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ORIGINAL PAPER

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Validation of the Turkish version of the Edinburgh Postnatal Depression Scale among women within their first postpartum year

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Abstract *Background* The aim of the study was to find out the validity and reliability of the Turkish version of the Edinburgh Postnatal Depression Scale (EPDS) and to determine the optimum cut-off value for postnatal depression. *Method* Validation of the Turkish version of the EPDS was conducted on a sample of 341 women who were within their first postpartum year. Structured Diagnostic Interview for DSM-IV Axis I Disorders was used as the gold standard test, and receiver operating characteristic analysis was used to evaluate test performance of the EPDS. *Results* The study of sensitivity, specificity and predictive values versus SCID-I indicated a cut-off score of 12.5 as the best (sensitivity: 75.5, specificity: 71.5). Positive predictive value was 30.3 % and negative predictive value was 94.5 %. Cronbach's alpha value was calculated as 0.72. *Conclusions* It was concluded that: (1) values for the validity were respectable, but not excellent; (2) the scale needs to be improved for use in the Turkish population; and (3) the high prevalence of postnatal depression found in this study may be a function of the low validity of the test.

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Introduction

Previous studies have shown that postnatal depression (PND) affects at least 10–20 % of women in their first postpartum year (O'Hara et al. 1984) and that many depressed mothers remain undiagnosed and untreated. These mothers may still be able to cope with their baby and with household tasks, but their enjoyment of life is seriously affected and it is possible that there are long-term effects on the family. PND also has negative consequences on mothers' social relationships and on maternal and child health (O'Hara et al. 2000). Less severe presentations of depressive illnesses are often missed and frequently dismissed by patients and healthcare professionals as normal after childbirth.

The World Health Organisation (WHO 2001) has recently reported that mental health problems have high prevalence worldwide, and that the management and treatment of mental disorders in primary care is a fundamental step in order to improve mental health. In this regard, developing screening tools for mental disorders is gaining more importance. The Edinburgh Postnatal Depression Scale (EPDS) (Cox et al. 1987) has been developed to assist primary care health professionals to detect mothers suffering from PND. It consists of ten short statements. The mother indicates which of the four possible responses is closest to how she has been feeling during the previous week. It was initially validated in the United Kingdom (Cox et al. 1987) and several validation studies have been conducted since 1987 (Harris et al. 1989; Murray and Carothers 1990; Boyce et al. 1993; Jadresic et al. 1995; Wickberg and Hwang 1996; Ghubash et al. 1997; Guedeney and Fermanian 1998; Hawley and Gale 1998; Lawrie et al.1998; Lee et al. 1998; Benvenuti et al. 1999). Also, in one study, this scale was translated into Turkish and tested for reliability in Turkish women (Engindeniz et al. 1996). This latter study concluded that

the sensitivity and specificity of the scale was found to be 84 % and 88 %, respectively, when the cut-off value was accepted as 12.5 and the value of Cronbach's alpha was 0.79.

In a previous study with Turkish women, we found the prevalence of PND as 34.6 % with the EPDS (unpublished data). We were concerned that this prevalence was very high, and we suspected that one of the reasons was the low validity of the Turkish EPDS, which is the basis for this re-validation study. Therefore, in the present study, we aimed to find out the validity and reliability of the Turkish version of the EPDS and to determine the optimum cut-off value for PND. We also aimed to compare our results with those of the previous validation study and to suggest practical recommendations for the use of the EPDS in general.

Subjects and methods

Subjects

The study population consisted of 1750 women who were within their first postpartum year, 352 of them attended primary health care clinics in the province of Erzurum from June to October 2001. Five women did not agree to be interviewed, six women were excluded due to psychiatric treatment history, and finally, 341 women participated in the study. Written informed consent was obtained from each woman before the interview.

The Turkish version of the EPDS had been translated into Turkish for a previous study by a psychiatrist. Another psychiatrist had performed back-translation into English in the same study. A pilot study was then carried out on women in a hospital (Engindeniz et al. 1996).

In our study, the EPDS was self-administered by all women except for those who were not literate. A research assistant assisted illiterate women in completing the questionnaires. Concurrent validity and internal reliability of the EPDS were evaluated. After the administration of the scale, a psychiatric interview was conducted by a mental health professional with all women for signs of depression. The professional who conducted the psychiatric interviews was blind to the results of the EPDS (she did not know the EPDS results of the participating women), and used the Turkish clinical version of Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Clinical Version (Corapcioglu et al. 1999). SCID ascertains the presence and severity of psychological signs and symptoms during the 2 weeks prior to the interview. Women who participated in this study did not have previous psychiatric treatment history. Participants were categorised as having major depressive disorder, minor depressive disorder or not having depression according to the SCID-I. Cases of definite major depressive disorder were defined with the presence of SCID criterion A (which contains different symptoms of dysphoric mood) and of five symptoms of criterion B (with eight depressive symptoms). The diagnosis of minor depression was made when women expressed at least two (but fewer than five) symptoms of depression, depressed mood or anhedonia over a 2-week period and when the mental health professional made a clinical diagnosis of depression.

Statistical analysis

Using one-way analysis of variance, we compared mean scores obtained from the EPDS according to postpartum period in months. In order to determine the optimum cut-off value for the PND, sensitivity, specificity values, and predictive values were calculated and receiver operating characteristic cure was performed.

Results

A total of 341 women agreed to participate in this study. The mean age and standard deviation of the participants was 26.6 ± 4.8 years and the median number of children was 2. Of all women, 7 % were illiterate, 9.7 % had no formal education, 55.4 % had primary education, 29 % had completed secondary education, and 5.9 % had tertiary education. A great majority of women (91.3 %) were housewives and only 8.7 % had a paid job outside of the house. Interviews by postpartum months are presented in Fig. 1.

The overall mean score from the EPDS was calculated as 10.8 ± 5.0. While percentage of the PND according to SCID was 14.4, it was 35.8 according to the EPDS if the cut-off value is accepted as 12.5. Sensitivity, specificity, confidence intervals and positive predictive values by cut-off scores are shown in Table 1.

Cronbach's alpha value was calculated as 0.76 and the area under the curve was found to be 0.72. Fig. 2 shows the graph of the receiver operating characteristic curve. According to our results, optimal cut-off value for major and minor depression was 12.5.

The difference of means in the first and second 6 months was not statistically significant ($t = 1.8, p = 0.07$).

All together we identified 18 false negatives for major and minor depression. The distribution of false negatives by the survey technique (i. e. self-administered vs. administrated by an interviewer) is presented in Table 2. We were concerned that the mode of administration of the scale could affect the outcomes and we tabulated our data according to this information.

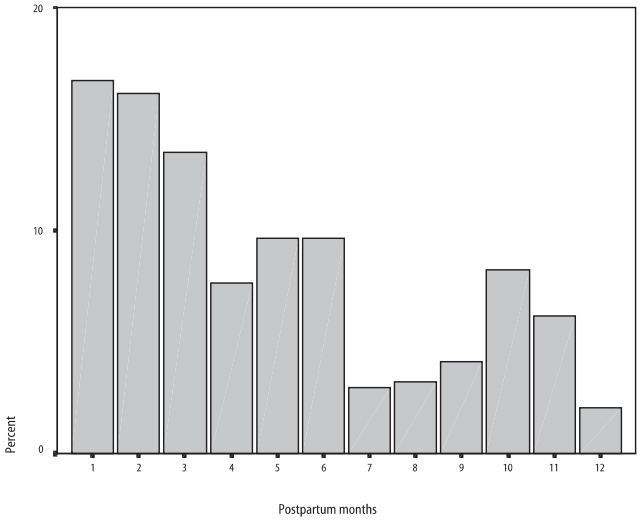

Fig. 1 Distribution of the participants of the EPDS validation study for the Turkish version by postpartum period in months

Table 1 Sensitivity, specificity, and predictive values by cut-off values for the validation of the Turkish version of the EPDS

Cut-off value	Sensitivity	95% CI	Specificity	95% CI	Positive PV %	Negative PV %
9.5	96.0	93.9–98.1	47.0	41.7–52.3	23.3	98.5
10.5	89.8	86.8–92.7	59.2	54.0–64.4	27.0	97.2
11.5	79.6	75.3–83.9	65.8	60.8–70.8	28.1	95.0
12.5	75.5	71.0–79.0	71.5	66.7–76.3	30.3	94.5
13.5	61.2	56.1–66.3	77.4	73.0–81.8	30.3	92.1

PV predictive value

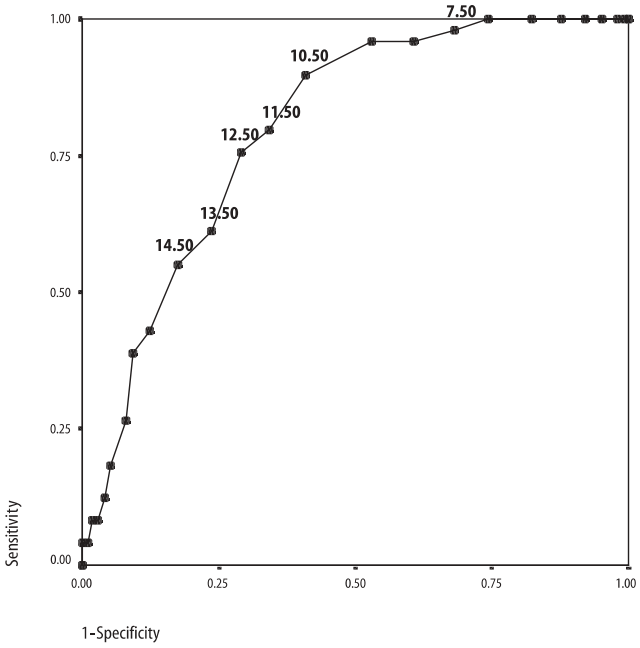

Fig. 2 Receiver operating characteristic curve of the Turkish version of the EPDS

Discussion

With regard to internal consistency values in this study, we can conclude that the scale is respectable (DeVellis 1991). Optimal cut-off value in this study was found to be 12.5 and this is higher than the values in some other studies (Wickberg and Hwang 1996; Guedeney and Fermanian 1998; Lee et al. 1998; Benvenuti et al. 1999). However, there are also some studies that have similar cut-off values. In a review of validation studies (Eberhard-Gran et al. 2001), it was reported that optimal cut-off value was between 8.5 and 12.5. It is indicated that the optimal cut-off values may vary from one population to the other (Cox and Holden 1994). Our results are consistent with the first study carried out in the western part of Turkey in which the cut-off value was also found to be high (Engindeniz et al. 1996).

In our study, PND prevalence was 35.8 according to the EPDS. In Affonso et al.'s (2000) international study, women from Asia (Korea, India, Taiwan) and South America (Guyana) had the highest depressive symptom scores. When the cut-off was used as 9/10, EPDS prevalence was found to be 50 % for Guyana, and 73.7 % for Taiwan. In our study, when the cut-off was used as 9/10, EPDS prevalence increases up to 59.2 %. The EPDS has been developed in English-speaking, westernised societies. In Asia and Guyana samples, English was not the dominant language, although there were published reports describing the utility of the EPDS [17, 67, 63] except for Guyana. In this study, PPD was assessed with the EPDS and Beck Depression Inventory without further evaluation through clinical interviews. Therefore, interpretation of the data should not be confined to diagnosis of clinical depression.

When we evaluated specificity, sensitivity and confidence intervals, we found low sensitivity and specificity values. Our figures were again in line with the validation study carried out in the west of Turkey (Engindeniz et al. 1996). Eberhard-Gran et al. reported that the sensitivity estimates varied between 65 and 100 % and specificity estimates varied between 49 and 100 %, and that the confidence intervals were wide.

There may be several factors that lead to this situation such as translation problems or socio-cultural features of the research population. With regard to the Turkish translation, we think that, while it tried to be faithful to the original in English, the concern for a verbatim literal translation could in fact have impaired easy comprehension in Turkish. Another factor may be related to the educational level and familiarity of the participants with surveys. For example, in this study, surveys that were ad-

Table 2 False negatives by interview techniques for the validation of the Turkish version of the EPDS

Survey technique	False negatives for major depression	False negatives for minor depression	True positives for major depression	True positives for minor depression	Total positives according to EPDS
EPDS administered by the interviewer	0	1	7	4	17
EPDS self-administered	6	11	21	17	105
Total	6	12	28	21	122

ministered by a trained interviewer yielded less false negatives when compared with the results of self-administered scales. Among the 18 false negatives in our group, only one false negative for minor depression was from a scale administered by the interviewer. All other false negatives came from the self-administered scales. Among the 33 women who were illiterate, 17 had EPDS scores above the cut-off value. According to the reference test, 7 women were diagnosed with major depression, while another 4 were diagnosed with minor depression, and there was only one false negative in the illiterate group. The remaining 308 women self-administered the survey and 107 of them scored above 12.5 in the EPDS. When SCID was conducted, among 21 who were diagnosed as having major depression with the EPDS, 6 were found to have false positives. Similarly, when SCID was used as the gold standard test, 11 of the 17 who were diagnosed as having minor depression with the Turkish EPDS were found to be false positives. Our results suggest that there is an increase in false positive diagnosis when the EPDS is self-administered. However, the impact of the mode of administration on the test results should be elaborated with further studies.

When we evaluated mean differences of items between false negative and true positive groups, it was found that items 3, 5 and 6 had a value of 1.0 or greater. This result may be due to difficulties in understanding these items. Guedeney et al. (2000) suggested that the EPDS can better identify depressed postnatal women with anhedonic and anxiety symptoms than those whose depression presents mainly with psychomotor retardation. The limitations of the EPDS should be noted. First, while it identifies those likely to be suffering from postpartum depression, it does not discriminate between mild, moderate, and severe depressive states (Cox et al. 1987). Second, according to Affonso et al. (1990), the unbiased tone of the EPDS gives women permission to speak about their feelings, but does not allow them to qualify or elaborate on their responses.

A limitation of this study is that it did not evaluate diagnosis of the other psychiatric disorders. It may be possible that these women have another psychiatric disorder, particularly co-morbidity of depression and anxiety.

In conclusion, data obtained from this study show that the Turkish version of the EPDS can be used for screening women, and that validity values were respectable, but not excellent. Further studies need to be carried out concerning validity. The very high prevalence of PND in this study may be related to low validity of the EPDS. Further studies to review the Turkish translation and improvement of the scale for use in the Turkish population are also necessary.

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