OBSTETRICS

Correlation of Thai Edinburgh Postnatal Depression Scale Scores between Thai Women During Early and 6-week Postpartum Periods

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ABSTRACT

Objective: To evaluate the correlation of Thai Edinburgh Postnatal Depression Scale (EPDS) scores between Thai women during early and at 6-week postpartum period.

Materials and methods: Two hundred and fifty one postpartum women completed Thai EPDS questionnaire during the first few days after delivery and at 6-week postpartum follow-up. Correlation of Thai EPDS scores between both periods were analyzed by Spearman's rank. Receiver-operator characteristic curve was used to determine the cut-off value of early Thai EPDS scores to predict the high-risk women for postpartum depression.

Results: Statistically significant correlation of Thai EPDS scores between early and 6-week postpartum was evident ($r = 0.36$, $P < 0.001$). Using an early Thai EPDS score ≥ 8 as a cut-off value, the high-risk women were detected with a sensitivity of 77.0% and specificity of 56.3%.

Conclusion: Thai EPDS scores during early postpartum showed significant correlation with scores at 6-week postpartum. Further investigations are needed to determine the utility of this early postpartum score.

Keywords: Postpartum Depression, Thai Edinburgh Postnatal Depression Scale, Screening tool, Correlation.

Introduction

Postpartum depression is a common psychiatric disorder affecting 10-15 percent of women during 4-6 weeks after delivery[1]. Its consequences include doubling the risk of depression in the following 5 years[2], increasing the risk of depression for spouse[3], having a negative impact on infant development[4], and heightening the risk of suicide in affected women[5]. Although it is a common problem, women suffering from this condition are hardly recognized. Only one-third of affected women believed that they faced this problem and up to 80 percent of affected women did not report

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their symptoms to the health-care providers[6]. In general, Thai societies regard postpartum period as a happy time for family celebration of the new member. Those depressive symptoms such as insomnia, loss of appetite, decrease libido, are easily negligent during postpartum. As a consequence, the problem is then under-diagnosed and under-treated.

To make a diagnosis of postpartum depression, diagnostic criteria from the Diagnostic and Statistical Manual for Mental Disorders-Fourth Edition (DSM-IV)[7] is used. It is practically impossible to have psychiatric evaluation in every postpartum woman, so self-reporting screening tools for postpartum depression are required. The Edinburgh Postnatal Depression Scale (EPDS), a questionnaire originally developed by Cox et al.[8], was demonstrated having strong validity and reliability. It contains 10-item self-report statements with four rating scales. Each item is score as 0, 1, 2 or 3 resulting in a minimum score of 0 and maximum score of 30. When compare to a diagnosis of major postpartum depression established through a psychiatric interview, the EPDS carried out at 4-6 weeks postpartum and using a cut-off value of $\geq$13 had a sensitivity of 68-95% and a specificity of 78-96%. This widely accepted instrument was translated into more than 12-language versions, which had variation of sensitivity and specificity depended on cut-off score and duration of postpartum period[9]. Pitanupong et al[10] validated Thai version of EPDS. There were no significant differences in EPDS scores of both versions at postpartum by paired t test. The internal consistency of the final version of the Thai EPDS was 0.8. The investigator found that using an Thai EPDS cut-off sum score of $\geq$7 at 6-8 weeks postpartum, major and minor depressions were detected with a sensitivity and specificity of 74% both. The investigator concluded that low cut-off score of Thai EPDS might reflect actual mild symptoms of depression due to family support in Thai population or some reluctance to endorse high scores of expression as common in Asian cultures.

Early identification of women at risk for postpartum depression using EPDS has been reported from some other studies[11-14]. Nevertheless, with the differences in social context and family cultures, it is worth to evaluate the value of EPDS scoring system in Thai women. The primary purpose of this study was to assess the correlation of EPDS scores between early postpartum period and 6-week postpartum in Thai women. The secondary objective was to determine the appropriate cut-off score of early EPDS to predict high-risk women who are likely to develop depression at 6-week postpartum.

Materials and Methods

This study was approved by the Institutional Review Board and conducted in King Chulalongkorn Memorial Hospital (KCMH), the university hospital in Bangkok, Thailand from June 2008 to June 2009. Eligibility criteria included Thai women who gave birth at KCMH and intended to follow up at family planning clinic at 6-week postpartum. Written informed consents were obtained from the participants before taking part in this study. Women who giving birth before 22-week gestation, not understanding Thai language, not doing the questionnaire themselves, or having current treatment for psychiatric problems were excluded. Although several confounders such as obstetric complications, neonatal health or socioeconomic status likely to affect maternal mood in the present study. By comparing maternal mood in the same person such confounders are not likely to affect the result.

Instrument used in this study is the Thai version of EPDS that was translated and validated by Pitanupong et al[10]. The 10-item self-report question-naire assess mental states, self-blame, anxiety, fear, inability to cope, difficulty sleeping, sadness, tearfulness and self-harm ideas. Each item is scored 0, 1, 2, and 3 in accordant with severity of the symptoms and sum of the scores will be the total score that could range from 0 to 30.

Eligible participants were randomly recruited from the mothers admitted at postpartum ward. They were asked to complete the EPDS prior to discharge and at family planning clinic during 6-week postpartum follow-up. At postpartum ward, the women did the test by themselves at a time when no spouse or relatives allowed in the ward. At family planning clinic,

the women completed the questionnaire in a private area while waiting for physical check-up.

Data analysis was performed using SPSS® statistical software version 14. EPDS scores have nonparametric distribution, so the correlation between scores at early postpartum period and at 6-week postpartum was determined by Spearman's rank correlation coefficient. Women having score at 6-week postpartum of ≥ 13 were identified as high risk for developing postpartum depression[8]. The appropriate cut-off value of early EPDS scores to detect the high-risk women was assessed by using receiver-operator characteristic (ROC) curve. Sensitivity as well as specificity was calculated for different thresholds on the early EPDS scores.

Results

A total of 251 participants completed the EPDS prior to discharge and at 6-week postpartum. The mean age of the studied population was 28.4 years (S.D. = 5.8), with a range from 15 to 43 years. Of the women, 45.0% were primigravida. Most of participants were married (91.6%), had family income less than baht 10,000/month (US $300) (70.1%) and attended prenatal care at least 4 times (95.6%). The percentage of normal vaginal births, cesarean deliveries, operative obstetric deliveries and vaginal breech deliveries were 62.5%, 32.7%, 4.0% and 0.8 %, respectively. Median gestational age was 38 weeks with a range from 26 to 42 weeks and 84.5% of the newborns had birth weight between 2,500-4,000 grams.(Table 1)

Table 1. Clinical demographic data

| Maternal characteristics	Number (%)
Number of women	251
Age (years)	28.4 ± 5.8
Gravidity Primigravida	113 (45)
Multigravida	138 (55)
Mode of delivery - Normal deliveries	157 (62.5)
Cesarean deliveries	82 (32.7)
Operative obstetric deliveries	10 (3.9)
Vaginal breech deliveries	2 (0.8)
Status Married	230 (91.6)
Single	21 (8.4)
Income less than 10,000 baht/month	176 (70.1)
10,000-20,000 baht/month	44 (17.5)
More than 20,000 baht/month	31 (12.4)
ANC 4 or more	240 (91.6)
less than 4	11 (8.4)
Occupation Worker	164 (65.3)
Home	23 (9.2)
Student	12 (4.8)
Business	7 (2.8)
Government	5 (2.0)
Others	40 (15.9)
Birth weight < 1,500 gm	4 (1.6)
1,500-2,499 gm	34 (13.5)
2,500-4,000 gm	212(84.5)
> 4,000 gm	1 (0.4)

EPDS scores during early postpartum ranged from 0 to 22, with a median of 8 while scores at 6-week postpartum ranged from 0 to 24, with a median of 9. Prevalence of women with high risk for developing postpartum depression (6-week Thai EPDS score $\geq$ 13) was 24.3%.

There was a significant positive correlation between Thai EPDS scores at early postpartum period and those at 6-week postpartum (r = 0.36, P < 0.001). The scatter plot for the association is shown in Fig. 1. ROC curve, plotting the true positive rate (sensitivity) against the false-positive rate (1-specificity) at each cut-off value, showed the area under the curve was 0.74 (95% confidence interval 0.67-0.81) (Fig. 2) and the appropriate cut-off value was $\geq$8 which revealed a sensitivity of 77.0% and specificity of 56.3%. The diagnostic performance of early Thai EPDS scores to predict the women with high risk for developing postpartum depression at the various threshold values was shown in the Table 2.
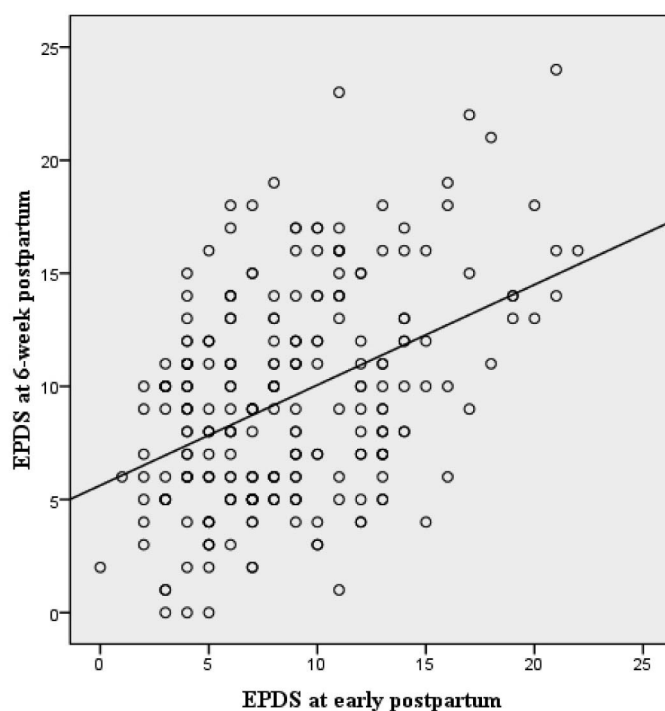
Fig. 1. Scatter plot depicting the linear correlation between the Thai EPDS scores at early postpartum and at 6-week postpartum
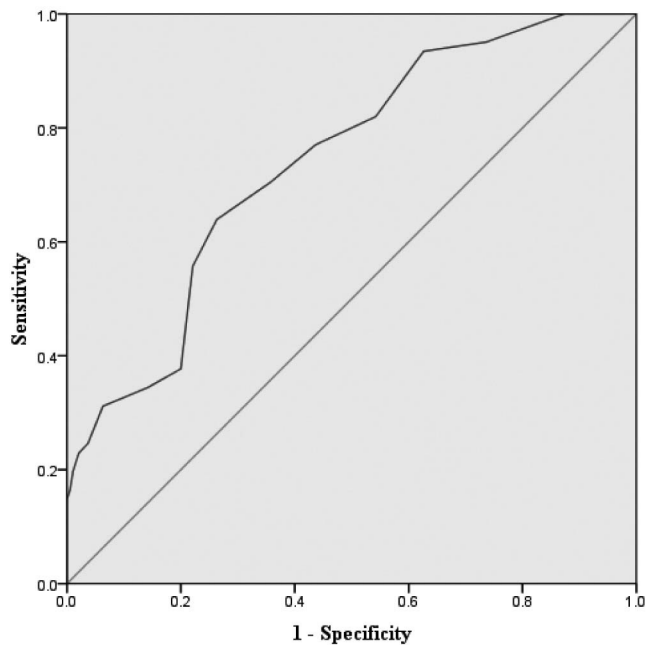
Fig. 2. ROC curve of the early Thai EPDS scores for prediction of high-risk women for postpartum depression

Table 2. Diagnostic performance of the early Thai EPDS scores for prediction of high-risk women for postpartum depression

Threshold values	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
≥ 6	93.4	37.4	32.4	94.7
≥ 7	82.0	45.8	32.7	88.8
≥ 8	77.0	56.3	36.2	88.4
≥ 9	70.5	64.2	38.7	87.1
≥ 10	63.9	73.7	43.8	86.4
≥ 11	55.7	77.9	44.7	84.6
≥ 12	37.7	80.0	37.7	80.0
≥ 13	34.4	85.8	43.7	80.3
≥ 14	31.1	93.7	61.3	80.9

PPV = Positive predictive value, NPV = Negative predictive value

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Discussion

It is a normal practice in Thailand for obstetricians to provide general care for women during the first few days after delivery. The patients will be appointed to come back at 6-week postpartum as a routine follow-up. Some women might not come back for various reasons, as a result, a number of women suffering from postpartum depression would not be evaluated and treated appropriately. To prevent the consequences of postpartum depression, a screening tool to detect high-risk women prior to discharge from hospitals is needed. The present study was conducted to evaluate correlation of Thai EPDS scores during early postpartum and at 6-week postpartum and determine its diagnostic performance. This is aimed to find a practical tool that can be used for early detection and intervention of postpartum depression.

The results from the present study indicate that Thai EPDS scores during early postpartum period had significant positive correlation with the scores at 6-week postpartum. This finding affirmed the previous studies which demonstrated a link between EPDS scores during the first week postpartum and scores at 4-8 week postpartum in different populations.[11-14] However, the strength of association in this study seems to be lower than the results from former reports. Variation on cultures, beliefs, lifestyles as well as supports from their families in dissimilar population may account for the differences.

The present study analyzed various thresholds of early Thai EPDS scores and their corresponding, specificity and predictive values for prediction of high-risk women for developing postpartum depression. It was shown that the Thai EPDS scores prior to hospital discharge of ≥ 8 had an acceptable sensitivity and specificity. Similar findings were noted in the prior studies[11-14] that the appropriate cut-off value of EPDS scores used in early postpartum period were slightly less than 13 which used at 6-week postpartum.

A limitation of the present study is the lack of interview of participants using DSM-IV criteria. As a result, the clinical diagnosis of major depression could not be performed and there was no actual prevalence of the disease. Proportion of women who were considered being high risk for development of postpartum depression in the present study was considerably higher than the prevalence in results of Pitanupong et al[10] (24.3% versus 11%). While study population in the previous study mostly lived in rural area, the participants in present study were living in the city. Lack of support of extended family and stress of living in urban area may be the reasons. Furthermore, most of the participants had low family income that may increase tension with more family members.

The strength of the present study related to data collection. The participants completed the tests at both time periods at the hospital while the previous studies [11-14] collected the 4 to 8 weeks postpartum data by phone interview or by mail. Self-completing of the questionnaires in a private situation is more likely to reflect their true feelings without external interference. With the perspectives on holistic approach, physician should treat patient as a whole, particularly the mental health. However, lack of time and experience in the care for depressive patients may lead to suboptimal care. The Thai EPDS, self-report questionnaires that require less than ten minutes for completing, was shown to have an acceptable diagnostic performance to screen high-risk women during the early postpartum period. This simple screening tool may facilitate obstetricians to identify women at risk for postpartum depression prior to discharge. To determine the utility of Thai EPDS scores during early postpartum period in general population, further investigations are needed.

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สหสัมพันธ์ระหว่างคะแนน Edinburgh Postnatal Depression Scale ฉบับภาษาไทย ในผู้หญิงไทยในหลังคลอดระยะแรกและ 6 สัปดาห์หลังคลอด

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วัตถุประสงค์ : เพื่อประเมินสหสัมพันธ์ระหว่างคะแนน Edinburgh Postnatal Depression Scale ฉบับภาษาไทยในผู้หญิงหลังคลอดระยะแรกและ 6 สัปดาห์หลังคลอด

วัสดุและวิธีการ : ผู้หญิงหลังคลอด 251 คน ทำแบบสอบถาม EPDS ฉบับภาษาไทยหลังคลอดระยะแรกและ 6 สัปดาห์หลังคลอด การคำนวณสหสัมพันธ์ระหว่างคะแนนสองช่วงเวลาใช้ Spearman's rank การคำนวณจุดตัดของคะแนน EPDS ฉบับภาษาไทยหลังคลอดระยะแรกในการทำนายผู้ที่มีความเสี่ยงสูงในการเกิดภาวะซึมเศร้าหลังคลอด คำนวณโดยใช้ Receiver-operator characteristic curve

ผลการวิจัย : สหสัมพันธ์ระหว่างคะแนน EPDS ฉบับภาษาไทย หลังคลอดระยะแรกและ 6 สัปดาห์หลังคลอดมีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติ (r = 0.36, P < 0.001) การใช้จุดตัดคะแนน EPDS ฉบับภาษาไทยหลังคลอดระยะแรกมากกว่าหรือเท่ากับ 8 สามารถทำนายผู้ที่มีความเสี่ยงสูง ในการเกิดภาวะซึมเคร้าหลังคลอดโดยมีความไว 77.0% และความจำเพาะ 56.3%

สรุป : สหสัมพันธ์ระหว่างคะแนน คะแนน EPDS ฉบับภาษาไทยในผู้หญิงไทยหลังคลอดระยะแรกและ 6 สัปดาห์หลังคลอด มีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติ สำหรับการนำคะแนนหลังคลอดระยะแรกไปใช้ประโยชน์ควรมีการศึกษาเพิ่มเติมต่อไป

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