EDINBURGH POSTNATAL DEPRESSION SCALE FOR SCREENING ANTEPARTUM DEPRESSION IN THE BRAZILIAN PUBLIC HEALTH SYSTEM

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Abstract

Objective: To evaluate the utilization of the Edinburgh Postnatal Depression Scale (EPDS) as an antepartum depression (APD) screening tool in the public health system.

Method: The Scale was administered between the 4th and 6th month of pregnancy to 90 pregnant women whose prenatal appointments occurred at a public maternity hospital located in the municipality of Belo Horizonte, Southeastern Brazil, from 2011 to 2012. All participants were submitted to a structured psychiatric interview (Mini-Plus 5.0), used as gold standard for APD diagnosis. The EPDS sensitivity and specificity were calculated, and the receiver operating characteristic (ROC) curve was used to find the best instrument cut-off point to discriminated pregnant women with APD symptoms. Reliability was calculated by Cronbach's coefficient α of internal consistency.

Results: APD was diagnosed in 20 women (22.2% of the total sample). The area under the curve (AUC) in a ROC analysis was 0.84, indicating that EPDS has a good capacity to discriminate women with depression symptoms on antepartum period. Using 09 as the cut-off point, the scale's sensibility was 0.80, the specificity 0.70, and the positive preditive value, 0.43.

Conclusions: The psychometric properties of the Scale indicated it as an interesting screening tool for antepartum depression and its disseminated use in Sistema Único de Saúde (SUS – National Health System) could have positive impacts, with a significant increase in the recognition, diagnosis and treatment of antepartum depression.

Key words: depression, edinburg postpartum depression scale, psychometrics, postpartum depression

Declaration of interest: none

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Introduction

Recently, there has been an increase in women's health studies, especially those concerning the postpartum period. Historically, comparing the whole women reproductive period, there was a smaller interest for the antenatal period despite the knowledge that in this there is also a high risk for the emergence of psychiatric disorders. According to Vesga-López et al (2008) between 15% and 29% of the women during pregnancy and postpartum manifest some psychopathology. Prevalence studies in Brazil may report even higher rates. For instance, a study conducted by our group using a structured interview for the diagnosis MINI-Plus 5.0 (Amorim 2003) obtained a postpartum depression prevalence of 26.9% (Figueira et al. 2009). Other, not related research group, found that in low income Brazilian women the prevalence of episodes of depression in the third trimester of pregnancy is 38% (Da Silva et al. 1998).

A shift to better understanding the whole pregnancy related disorders has been in course. It was developed

Submitted January 2013, Accepted April 2013

the term Perinatal psychiatry, which is the specialty concerned with the mental health and illness of women from conception through to the first postnatal year. By using the term "perinatal" the proponents intend to ensure not only that maternal mental health is considered from conception onwards, but its impact on the developing mother-infant relationship also (Austin 2009). This new scenario can be glimpsed taking the EPDS use as an example.

Traditionally proposed for use in the postpartum period, the Edinburgh Depression scale is one of the most used screening tools in that period (Cox et al. 1987, O'Hara 1994). It is a self-administered scale containing ten items, each question is scored on scale from 0 to 3, resulting in a total score range of 0 to 30. Its affirmatives describe depressive symptoms in the last seven days and among these are included: inability to laugh and look forward to things, blaming oneself unnecessarily, feeling anxious or worried, feeling scared or panicky, inability to cope and presence of thoughts harming (Cox et al. 1987). Its administration is quick and simple, and it can be used by not only doctors but also others health professionals. Since its development, EPDS has been adapted and validated in many countries, including Brazil (Santos et al. 1999, Santos et al. 2007).

Later on, it was validated as a screening tool for APD in pregnant women, with a cut-off point of 14/15 for probable depression (Murray and Cox 1990) and also gradually applied for the antenatal period (Da Silva et al. 1998, Adewuya et al. 2006, Felice et al. 2006, Manikkam and Burns 2012).

The aim of this study was to investigate psychometric characteristics of Edinburgh Postnatal Depression Scale as a screening tool for antepartum depression (APD) in a Brazilian public health system sample.

Method

Participants

The sample was composed by 90 antepartum women, who were attending, between 2011 and 2013, the antenatal clinic at a Public Hospital located in Belo Horizonte, Brazil. Inclusion criteria were pregnant women attending prenatal check-up between first and six months that have answered the EPDS scale (Cox et al. 1987) and the Mini-Plus 5.0 (Amorim 2003).

Data collection

The study protocol was approved by the Research Ethics Committee of Universidade Federal de Minas Gerais. Pregnant women attending antepartum check-up were invited to participate in the present study. All participants assigned informed consent and were submitted to EPDS and a demographic interview. Finally, a structured psychiatric interview (Mini-Plus 5.0) was administrated by a trained psychiatrist, who was blind to EPDS scores. Both EPDS and MINI data, were planned to be taken at the same day, but due to mother's reluctance, in some cases it took two weeks between them. The Mini-Plus result was used as a gold standard for antepartum depression diagnosis. Women identified as having a psychiatric diagnosis were referred on for treatment. The data collection occurred from 2011 to 2013.

Table 1. *Sociodemographic characteristics of groups diagnosed by Mini-Plus*

Characteristics	Groups		Chi-square or U Mann-Whitney (p value)
	Women without APD (n=70)	Women with APD (n=20)	
Age, years (±SD)	28.09 (6.98)	30.26 (6.58)	1.33 (0.18)
Age, n (%)			
<20	11 (15.7)	2 (10.0)	1.73 (0.63)
21-30	34 (48.6)	8 (40.0)	
31-42	22 (31.4)	9 (45.0)	
Missing	3 (4.3)	1 (5.0)	
Mean of schooling, years (±SD)	9.99 (2.61)	10.47 (2.57)	0.40 (0.68)
Marital status, n (%)			
Without a partner	8 (11.4)	6 (30.0)	4.19 (0.04)*
With a partner	59 (84.3)	13 (65.0)	
Missing	3 (4.3)	1(5.0)	
Socioeconomic class, n (%)			
Class B1	1 (1.4)	0 (0.0)	1.21 (0.75)
Class B2/C1	42 (60.0)	10 (50.0)	
Class C2/D	20 (28.6)	8 (40.0)	
Missing	7 (10.0)	2 (10.0)	
Working status, n (%)			
Do not work	28 (40.0)	5 (25.0)	1.50 (0.22)
Working	39 (55.7)	14 (70.0)	
Missing	3 (4.3)	1 (5.0)	

Note: APD=antepartum depression; SD=standard deviation; *=p<0.05

Statistical analysis

To describe sample's sociodemographic, clinical and gestational characteristics, we used frequencies to categorical variables and means and standard deviations to continuous variables. Mini-Plus 5.0 was used as gold standard for depression diagnosis and to divide the participants into two groups according to the presence or not of depression symptoms. Sociodemographic and clinical groups' characteristics were compared using chi-square test and U Mann-Whitney test.

Distribution of EPDS scores were tested by Kolmogorov-Smirnov test that indicated the appropriate used of parametric or non-parametric tests. The validity of EPDS was calculated by comparisons between mean EPDS scores of diagnostic groups using Student t test or U Mann-Whitney test. The EPDS's sensitivity, specificity and the best cut-off point to discriminate the diagnostic group were calculated using the receiver operating characteristic (ROC) analyses and the area under the curve. Finally, for EPDS total score internal consistency, Cronbach's alpha was calculated. Analyses were performed with the SPSS version 19. We used a level of 5% as criterion significance.

Results

Sociodemographic and clinical characteristics

The mean age in the sample was 28.57 years (SD=6.93 years; range from 13 to 42 years old); fifty-

Table 2. *Gestational and clinical characteristics of groups diagnosed by Mini-Plus*

Characteristics	Groups		Chi-square or U Mann-Whitney (p value)
	Women without APD (n=70)	Women with APD (n=20)	
Planned pregnancy, n (%)			
No	37 (52.9)	11 (55.0)	0.04 (0.84)
Yes	30 (42.9)	8 (40.0)	
Missing	3 (4.3)	1 (5)	
Pregnancy risk (mothers' rating), n (%)			
No	37 (52.9)	6 (30.0)	3.54 (0.06)
Yes	29 (41.4)	13 (65.0)	
Missing	4 (5.7)	1 (5.0)	
Pregnancy risk (obstetricians' rating), n (%)			
No	26 (37.1)	6 (30.0)	0.33 (0.57)
Yes	41 (58.6)	13 (65.0)	
Missing	3 (4.3)	1 (5.0)	
Thought about having an abortion, n (%)			
No	56 (80.0)	9 (45.0)	10.52 (0.001)*
Yes	11 (15.7)	10 (50.0)	
Missing	3 (4.3)	1 (5.0)	
Previous history of MD, n (%)			
No	51 (72.9)	6 (30.0)	12.30 (<0.001)*
Yes	19 (27.1)	14 (70.0)	
Missing	0 (0.00)	0 (0.00)	
Previous history of PPD, n (%)			
No	63 (90.0)	16 (80.0)	2.84 (0.09)
Yes	3 (4.3)	3 (15.0)	
Missing	1 (5.7)	1 (5.0)	
Previous suicide attempt, n (%)			
No	64 (91.4)	15 (75.0)	1.52 (0.22)
Yes	5 (7.1)	3 (15.0)	
Missing	1 (1.4)	2 (10.0)	
Suicide risk / MINI - C item, n (%)			
No	56 (80.0)	9 (45.0)	11.39 (0.003)*
Yes	14 (20.0)	10 (50.0)	
Low	11 (15.70)	4 (20.0)	
Moderate	1 (1.40)	1 (5.0)	
High	2 (2.90)	5 (25.0)	
Missing	0 (0.0)	1 (5.0)	

Note: APD=antepartum depression; PPD=postpartum depression; MD= major depression; SD=standard deviation; *=p<0.05

Table 3. *Sensitivity, Specificity, positive predictive value and negative predictive value in the EPDS to discriminated pregnant women with APD symptoms*

EPDS (cut-off point)	Sensitivity	Specificity	Positive predictive value	Negative predictive value
07	0.90	0.60	0.39	0.95
08	0.85	0.66	0.41	0.78
09	**0.80**	**0.70**	**0.43**	**0.92**
11	0.75	0.73	0.44	0.92
12	0.70	0.73	0.42	0.89

seven women (66.3%) were married or had a partner. Considering education, the mean years of education was 10.09 (SD=2.60 years; range from 4 to 16 years). Forty-six women (53.5%) were first-time mother and 48 (55.8%) reported an unplanned pregnancy. Moreover, twenty-one out of the 90 participants (24.4%) reported the idea of aborting.

Mini-Plus was used to identify diagnostic groups namely depression group and non-depression group. Twenty (22.2%) women were diagnosed with depression. **Table 1** provides an overview of participants' sociodemographic characteristics.

Significant differences were observed between groups in relation to marital status (χ^2=4.19, p=0.04) considering the gold standard for depression diagnosis. Thirty percent of depressed pregnant women lived without a partner while only 11.4% of non-depressed showed the same status. **Table 2** provides an overview of groups' gestational and clinical characteristics.

Considering gestational aspects, there was no significant difference between depressed and non-depressed pregnant; the exception was the significant higher frequency of thought about having an abortion among women with APD symptoms than women without APD symptoms (χ^2=10.52, p=0.001). With regard clinical characteristics, among the pregnant APD women was a significant higher rate of suicidal risk (χ^2=11.39, p=0.003) and previous episodes of Major Depression (χ^2=12,30 p<0.001).

Validity evidences

Distribution of EPDS scores were tested by Kolmogorov-Smirnov test that indicated the appropriate used non-parametric tests (Z=1.52; p<0.05). The mean EDPS scores of the non-depressed mothers was 7.17 (5.88) and 15.40 (SD=6.08) for the mothers with depression. U Mann-Whitney test of EPDS total scores revealed significant differences between groups (z=4.60; p<0.001).

ROC analyses were used to screening accuracy of the EPDS for depressive disorders against depression diagnosis according to Mini-Plus 5.0. The area under the curve (AUC) in a ROC analysis was 0.84 (standard error=0.04; p< 0.001) with a confidence interval of 95% range from 0.75 to 0.92 (see **figure 1**). This result indicated that EPDS had a good capacity to discriminate women with depression symptoms on antepartum period.

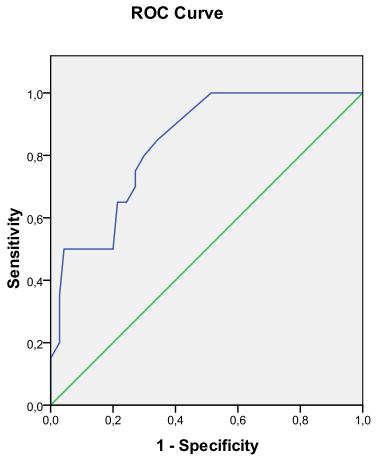

Figure 1. *ROC curve for performance in EPDS during antepartum in comparison to depression diagnosis based on Mini-Plus 5.0 (gold standard)*

Table 3 shows the predictive values of EDPS at different cut-off points (07, 08, 09, 11, 12) and respectively, sensitivity and specificity. A satisfactory cut-off point of 09, generated a sensitivity of 80% and specificity of 70% with a positive predictive value (PPV) of 43% and a negative predictive value (NPV) of 92%.

Reliability

The EPDS showed good internal consistency (Cronbach α=0.89). This result indicated acceptable items homogeneity.

Discussion

Clinically it can be very difficult to distinguish between distress and depression in the pregnancy setting. Pregnancy is an emotionally charged time, and many women report distress or changes in mood which may be quite normal in this setting.

Our findings indicate that some sociodemographic, gestacional and clinical variables can acquire statiscal significancy when comparing women with or without APD. In our sample, those were not having a partner, abortion ideation, previous major depression and risk of suicide measured by MINI's - C item.

Concerning the EPDS' psychometric properties,

in our study it presented good internal consistency, besides showing good capacity to discriminate pregnant women with APD diagnosis. Using 09 as cut-off point for EPDS, we had a sensitivity of 80%, specificity of 70%, positive predictive value of 43% and negative predictive value of 92%. Those numbers came close to the one's finded by Adouard et al, 2004, that in a french sample with high obstetric risks found that 11.5 was the optimal cut-off score for a sensibility and specificity of 0.80 each, a PPV of 0.42 and a NPV of 0.95. On the other hand, there are validation studies that point towards to even higher cut-off points for EPDS: 14/15 (Murray and Cox 1990), 13/14 (Felice et al. 2006) and 12 (Adewuya et al. 2006).

The APD prevalence in our study (22.2%) was within the margin frequently found in the literature - 15% and 29% (Vesga-López et al. 2008) - and once again close to the french study (25%) which had, as us, a sample of high obstetric risk women. Nevertheless, even in Brazil, there is a study that shows a higher rate: 37.9% (Da-Silva et al. 1998).

An important aspect that we should consider to explain those differences is that in pregnancy even using the same instrument and checking the same population there can be a considerable change in the values reached, due to normal symptoms of pregnancy that can be misconstrued as symptoms of depression and that can ameliorate as the pregnancy comes to its end. This will have significant implications for studies that report on the prevalence of depression in the perinatal period, as well as studies validating self-report measures against diagnostic criteria (Matthey and Ross-Hamid 2012). Those misunderstandings can be responsible for a higher pontuation in self-report instruments and prevalence differences in different samples. Other aspects are: differences in study methodology, language and diagnostic interview / criteria used; and, in the end, due to those heterogeneities the results of different studies may not be directly comparable and the EPDS may not be an equally valid screening tool across all settings and contexts (Gibson et al. 2009).

A limitation of our study was that in some particular cases the MINI and EPDS extraction data could not be done at the same time due to mothers' impatience in completing the whole questionaire at the same opportunity. The well known applicancy of the EPDS according to "the last week" criteria and mood changes during this elapsed time between the two measurements (maximum 2 weeks) could be responsible for changes in the psychometric properties in our study.

Our study corroborates the literature, suggesting that EPDS, depending of the context, constitutes an adequate screening tool for antepartum depression, and that it can be implemented in the public health network. Never forgetting that it is a screening and not a diagnostic tool. The broad use of the scale can be associated with an increase in the indexes of diagnosis and treatment of the disease, thus minimizing its possible harmful effects.

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