Suvremena psihologija 16 (2013), 2, 203-218

Izvorni znanstveni članak - UDK 159.923.2

VALIDATION STUDY OF THE CROATIAN VERSION OF THE EDINBURGH POSTNATAL DEPRESSION SCALE (EPDS)

Sandra Nakić Radoš
Department of Obstetrics and Gynecology
University Hospital Centre *Sisters of Mercy*
Vinogradska 29, 10000 Zagreb, Croatia
nakic.sandra@gmail.com

Meri Tadinac
Department of Psychology, Faculty of Humanities and Social Sciences
University of Zagreb
I. Lučića 3, 10000 Zagreb, Croatia
mtadinac@ffzg.hr

Radoslav Herman
University of Applied Health Studies
Mlinarska 38, 10000 Zagreb, Croatia
radoslav.herman@zvu.hr

Abstract

Validation studies established different cut-off points for the Edinburgh Postnatal Depression Scale (EPDS) in different countries. The aim of this paper was to validate the Croatian EPDS against DSM-IV-TR for major and minor depression. A community sample of 272 women was followed from pregnancy to six weeks postpartum. They filled out the EPDS and STAI and were diagnosed using the SCID-I-RV. At the 8/9 cut-off score the sensitivity of the EPDS was 77.3% and its specificity was 82.4%. The principal component analysis with oblique rotation resulted in two correlated oblique factors, reflecting depressive and anxiety symptoms. Since the scree plot indicated that a one-factor solution would be appropriate, it is advised to treat the scale as one-dimensional. The Croatian version of the EPDS is a valid screening instrument and can be used by health practitioners for PPD screening.

Key words: postpartum depression; EPDS; validity; factor analysis; ROC; Croatia

* This study was carried out as part of a research project *Postpartum depression – risk factors, early detection, and therapy* funded by the Croatian *Ministry of Science, Education and Sports* (MZOS project number: 134-0000000-2421).

INTRODUCTION

Postpartum depression (PPD) is a frequent mood disorder that occurs in 13% of women after childbirth (O'Hara & Swain, 1996), with onset mostly within six weeks of childbirth (Stowe, Hostetter & Newport, 2005). Untreated, a postpartum depression episode may last for several months on average, similar to the non-postpartum depression episode (O'Hara, 1997). More than 50% of women diagnosed with PPD four months after childbirth are still clinically depressed one year after delivery and some women are depressed after 4 years (McMahon, Trapollini & Barnett, 2008). Apart from depressive symptoms, women with PPD also have anxiety symptoms and anxious intrusive thoughts (Hendrick, Altshuler, Strouse & Grosser, 2000; Leckman, Mayes, Feldman, Evans, King & Cohen, 1999; Negus Jolley & Betrus, 2007; Ross, Gilbert Evans, Sellers & Romach, 2003).

Even though some measures that are widely used for assessment of non-postpartum depression are also used for screening and assessment of PPD, they do not have satisfactory psychometric characteristics when applied to pregnant or postpartum women. For example, the Beck Depression Inventory (BDI) has poor psychometric characteristics when applied to postpartum (Harris, Huckle, Thomas, Johns & Fung, 1989) or pregnant women (Su et al., 2007). This is a consequence of the high proportion of BDI items concerning somatic symptoms, which are normal in pregnancy and puerperium (Noble, 2005). Therefore, the Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden & Sagovsky, 1987) has gained much popularity and attention, being a short measure for detecting PPD and not including somatic symptoms. The EPDS is composed of 10 items scored from 0 to 3. Validation studies confirmed that the EPDS is an "acceptable, convenient, reliable, and valid postdelivery screening instrument for PPD" (Evins & Theofrastous, 1997, p. 241).

In the original study of the EPDS, Cox et al. (1987) established that the cut-off score of 12/13 yields sensitivity of 86%, specificity of 78% and positive predictive value (PPV) of 73%. Sensitivity in this case is the probability that the woman's score on the EPDS will be above the cut-off if she is depressed, while specificity is the probability that a woman's score will be below the cut-off if she is not depressed. Finally, the PPV is called *precision* and reflects the probability that depression is present when the score on the EPDS is positive (Pintea & Moldovan, 2009). A wide range of sensitivity and specificity rates of the EPDS was established across the studies. Sensitivity varied in range from 65% to 100% and specificity in an even wider range from 49% to 100% (Eberhard-Gran, Eskild, Tambs, Opjordsmoen & Samuelsen, 2001). A great variety of cut-off scores were proposed in different cultures in order to improve sensitivity or specificity of the scale, so the cut-off thresholds can vary from 9/10 to 13/14 (Halbreich & Karkun, 2006).

The EPDS was originally developed as a one-dimensional construct. However, since the first report on an anxiety subscale within EPDS (Pop, Komproe & Van Son, 1992), a new series of studies have begun questioning the dimensionality of the EPDS. Some of them found a similar two-factor solution (Jomeen & Martin, 2005;

Matthey, 2008; Phillips, Charles, Sharpe & Matthey, 2009), while others established the additional third factor with loading on a single item "self-harm" (Brouwers, van Baar & Pop, 2001; Ross et al., 2003). Some other studies also established the three-factor solution (Lee King, 2012; Small, Lumley, Yelland & Brown, 2007; Tuohy & McVey, 2008), but the only consistent finding across these studies was that items 3, 4 and 5 make a distinct 'anxiety' subscale, while other items might slightly traverse between different subscales.

The EPDS is the most often used self-report measure cross-culturally (Boyd, Le & Somberg, 2005; Halbreich & Karkun, 2006). It has been translated and validated in at least twenty different languages (Department of Health, Government of Western Australia, 2006). The only translation of the EPDS to Croatian language was done by Perinčić (2002), but the scale was not validated against DSM-IV criteria. One-factor solution was established with a relatively high internal consistency.

Today, to the authors' best knowledge, there is no validation study of the Croatian version of the EPDS or any other postpartum depression screening instrument against DSM-IV criteria. Therefore, the goal of this study was twofold: (1) to evaluate the validity of the Croatian version of the EPDS in identifying postpartum depression and (2) to verify the existence of the anxiety scale within the EPDS and to evaluate its concurrent validity.

METHODS

Participants and Procedures

The research was carried out at the Department of Obstetrics and Gynecology of the University Hospital Centre in Zagreb (approximately 3500 births per year) as part of a larger prospective study on postpartum depression. Ethical approval was obtained by the Croatian Ministry of Science, Education and Sports and all participants gave their informed consent. The prospective cohort of the community sample was followed from the third trimester of gestation (the first point of data collection, T1), through to 2 days after giving birth (the second point of data collection, T2), until 6-8 weeks after giving birth (the third point of data collection, T3). Data collected at the third time point were used for EPDS validation in the current study.

The inclusion criteria were (1) maternal age of at least 18 years and (2) giving birth to a healthy baby, while the exclusion criteria were (1) depression in pregnancy, (2) psychopathology in anamnesis and (3) inability to read and speak the Croatian language. The criteria were met by 375 women at the prenatal clinic (T1), 326 of which filled out the questionnaires at the maternity ward (T2) and 272 who filled out the postal questionnaires and were interviewed 6 weeks after childbirth (T3). The response rate for the postal questionnaires was 83.4%, and the complete response rate of all the eligible women was 72.5%.

Measures

The Croatian version of the EPDS was translated from the original (Cox et al., 1987) to Croatian by different translators and experts in the field and translated back to English by an independent translator. The translation was guided by the method for equivalence of cross-culturally adapted psychiatric instruments (Flaherty et al., 1988). There was concern regarding the use of the appropriate verb tense. In the original EPDS the *present perfect* was used, but in the translated version the *past* tense was used, in accordance with Croatian grammar. Nevertheless, the meaning of the original was preserved. The retranslated version was compared to the original and was confirmed as similar. The Croatian translation of the EPDS was administered in a pilot study on a group of pregnant and postpartum women and the content, language and layout were found to be acceptable by all participants ($N = 15$). The Croatian EPDS is provided in Appendix A. In the current study the EPDS was administered as a postal questionnaire 6-8 weeks postpartum.

DSM-IV-TR criteria for both major and minor depressive episode with postpartum onset (American Psychiatric Association, 1998) were assessed by the Structured Clinical Interview for DSM Disorders – Research version (SCID-I RV) (First, Gibbon, Spitzer & Williams, 2002). The SCID was administered by phone 6 weeks postpartum, so that the participants could be accessed more easily. The interviewer was not aware of the woman's EPDS score at the time of the interview.

Anxiety was measured by the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 2000). The STAI is a self-report measure with two subscales that measure anxiety as a state (STAI-S) and anxiety as a trait (STAI-T), with 20 items each. The s*tate anxiety* subscale measures anxiety at the moment of administration and reflects transient emotional feelings, while the *trait anxiety* subscale reflects more stable characteristics of personality. A higher score on these scales suggests a higher anxiety level. STAI has already been adjusted for Croatian language (Spielberger et al., 2000). STAI-T was administered in pregnancy and STAI-S 6 weeks postpartum. The internal consistency measured by Cronbach's α obtained in this study was 0.90 and 0.94 for STAI-T and STAI-S, respectively.

Statistical analyses

The internal consistency of the EPDS was calculated by Cronbach's α and Guttman split-half coefficients. The appropriate cut-off score of the Croatian EPDS at 6 weeks postpartum was tested by calculating sensitivity, specificity, positive predictive value (PPD) and negative predictive value (NPV), in order to obtain the optimal cut-off score for the EPDS at 6 weeks postpartum against DSM-IV-TR diagnosis of depression. The Receiver Operating Characteristic (ROC) curve analysis was performed by using MedCalc for Windows, version 12.0.0.0.

With regard to the EPDS factor structure, some studies showed that the scale was multidimensional and that it comprised an anxiety subscale (Jomeen & Mar-

tin, 2005; Phillips et al., 2009). Since depression and anxiety are related conditions (Mineka, Watson & Clark, 1998; Stuart, Couser, Schilder, O'Hara & Gorman, 1998), the principal component analysis with oblique rotation (Oblimin) was chosen to test the factor structure of the EPDS.

RESULTS

The mean age of participants was 29 years. The majority were married (89.6%), employed (86.0%) and of average socio-economic status (74.4%). Somewhat higher proportion of women delivered their first baby (58.8%) and the majority of women had vaginal delivery (80.0%). Detailed demographic, obstetric and clinical characteristics of the sample can be seen in Table 1. The prevalence of PPD in the sample was 8.1% (4.4% for minor and 3.7% for major depressive episode), as reported elsewhere (Nakić Radoš, Tadinac & Herman, under revision).

Table 1. Demographic, obstetric, and clinical characteristics of the sample (N = 272)

	n (%)
Marital status	
married	244 (89.7)
living with the partner	28 (10.3)
SES	
below average	24 (8.8)
average	203 (74.6)
above average	45 (16.6)
Employment	
employed	231 (84.9)
non-employed	41 (15.1)
Parity	
primipara	161 (59.2)
multipara	111 (40.8)
Delivery	
vaginal	217 (79.8)
caesarean section	55 (20.2)
Family history of psychiatric disorder	
yes	25 (9.2)
no	247 (90.8)
Depressiveness in anamnesis	
yes	25 (9.2)
no	247 (90.8)
	M (*SD*)
Maternal age (years)	29.6 (4.3)
EPDS	5.9 (4.5)
STAI-S	31.7 (10.3)
STAI-T	36.3 (7.9)

Sensitivity, specificity, and predictive values

The performance of the Croatian version of the EPDS for PPD screening is shown in Table 2. By analysing the scale sensitivity and specificity in identifying

Table 2. Sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) for different cut-off scores of the Croatian version of EPDS.

Cut-off score	Sensitivity	Specificity	PPV*	PPV**	NPV*	NPV**
6/7	81.8	64.8	25.8	17.0	96.0	97.6
7/8	77.3	74.8	31.4	21.2	95.7	97.4
8/9	**77.3**	**82.4**	**39.6**	**27.9**	**96.0**	**97.6**
9/10	72.7	84.8	41.7	29.6	95.4	97.2
10/11	68.2	87.6	45.1	32.6	94.9	96.9
11/12	59.1	89.6	45.9	33.3	93.6	96.1
12/13	45.5	94.4	54.8	41.7	92.1	95.2
13/14	40.9	96.0	60.4	47.4	91.6	94.9

* Predictive values obtained with the prevalence of PPD in the population set to 13%;
** Predictive values obtained with the prevalence of PPD in the population set to 8.1%.

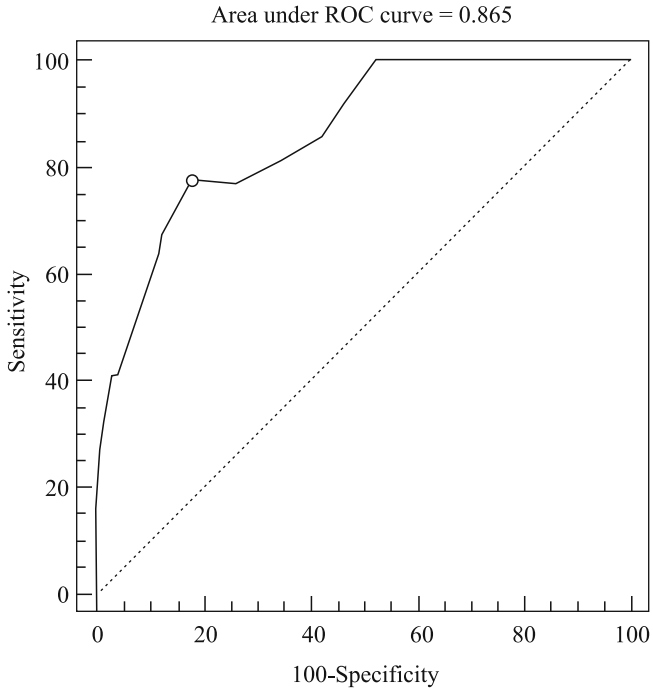

Figure 1. Receiver operating characteristics (ROC) of the Croatian version of EPDS for postpartum depression according to the DMS-IV

depressed women, it was shown that the cut-off score of 8/9 was the best one to discriminate between depressed and non-depressed women. Sensitivity was 77.3%, specificity 82.4% and positive predictive value (PPV) 27.9%, when prevalence value was set to the one obtained in this study. PPV was somewhat higher (39.6%) when prevalence rate was set to 13%, as had been found in the meta-analysis (O'Hara & Swain, 1996).

The global functioning of the scale was ascertained by ROC analysis. The area under the ROC curve (AUROC) is an overall indicator of diagnostic test performance (Pintea & Moldovan, 2009) or of the probability that a randomly chosen depressed person would have a higher score at any cut-off point than a healthy person. As shown in Figure 1, the AUROC curve obtained in our study was 0.865 (95% CI 0.82 to 0.90; $z = 9.65$; $p < 0.001$), suggesting a satisfying accuracy of the EPDS in differentiating women with and without PPD.

Exploratory factor analysis

A principal component analysis (PCA) with oblique rotation (Oblimin) was performed on the 10-item EPDS. Two components had eigenvalues over Kaiser's criterion of 1 and in combination explained 57.1% of the total variance. The first two eigenvalues were 4.58 and 1.13, while the third one was 0.96. Factor loadings after rotation can be seen in Table 3. The first oblique factor included items 3, 4, 5 and 6, which reflected cognitive anxiety symptoms. The second oblique factor included items 1, 2, 7 and 10, which reflected depressive symptoms. Items 8 and 9 were equally saturated by both components and were omitted from further analysis

Table 3. Summary of principal component analysis results for the EPDS questionnaire (the pattern matrix is reported)

	OBQ1 Anxiety symptoms	OBQ2 Depressive symptoms
Item 1 (anhedonia)	0.22	**0.65**
Item 2 (anhedonia)	0.00	**0.77**
Item 3 (guilt)	**0.71**	0.05
Item 4 (anxiety)	**0.87**	-0.15
Item 5 (panic attacks)	**0.87**	-0.09
Item 6 (overwhelmed)	**0.69**	0.14
Item 7 (sleep disorder)	0.34	**0.48**
Item 8 (sadness)	**0.54**	**0.43**
Item 9 (tearfulness)	**0.46**	**0.43**
Item 10 (suicidal ideas)	-0.15	**0.67**
OBQ variances	3.99	3.09

Note: Factor loadings over .40 appear in bold.

Table 4. Pearson's correlation coefficients among the subscales of the EPDS and the STAI

	EPDS-Anx	EPDS	STAI-S	STAI-T
EPDS-D (EPDS items 1, 2, 7, 10)	0.55*	0.80*	0.65*	0.24*
EPDS-Anx (EPDS items 3, 4, 5, 6)	-	0.91*	0.65*	0.43*
Total EPDS (10 items)		-	0.75*	0.41*

*$p < .01$; EPDS-D: depressive symptoms EPDS; EPDS-Anx: anxiety symptoms EPDS; STAI-S – State anxiety; STAI-T – Trait anxiety

because they were not discriminative. The correlation between components was 0.42. According to the convergence of the scree plot, it is justified to retain only one component.

"Anxiety symptoms" and "depressive symptoms" subscales of the EPDS are correlated with each other. Pearson's correlation coefficients between (subscales of) the EPDS and the STAI are presented in Table 4. All correlations were significant, but the total EPDS score was correlated more highly with STAI-S than either of the EPDS subscales *per se* ($t = 5.89$; $df = 269$; $p < 0.01$). Also, the "anxiety symptoms" subscale was in a higher correlation with the total score on the EPDS than the "depressive symptoms" subscale ($t = 9.1$; $df = 269$; $p < 0.01$).

Internal consistency

Internal consistency of the global 10-item scale measured by Cronbach's standardised α was 0.86 and by Guttman split-half 0.84. Cronbach's α for the anxiety and depression subscale was 0.81 and 0.67, respectively.

DISCUSSION

This is the first validation study of the EPDS for the Croatian language. The results suggest that a cut-off score of 8/9 provides both satisfactory sensitivity and specificity. Even though the PPV is lower (27.9%), the AUROC curve confirms the Croatian version of the EPDS to be a good screening tool for PPD detection. Two-component solution was yielded, with an anxiety symptoms subscale along with a depressive symptoms subscale. However, the total EPDS score has better psychometric properties so the use of the EPDS as a complete scale is recommended.

Validity of the EPDS

Our study suggests that face validity of the Croatian version of the EPDS was good and construct validity was acceptable. Concurrent validity was not examined

since no other depression scales were previously validated on a sample of pregnant or postpartum women. Cut-off score of 8/9 provides both satisfactory sensitivity (77.3%) and specificity (82.4%) in a community sample. Lower cut-off and similar diagnostic characteristics were obtained in other validation studies of the EPDS in non-English speaking populations, e.g. 9/10 in Italian and Chinese (Benvenuti, Ferrara, Niccolai, Valoriani & Cox, 1999; Wang, Guo, Lau, Chan, Yin & Chen, 2009), 8/9 in Greek and Japanese (Vivilaki, Dafermos, Kogevinas, Bitsios & Lionis, 2009; Yamashita, Yoshida, Nakano & Tashiro, 2000) or even 6/7 in Lithuanian, Thai and Ethiopian (Bunevičius, Kusminskas & Bunevičius, 2009; Pitanupong, Liabsuetrakul & Vittayanont, 2007; Tesfaye, Hanlon, Wondimagegn & Alem, 2011). Also, in the first validation study of the EPDS, Cox et al. (1987) proposed 12/13 as a cut-off score for use in a clinical setting, but recommended a lower cut-off score (9/10) for use in a community sample.

Becker and Gardiner (Evins & Theofrastous, 1997, p. 243) stated that a "good screening test should have high sensitivity, satisfactory specificity, simplicity, safety, acceptability, and low cost of administration". The Croatian version of the EPDS satisfies all these criteria, with the exception of sensitivity which proved to be moderately high. A somewhat lower sensitivity could be attributed to the inclusion of minor depression cases (Eberhard-Gran et al., 2001). Furthermore, in some PPD women the depressive symptoms had already ceased by the 6 weeks postpartum assessment, which might have influenced the sensitivity as well. However, as the EPDS is a screening tool, it is important not to miss any potentially depressed women. Therefore, a somewhat lower sensitivity could be acceptable for community use and comparable characteristics were obtained in other validation studies of the EPDS in non-English languages (Benvenuti et al., 1999; Kheirabadi, Maracy, Akbaripour & Masaeli, 2012; Pitanupong et al., 2007; Tesfaye et al., 2011). Nevertheless, professionals using the EPDS should keep this in mind and not rely on it as a diagnostic tool.

The PPV estimated for the prevalence rate obtained in this study was 27.9%, which was lower than in the original studies. However, the depressed women are sometimes over-represented in the validation studies due to the methods of sampling. In some studies, not all of the women were interviewed as in the current study, but a two-stage method was used. For example, only those women who had an EPDS score higher than 9 and a randomised sample (10% or 20%) of those who scored below 9 were interviewed (e.g. Garcia-Esteve, Ascaso, Ojuel & Navarro, 2003; Mazhari & Nakhaee, 2007; Santos et al., 2007). This kind of sampling yields an overrepresentation of depressed women and a higher prevalence of PPD. A different method of sampling in our study, i.e. interviewing all the women, could be the cause of the lower PPV. While PPV is affected by this methodological issue, sensitivity and specificity are not (Santos et al., 2007).

Keeping this in mind, Eberhard-Gran et al. (2001), in their review of validation studies of the EPDS, calculated the PPV as it would be if the prevalence of PPD

was 13%, which they considered as more realistic for the population. The adjusted values ranged from 22% to 79%, i.e. lower than the ones presented in the original studies. The authors concluded that it was highly likely that PPV for PPD would be less than 50% when the EPDS is administered in a general population with PPD prevalence of 13%. The results of the current study comply with this notion, and the lower prevalence of PPD established in the study (8.1%) can explain a somewhat lower PPV compared to other studies.

Despite the lower PPV in our study, the AUROC curve confirmed that the Croatian EPDS had a good diagnostic test performance and high accuracy in differentiating women with and without PPD. Cronbach's α is relatively high and comparable to the internal consistency reported by others (Cox et al., 1987; Mazhari & Nakhaee, 2007; Perinčić, 2002).

Factor analysis

Contrary to the original validation of the EPDS by Cox et al. (1987), the results of this study support a growing body of literature showing the multi-dimensionality of the EPDS scale. Depressive and anxiety symptom subscales were established. In various studies these two subscales slightly differ in their content (Brouwers et al., 2001; Jomeen & Martin, 2005; Pop et al., 1992; Ross et al., 2003; Swalm, Brooks, Nathan, Jacques & Doherty, 2010), but in most studies it was consistently found that four out of ten items (1, 2, 8, 9) were part of the depression subscale and three of the items (3, 4, and 5) were part of the anxiety subscale. A similar factor interpretation has also been offered in this study, with the exception of items 8 and 9, which were saturated by both. Similar items (7 and 8) were omitted in the study where advanced Rasch analysis was used in order to gain the best model fit with one factor (Pallant, Miller & Tennant, 2006).

Depression and anxiety subscales were found to be in a moderate correlation and two components extracted with oblique rotation were correlated. Correlations between the EPDS (total score and subscales) and STAI were also inspected. Although the anxiety subscale of the EPDS had a higher correlation with the EPDS total, the EPDS total had a higher correlation with STAI-S than the anxiety subscale itself. Similar results were found by Brouwers et al. (2001). Together with the factor analysis results, it clearly shows that the EPDS should be considered and used as a one-dimensional scale. A similar conclusion was obtained in a recent extensive psychometric testing of the EPDS (Reichenheim, Moraes, Oliviera & Lobato, 2011). Three highly correlated factors were extracted (anhedonia, depression and anxiety), but with poor discriminant validity. Several parameters supported a notion of the general factor of PPD and suggested that separate subscales should not be used. However, it is proposed that the anxiety subscale (items 3, 4, and 5) could be used for screening for anxiety disorders (Matthey, 2008; Matthey, Fisher & Rowe, 2013; Phillips et al., 2009; Swalm et al., 2010).

In summary, our study confirmed the validity of the EPDS as a screening instrument for PPD in Croatian mothers. The EPDS should be used as a one-dimensional scale for assessment of depressive symptoms in postpartum women. Lower cut-off score of 8/9 is recommended for screening for both major and minor depression in a community sample. However, the scale should not be a substitute for the clinical interview in diagnosing mothers with depression.

REFERENCES

American Psychiatric Association. (1996). *DSM-IV, Dijagnostički i statistički priručnik za duševne poremećaje* [Diagnostic and Statistical Manual of Mental Disorders. (4th ed)]. Jastrebarsko: Naklada Slap.

Benvenuti, P., Ferrara, M., Niccolai, C., Valoriani, V., Cox, J.L. (1999). The Edinburgh Postnatal Depression Scale: validation for an Italian sample. *Journal of Affective Disorders, 53*, 137-141.

Boyd, R.C., Le, H.N., Somberg, R. (2005). Review of screening instruments for postpartum depression. *Archives of Women's Mental Health, 8,* 141-153.

Brouwers, E.P.M., van Baar, A.L., Pop, V.J.M. (2001). Does the Edinburgh Postnatal Depression Scale measure anxiety? *Journal of Psychosomatic Research, 51*, 659-663.

Bunevičius, A., Kusminskas, L., Bunevičius, R. (2009). Validation of the Lithuanian version of the Edinburgh Postnatal Depression Scale. *Medicina, 45*, 544-548.

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.

Department of Health, Government of Western Australia. (2006). *Edinburgh Postnatal Depression Scale (EPDS): Translated versions – validated*. Perth, Western Australia: State Perinatal Mental Health Reference Group.

Eberhard-Gran, M., Eskild, A., Tambs, K., Opjordsmoen, D., Samuelsen, S.O. (2001). Review of validation studies of the Edinburgh Postnatal Depression Scale. *Acta Psychiatrica Scandinavica, 104*, 243-249.

Evins, G.G., Theofrastous, J.P. (1997). Postpartum depression: A review of postpartum screening. *Primary Care Update for OB/GYNS, 4*, 241-246.

First, M.B., Gibbon, M., Spitzer, R.L., Williams, J.B. W. (2002). *User's Guide for the Structured Clinical Interview for DSM-IV-TR Axis I Disorders - Research Version – (SCID-I for DSM-IV-TR, November 2002 Revision).* New York: Biometrics Research Department, New York State Psychiatric Institute.

Flaherty, J.A., Gaviria, F.M., Pathak, D., Mitcherll, T., Wintrob, R., Richman, J.A., Birz, S. (1988). Developing instruments for cross-cultural psychiatry research. *The Journal of Nervous and Mental Disease, 176,* 257-263.

Garcia-Esteve, L., Ascaso, C., Ojuel, J., Navarro, P. (2003). Validation of the Edinburgh Postnatal Depression Scale (EPDS) in Spanish mothers. *Journal Of Affective Disorders, 75*, 71-76.

Halbreich, U., Karkun, S. (2006). Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptom. *Journal of Affective Disorders, 91,* 97-111.

Harris, B., Huckle, P., Thomas, R., Johns, S., Fung, H. (1989). The use of rating scales to identify post-natal depression. *British Journal of Psychiatry, 154*, 813-817.

Hendrick, V., Altshuler, L., Strouse, T., Grosser, S. (2000). Postpartum and nonpostpartum depression: Differences in presentation and response to pharmacologic treatment. *Depression and Anxiety, 11*, 66-72.

Jomeen, J., Martin, C.R. (2005). Confirmation of an occluded anxiety component within the Edinburgh Postnatal Depression Scale (EPDS) during early pregnancy. *Journal of Reproductive and Infant Psychology, 23*, 143-154.

Kheirabadi, G.R., Maracy, M.R., Akbaripour, S., Masaeli, N. (2012). Psychometric properties and diagnostic accuracy of the Edinburgh Postnatal Depression Scale in a sample of Iranian women. *Iranian Journal of Medical Sciences, 37*, 32-38.

Leckman, J.F., Mayes, L.C., Feldman, R., Evans, D., King, R.A., Cohen, D.J. (1999). Early parental preoccupations and behaviors and their possible relationship to the symptoms of obsessive compulsive disorder. *Acta Psychiatrica Scandinavica, 100*, 1-26.

Lee King, P. (2012). Replicability of structural models of the Edinburgh Postnatal Depression Scale (EPDS) in a community sample of postpartum African American women with low socioeconomic status. *Archives of Women's Mental Health, 15*, 77-86.

Matthey, S. (2008). Using the Edinburgh Postnatal Depression Scale to screen for anxiety disorders. *Depression and Anxiety, 25*, 926-931.

Matthey, S., Fisher, J., Rowe, H. (2013). Using the Edinburgh Postnatal Depression Scale to screen for anxiety disorders: Conceptual and methodological considerations. J*ournal of Affective Disorders, 146*, 224-230.

Mazhari, S., Nakhaee, N. (2007). Validation of the Edinburgh Postnatal Depression Scale in an Iranian sample. *Archives of Women's Mental Health, 10*, 293-297.

McMahon, C., Trapolini, T., Barnett, B. (2008). Maternal state of mind regarding attachment predicts persistence of postnatal depression in the preschool years. *Journal of Affective Disorders, 107*, 199-203.

Mineka, S., Watson, D., Clark, L.A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology, 49*, 377-412.

Nakić Radoš, S., Tadinac, M., Herman, R. Prevalence of depression during pregnancy and postpartum in a sample of Croatian women. *Klinička psihologija (under revision)*.

Negus Jolley, S., Betrus, P. (2007). Comparing postpartum depression and major depressive disorder: Issues in assessment. *Issues in Mental Health Nursing, 28,* 765-780.

O'Hara, M.W. (1997). The nature of postpartum depressive disorder. In L. Murray, P.J. Cooper (Eds.), *Postpartum depression and child development* (3-31). Guilford Press.

O'Hara, M.W., Swain, A.M. (1996). Rates and risk of postpartum depression - a meta-analysis. *International Review of Psychiatry, 8*, 37-54.

Pallant, J.F., Miller, R.L., Tennant, A. (2006). Evaluation of the Edinburgh Post Natal Depression Scale using Rasch analysis. *BMC Psychiatry, 6*, 28.

Perinčić, D. (2002). *Neki korelati postnatalne depresije. Diplomski rad.* [Some correlates of postpartum depression. Diploma thesis.]. Zadar: Department of Psychology, University of Zadar.

Phillips, J., Charles, M., Sharpe, L., Matthey, S. (2009). Validation of the subscales of the Edinburgh Postnatal Depression Scale in a sample of women with unsettled infants. *Journal of Affective Disorders, 118*, 101-112.

Pintea, S., Moldovan, R. (2009). The Receiver-Operating Characteristic (ROC) analysis: Fundamentals and application in clinical psychology. *Journal of Cognitive and Behavioral Psychotherapies, 9*, 49-66.

Pitanupong, J., Liabsuetrakul, T., Vittayanont, A. (2007). Validation of the Thai Edinburgh Postnatal Depression Scale for screening postpartum depression. *Psychiatry Research, 149*, 253-259.

Pop, V.J., Komproe, I.H., Van Son, M.J. (1992). Characteristics of the Edinburgh Postnatal Depression Scale in the Netherlands. *Journal of Affective Disorders, 26,* 105-110.

Reichenheim, M.E., Moraes, C.L., Oliviera, A.S.D., Lobato, G. (2011). Revisiting the dimensional structure of the Edinburgh Postnatal Depression Scale (EPDS): Empirical evidence for a general factor. *BMC Medical Research Methodology, 11,* 93.

Ross, L.E., Gilbert Evans, S.E., Sellers, E.M., Romach, M.K. (2003). Measurement issues in postpartum depression part 1: anxiety as a feature of postpartum depression. *Archives of Women's Mental Health, 6*, 51-57.

Santos, I.S., Matijasevich, A., Tavares, B.F., Barros, A.J.D., Botelho, I.P., Lapolli, C., Barros, F.C. (2007). Validation of the Edinburgh Postnatal Depression Scale (EPDS) in a sample of mothers from the 2004 Pelotas Birth Cohort Study. *Cadernos de Saúde Pública, 23,* 2577-2588.

Small, R., Lumley, J., Yelland, J., Brown, S. (2007). The performance of the Edinburgh Postnatal Depression Scale in English speaking and non-English speaking populations in Australia. *Social Psychiatry and Psychiatric Epidemiology, 42,* 70-78.

Spielberger, C.D., Gorsuch, R.L., Lushene, R., Vagg, P.R., Jacobs, G.A. (2000). *Priručnik za Upitnik anksioznosti kao stanja i osobine ličnosti* [State-Trait Anxiety Inventory (Form Y)]. Jastrebarsko: Naklada Slap.

Stowe, Z.N., Hostetter, A.L., Newport, D.J. (2005). The onset of postpartum depression: Implications for clinical screening in obstetrical and primary care. *American Journal of Obstetrics and Gynecology, 192*, 522-526.

Stuart, S., Couser, G., Schilder, K., O'Hara, M., Gorman, L. (1998). Postpartum anxiety and depression: onset and comorbidity in a community sample. *Journal of Nervous and Mental Disease, 186*, 420-424.

Su, K.P., Chiu, T.H., Huang, C.L., Ho, M., Lee, C.C., Wu, P. L., Pariante, C.M. (2007). Different cut-off points for different trimesters? The use of Edinburgh Postnatal Depression Scale and Beck Depression Inventory to screen for depression in pregnant Taiwanese women. *General Hospital Psychiatry, 29*, 436-441.

Swalm, D., Brooks, J., Nathan, E., Jacques, A., Doherty, D. (2010). Using the Edinburgh Postnatal Depression Scale to screen for perinatal anxiety. *Archives of Women's Mental Health, 13*, 515-522.

Tesfaye, M., Hanlon, C., Wondimagegn, D., Alem, A. (2011). Detecting postnatal common mental disorders in Addis Ababa, Ethiopia: Validation of the Edinburgh Postnatal Depression Scale and Kessler Scales. *European Psychiatry*, *26*, 1689.

Tuohy, A., McVey, C. (2008). Subscales measuring symptoms of non-specific depression, anhedonia, and anxiety in the Edinburgh Postnatal Depression Scale. *British Journal of Clinical Psychology, 47*, 153-169.

Vivilaki, V.G., Dafermos, V., Kogevinas, M., Bitsios, P., Lionis, C. (2009). The Edinburgh Postnatal Depression Scale: Translation and validation for a Greek sample. *BMC Public Health, 9*, 329-339.

Wang, Y., Guo, X., Lau, Y., Chan, K.S., Yin, L., Chen, J. (2009). Psychometric evaluation of the Mainland Chinese version of the Edinburgh Postnatal Depression Scale. *International Journal of Nursing Studies*, *46*, 813-823.

Yamashita, H., Yoshida, K., Nakano, H., Tashiro, N. (2000). Postnatal depression in Japanese women: Detecting the early onset of postnatal depression by closely monitoring the postpartum mood. *Journal of Affective Disorders*, *58*, 145-154.

VALIDACIJSKO ISTRAŽIVANJE HRVATSKE VERZIJE EDINBURŠKOG UPITNIKA POSLIJEPORODAJNE DEPRESIVNOSTI (EPDS)

Sažetak

Istraživanja koja su se bavila validacijom Edinburškog upitnika poslijeporođajne depresivnosti (EPDS) utvrdila su različite kritične rezultate u različitim zemljama. Cilj ovog istraživanja bio je validirati hrvatsku verziju EPDS-a s obzirom na dijagnozu velike i male depresivne epizode prema DSM-IV-TR. U istraživanju su sudjelovale 272 žene koje su praćene od trudnoće do 6 tjedana nakon porođaja, kad su ispunile EPDS i Spielbergerov upitnik anksioznosti (STAI) te je proveden strukturirani klinički intervju (SCID-I-RV) s ciljem postavljanja dijagnoze depresije. Pri kritičnom rezultatu 8/9 osjetljivost EPDS-a je 77,3%, a specifičnost 82,4%. Metodom glavnih komponenti s kosokutnom rotacijom utvrđena su dva kosokutna faktora koji odražavaju depresivnost i anksioznost, a za koje se pokazalo da su u međusobnoj korelaciji. S obzirom na to da *scree plot* upućuje na postojanje jednog faktora, preporuča se koristiti upitnik kao jednodimenzionalni. Zaključno se može reći da se hrvatska verzija EPDS-a pokazala valjanim upitnikom za trijažu poslijeporođajne depresije te se preporuča za korištenje u kliničke i zdravstvene svrhe.

Ključne riječi: poslijeporođajna depresija; EPDS; validacija; faktorska analiza; ROC analiza; Hrvatska

Primljeno: 17. 10. 2013.

Appendix A.

Croatian version of the Edinburgh Postnatal Depression Scale (EPDS)
Edinburška ljestvica poslijeporođajne depresije

Molimo Vas, označite odgovore koji najbolje opisuju kako se osjećate **proteklih 7 dana**, a ne samo danas. Ovdje je primjer koji je već ispunjen.

Osjećala sam se sretno.
☐ Da, cijelo vrijeme
☒ Da, uglavnom — Ovo bi značilo: "Uglavnom sam se osjećala sretno" tijekom posljednjih tjedan dana.
☐ Ne, ne baš često
☐ Ne uopće

Molimo Vas, popunite upitnik na isti način.

U posljednjih 7 dana:

1. Mogla sam se smijati i vidjeti smiješnu stranu stvari:
   - kao i inače — 0
   - ne toliko često — 1
   - sigurno manje nego inače — 2
   - ne uopće — 3

2. Radovala sam se stvarima unaprijed:
   - kao i inače — 0
   - ne toliko često — 1
   - sigurno manje nego inače — 2
   - jedva uopće — 3

3. Nepotrebno sam se okrivljavala kad bi stvari krenule krivo:
   - da, većinu vremena — 3
   - da, dio vremena — 2
   - ne baš često — 1
   - ne, nikad — 0

4. Bila sam uznemirena ili zabrinuta bez pravog razloga:
   - ne uopće — 0
   - jedva ikad — 1
   - da, ponekad — 2
   - da, vrlo često — 3

5. Osjećala sam se uplašeno ili uspaničeno bez pravog razloga:
   - da, prilično često — 3
   - da, ponekad — 2
   - ne baš često — 1
   - ne uopće — 0

6. Stvari su me opterećivale:
   - da, većinu vremena nisam bila sposobna nositi se sa stvarima — 3
   - da, ponekad se nisam mogla nositi sa stvarima kao što inače znam — 2
   - ne, većinu vremena sam se nosila sa stvarima prilično dobro — 1
   - ne, nosila sam se sa stvarima jednako kao i uvijek — 0

7. Bila sam tako nesretna da sam imala poteškoća sa spavanjem:
   - da, većinu vremena 3
   - da, ponekad 2
   - ne baš često 1
   - ne uopće 0

8. Osjećala sam se tužno ili jadno:
   - da, većinu vremena 3
   - da, prilično često 2
   - ne baš često 1
   - ne uopće 0

9. Bila sam toliko nesretna da sam plakala:
   - da, većinu vremena 3
   - da, prilično često 2
   - samo povremeno 1
   - ne, nikad 0

10. Pala mi je na pamet misao da se ozlijedim:
   - da, prilično često 3
   - ponekad 2
   - gotovo nikad 1
   - nikad 0