Validation of the Lithuanian version of the Edinburgh Postnatal Depression Scale

Adomas Bunevičius[1, 2], Laima Kusminskas[2], Robertas Bunevičius[2]
[1]Faculty of Medicine, [2]Institute of Physiology and Rehabilitation, Kaunas University of Medicine, Lithuania

Key words: *postnatal depression; the Edinburgh postnatal depression scale; validity; sensitivity; area under the ROC curve.*

Summary. *Depression is prevalent postpartum and is a major health problem.*

Objective. In this study, we aimed to evaluate how precise the Edinburgh Postnatal Depression Scale (EPDS) is in screening for depressive disorders postpartum.

Materials and methods. A random sample of 94 women was interviewed two weeks postpartum using the Composite International Diagnostics Interview Short-Form (CIDI-SF). In addition, they filled in the EPDS. We evaluated (a) internal consistency of the EPDS by the means of Cronbach's alpha coefficient; (b) area under the ROC curve, sensitivity, specificity of the EPDS against the CIDI-SF diagnoses of depressive disorders.

Results. The internal consistency of the EPDS was 0.83. The optimal cutoff score of the EPDS for screening CIDI-SF diagnoses of depressive disorders was found to be 7 and more with an area under the ROC curve of 0.83, sensitivity of 92%, and specificity of 73%.

Conclusions. The EPDS has a good reliability as a screening instrument, and a cutoff score of 7 and more has to be used in screening for postpartum depressive disorders.

Introduction

Postnatal depression is the most common complication of childbearing and is a major health problem affecting women and their families (1). The prevalence of postpartum depression varies from 7% (2) to 20% (3). Therefore, medical specialists encountering postpartum women need a reliable and sensitive screening instrument for postpartum depressive disorders. Although several diagnostic tools have been established to diagnose depressive symptoms or depressive disorders, but not all of them are appropriate to use in a population of postpartum women (4). Useful instruments must be easily administered, highly sensitive and should avoid questions about physical health, because this population is expected to have physical symptoms; therefore, these questions could bias the results of a screening (5, 6).

A number of instruments have been established for screening of postpartum depression, but the Edinburgh Postnatal Depression Scale (EPDS) (7) remains the most extensively studied and most widely used instrument for this purpose (4). The EPDS was developed in 1987 by Cox and colleagues, and since then a number of studies have showed its good psychometric properties in screening for postpartum depression (8). However, validation studies have shown a significant variability in psychometric properties and optimal cutoff scores of the EPDS (8). Therefore, it is highly recommended to validate the EPDS in the particular populations before it can be used in screening for depression. Lithuanian version of the EPDS has been previously validated in a community-based population (9), but not in postpartum women.

This paper seeks to evaluate how precise the EPDS is in screening for depressive disorders in an unselected population of women in an early postpartum period.

Subjects and methods

Subjects

The study was performed in 2005. A total of 94 (31%) pregnant women, randomly selected from a sample of women that participated in a larger study (n=307) aiming to evaluate the relationship between thyroid function and mood symptoms during pregnancy (10), were screened for postpartum depressive disorders. There were no restrictions on the selection of pregnant women, but only subjects aged 18 or more were included into the study. The mean age of the study population was 29 years (range, 20–43 years).

Correspondence to A. Bunevičius, Mokyklos 4, 53216 Garliava, Lithuania
E-mail: a.bunevicius@yahoo.com

Forty-three (46%) women were pregnant for the first time, 45 (48%) planned the current pregnancy, and 92 (98%) women were married or had a partner. All women were employed or had classes during pregnancy. Eight (8%) women had a history of depression, and 16 (19%) women reported a family history of depression. At the time of the study, two women had an established psychiatric diagnosis of major depressive disorder in the third trimester of pregnancy.

Methods

The study and its informed consent procedures were approved by the Regional Ethics Committee for Biomedical Research at the Kaunas University of Medicine, Kaunas, Lithuania. After written informed consent was obtained, all study participants were interviewed for demographic data during pregnancy. Symptoms of depression were evaluated, and clinical diagnoses of current depressive disorders were established in the second week postpartum. Symptoms of depression were evaluated using the EPDS; clinical diagnoses of depressive disorders were established using the Composite International Diagnostics Interview Short-Form (CIDI-SF) (11).

Symptoms of depression were evaluated using the validated Lithuanian version (9, 12) of the EPDS (7). The EPDS is beneficial against most of other instruments used in screening for postnatal depressive symptoms because it is easy to administer and it evaluates psychological and cognitive but not physical symptoms of depression that are prevalent during pregnancy. The EPDS is a ten-item self-rating instrument, and it takes 2 to 5 minutes to complete. Each item is scored from 0 to 3 to which subject responds based on her experience over the past week. Possible scoring range is from 0 to 30. The original paper indicated that at a 12.5 cutoff point the EPDS screened accurately for postpartum major depression (7). Validation study of the Lithuanian version of the EPDS in a community sample found that the EPDS is an optimal screening instrument for severe depressive disorder when cutoff score of 12 and more is used with a sensitivity of 95% and area under the receiver operating characteristic (ROC) curve of 0.94 (9).

All study women were interviewed using the Lithuanian version of the CIDI-SF (11). The CIDI-SF is a structured clinical interview that ascertains the presence of psychiatric disorders according to Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) (13). We chose the CIDI-SF as a "gold standard" because of its proven reliability and validity (14, 15).

The EPDS was administered as a paper-and-pencil questionnaire; an interview for psychiatric diagnoses using the CIDI-SF was performed by a trained psychiatrist (L.K). The order of administration of the EDPS and the CIDI-SF was changed randomly, so that the results of one instrument could not influence the response to the other.

Statistical analysis

All continuous data are presented as mean ± standard deviation, all categorical data as number and percentage. Firstly, we evaluated the internal consistency of the EPDS using the Cronbach's coefficient alpha, which is a numerical coefficient of reliability. Alpha coefficients range from 0 to 1 and are used to describe the reliability of factors extracted from dichotomous and/or multipoint formatted questionnaires or scales. The higher the score, the more reliable the scale is. A self-report instrument is reliable when its Cronbach's coefficient alpha is at least 0.60, and an instrument can be used for screening purposes when its Cronbach's alpha is about 0.80 (16).

Secondly, we addressed the issue of how well different cutoff values of the EPDS predicted CIDI-SF diagnoses of depressive disorders. For each comparison, we computed sensitivity (the true-positive rate), specificity (the true-negative rate), positive predictive value (proportion of subjects with positive test results who are correctly diagnosed), negative predictive value (proportion of subjects with negative test results who are correctly diagnosed), and the area under the ROC curve (AUC). The AUC is an index of the amount of information the test provides over its entire scoring range. An AUC can range from 0.50, which indicates a worthless test, to 1.0, which indicates a perfect test with a perfect sensitivity and specificity (17). SPSS 12.0 for Windows (Chicago, IL) was used for data analysis.

Results

We found that the internal consistency of the EPDS using Cronbach's alpha coefficient was 0.83, indicating good reliability for a screening instrument (15).

All 13 (14%) women were found to have diagnoses of depressive disorder according to the CIDI-SF: mild depressive episode was diagnosed in 10 (11%) women, recurrent depressive disorder, current episode moderate, was diagnosed in 1 (1%) woman, mixed anxiety and depressive reaction was diagnosed in 1 (1%) woman, and prolonged depressive reaction was diagnosed in 1 (1%) woman.

The area under the ROC curve for the CIDI-SF

Table 1. **Receiver-operating characteristics and sensitivity of the Edinburgh Postnatal Depression Scale (EPDS) at different cutoff scores for CIDI-SF diagnoses of depressive disorders**

EPDS cutoff scores	Any depressive disorder	
	AUC	sensitivity, %
≥4	0.72	100
≥5	0.75	92
≥6	0.79	92
≥7	**0.83**	**92**
≥8	0.83	85
≥9	0.80	77
≥10	0.80	69
≥11	0.74	54
≥12	0.71	46
≥13	0.71	46
≥14	0.69	39
≥15	0.65	31

AUC – area under the curve; CIDI-SF – Composite International Diagnostics Interview Short-Form. Optimal characteristics are in bold.

diagnoses of depressive disorders was highest at the EPDS cutoff scores of 7 and more and 8 and more (Table 1). However, the sensitivity for the CIDI-SF diagnoses of depressive disorders was higher at the EPDS cutoff score of 7 and more when compared to a cutoff score of 8 and more. Therefore, the EPDS cutoff score of 7 and more was an optimal cutoff score. Other characteristics of the EPDS at optimal cutoff scores of diagnosing any depressive disorder are presented in Table 2.

Table 2. **Characteristics of the Edinburgh Postnatal Depression Scale (EPDS) at optimal cutoff score against the CIDI-SF diagnoses of depressive disorders**

Characteristic	Any depressive disorder
Prevalence	14%
EPDS cutoff score	≥7
Sensitivity	92%
Specificity	73%
Positive predictive value	35%
Negative predictive value	98%
Area under the ROC curve	0.83

ROC – receiver operating characteristic; CIDI-SF – Composite International Diagnostics Interview Short-Form.

Discussion

Results of this study indicate that the EPDS is a sensitive and accurate instrument for screening for postpartum depressive disorders with an optimal cutoff score of 7 and more. It corresponds to the findings from a study by Pitanupong et al. (18) performed in a sample of woman (n=351) at 6 to 8 weeks postpartum that found an optimal EPDS cutoff score at the level of 6/7 in screening for major and/or minor depression according to the DSM-IV criteria with a sensitivity of 74%. Results from validation study of the Lithuanian version of the EPDS in a community sample showed that the EPDS is an optimal screening instrument for severe depressive illness when cutoff score of 12 and more is used (9). As it is mentioned above, there is a significant variability in optimal cutoff scores of the EPDS for screening of depressive disorders among the studies (8). The study including a large sample (N=1201) of women at 6 weeks postpartum found an optimal cutoff score of 10/11 of the EPDS against the Structured Clinical Interview for DSM-IV diagnoses of major and minor depression (19). Another study performed in Nepal in a random sample of women 2 to 3 months postpartum found an optimal EPDS cutoff score of 13 and more for screening for postpartum depression (20). Variation of optimal EPDS cutoff scores depends on the population and on instruments used as "gold standard" in establishing diagnoses of depression. Variability of the optimal cutoff score occurs even when the instrument is used in the same language. Therefore, the EPDS must be evaluated in each country and in each specific population before using it for screening purposes of depressive disorders.

Moreover, optimal cutoff scores of the EPDS in screening for postpartum depressive disorders seem to be different at different postpartum periods. A recent study by Alvarado-Esquivel and colleagues (21) found an optimal cutoff score of 11/12 for screening for depression in women with less than a week postpartum and an optimal cutoff score of 7/8 for screening for depression at 4 to 13 weeks postpartum. Diagnoses of depressive disorders in that study were established according to the DSM-IV criteria, although authors did not indicate which specific instrument they used as a "gold standard."

The EPDS was also found to be a valid screening instrument for depressive disorders during pregnancy (22, 23) and during lifetime not related to gestation (24) allowing objective evaluation of mood disorders using the same instruments during different woman's life cycles.

Sensitivity of the EPDS at optimal cutoff score was 92% indicating that most of women who had depressive disorders according to the CIDI-SF were correctly classified by the EPDS. It correspond to findings of a study by Wickberg and Hwang (25) that found a sensitivity of the EPDS screening for major depression at the level of 96%. Other studies found that sensitivity of the EPDS at an optimal cutoff score in screening for depressive disorders ranged from 76% (26) to 100% (27). Other findings of our study on the EPDS such as high specificity (73%) and high negative predictive value (98%) fulfilled requirements for good screening instrument. Overall, our results validate the EPDS as a good screening tool for postpartum depression with a high sensitivity, thereby confirming the conclusion of review on the EPDS validations in screening for postpartum depression (8).

There is debate in the literature on how many dimensions are in the EPDS based on a factor analysis (22, 28). Study by Brouwers et al. (29) has confirmed that the EPDS does not exclusively measure depression, but also anxiety subscale exists within the EPDS. But in this study, we did not take this issue into consideration because we focused on how precise the EPDS is in identifying CIDI-SF diagnoses of depressive disorders. We used the EPDS as one-dimensional questionnaire in screening for depressive symptoms. Internal consistency of the EPDS evaluated by the means of Cronbach's coefficient alpha was found to be 0.83, indicating that the EPDS can be used for screening purposes (16). Validation study of the Lithuanian version of the EPDS in a community sample showed that the internal consistency of the EPDS measured by the means of Cronbach's alpha was 0.91 (9). Other studies found that internal consistency of the EPDS varied from 0.72 (26) to 0.79 (30).

Conclusions

The results of this validation study of the EPDS shows that the EPDS is an adequate instrument in screening for depressive disorders in the postpartum period. It should be mentioned that screening with the EPDS would miss about 8% of patients with depressive disorders. Whenever possible, the IDI-SF or other structured diagnostic interview must be used to diagnose a specific depressive disorder.

Edinburgo pogimdyminės depresijos skalės lietuviškos versijos validizacija

Adomas Bunevičius[1, 2], Laima Kusminskas[2], Robertas Bunevičius[2]

[1]Kauno medicinos universiteto Medicinos fakultetas, [2]Psichofiziologijos ir reabilitacijos institutas

Raktažodžiai: pogimdyminė depresija, Edinburgo pogimdyminės depresijos skalė, validizacija, jautrumas, plotas po ROC kreive.

Santrauka. Pogimdyminė depresija yra svarbi sveikatos problema.

Tyrimo tikslas. Nustatyti Edinburgo pogimdyminės depresijos skalės (EPDS) tinkamumą naudoti pogimdyminės depresijos atrankai Lietuvoje.

Tyrimo medžiaga ir metodai. Atsitiktinės atrankos būdu tyrimui atrinktos 94 moterys praėjus dviem savaitėms po gimdymo. Jos buvo apklaustos naudojant Sudėtinio tarptautinio diagnostinio interviu trumpąją formą (angl. *Composite International Diagnostics Interview Short-Form*) (CIDI-SF) ir užpildė EPDS. Nustatėme: a) EPDS vidinį pastovumą, naudodami Kronbacho alfa koeficientą; b) EPDS skirtingų atskaitos taškų plotą po ROC kreive, jautrumą ir specifiškumą depresijos sutrikimų, diagnozuotų naudojant CIDI-SF, atrankai.

Rezultatai. EPDS vidinis pastovumas, taikant Kronbacho alfą koeficientą, buvo 0,83. Optimalus EPDS atskaitos taškas depresijos sutrikimų, diagnozuotų naudojant CIDI-SF, atrankai buvo 7 balai ir daugiau. Naudojant šį atskaitos tašką, plotas po ROC kreive buvo 0,83, o depresijos sutrikimai nustatomi 92 proc. jautrumu, 73 proc. specifiškumu.

Išvada. EPDS yra tinkamas instrumentas pogimdyminės depresijos atrankai. Optimalus EPDS atskaitos taškas pogimdyminės depresijos atrankai yra 7 balai ir daugiau.

Adresas susirašinėti: A. Bunevičius, Mokyklos 4, 53216 Garliava, Kauno rajonas
El. paštas: a.bunevicius@yahoo.com

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Received 28 April 2008, accepted 7 July 2009
Straipsnis gautas 2008 04 28, priimtas 2009 07 07