnancy (≥7), the prevalence would become 17.9% (see Fig. 2). Since this study is unique in providing anxiety data in each of the trimesters of pregnancy, we do not have other studies which allow us to compare prevalence by trimester using the EDS-3A.

The data found are within the prevalence range of anxious symptoms found in Europe (7.7–36.5%) in the review carried out by Val & Míguez (2023). Likewise, if we analyze the prevalence obtained in Europe with other measurement instruments such as the HADS-A (10.4 -29.9%) and the GAD-7 (8.3 -19.5%), the prevalence found with these instruments is within the range the data found with the EDS-3A in the presente study.

Strengths and Limitations

In this study the EDS-3A provided good levels of sensitivity and specificity, combined with a high negative predictive value and a good proportion of correctly identified cases overall. Therefore, it would meet the requirements of a good screening instrument for the presence of anxiety in pregnancy since it makes it possible to identify those women who present a clinically significant level of generalized anxiety. However, this study has certain limitations that should be taken into account when interpreting the data. In the first place, the low PPV obtained implies an increase in the rate of false positives, so more evaluations are needed to confirm the diagnosis of generalized anxiety disorder. This could be explained by the brevity of the scale, which is why it has been criticized (Matthey et al., 2013b, Meades and Ayers, 2011). However, most screening tools suffer from the same difficulties, as they are designed to indicate the possibility of disease. Clinical evaluation is required to make a definitive diagnosis (Gibson et al., 2009). Second, the ROC curves indicate that the questionnaire does not discriminate (or predict) significantly in the third trimester ($p > 0.05$). This means that the result obtained for this third trimester is not reliable, therefore, the data should be interpreted with caution. As a result, a cut-off point cannot be recommended for this trimester. It would be interesting to have other studies with which to compare this data and shed more light on the predictive capacity of the EDS-3A in this third trimester of pregnancy.

Despite these limitations, this research adds important value. This is the first study that validates the EDS-3A during pregnancy in pregnant Spanish women. Besides, this is a study that evaluates pregnant women in the first, second, and third trimesters of pregnancy, providing a cut-off point for each trimester, and a general cut-off point for pregnancy has also been established. Previous studies only provide data for pregnancy in general (Adhikari et al., 2021; Matthey et al., 2013b) or for a specific trimester (Austin et al., 2022). The advantage of providing a cut-off point by trimesters allows each researcher or clinician to use the most appropriate cut-off point according to the moment of pregnancy in which the woman is evaluated. On the other

hand, in our study, a clinical interview (SCID-5) applied by the same professional in the three trimesters was used. The rest of the studies that have provided prevalence data are based either on the cut-off point established for the postpartum period (Adhikari et al., 2021) or on the calculation of percentiles (Matthey et al., 2013b).

Another relevant aspect that deserves to be highlighted is that taking the 85th percentile as a reference, also used by Matthey et al., (2013b), we have observed that the cut-off points coincide with those obtained by the ROC curves, with the exception of the one obtained for the first trimester. In this trimester, according to the ROC curves, the cut-off point would be ≥6 and the percentile indicates a cut-off point of ≥7. Therefore, we consider that it might be appropriate to use a more conservative cut-off point, which would mean using ≥7 for the whole pregnancy, which is more useful in clinical practice, as it avoids having to remember different cut-off points for each trimester.

Practical Implications

This study shows that the EDS-3A has initial potential for validity in identifying anxiety in pregnant Spanish women, since it demonstrated good criterion validity. The advantage of EPDS lies in its free availability, easy administration, brevity, and general acceptability to women. This makes it a useful tool in the field of perinatal mental health. Additionally, the same instrument allows for rapid detection of anxious and depressive symptoms during pregnancy. Therefore, we recommend that all pregnant women be routinely evaluated at their pregnancy follow-up and control visits with the EPDS. This will contribute to improving mental health care for women during pregnancy, which will benefit family well-being.

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Compliance with ethical standards

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