Brief report

Postnatal depression and child outcome at 11 years: The importance of accurate diagnosis

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Abstract

Background: One in ten women suffers from postnatal depression (PND) and their children have elevated rates of psychopathology. We compared caseness of PND using the Edinburgh Postnatal Depression Scale (EPDS), the most commonly used research tool for the detection of PND, and the Clinical Interview Schedule (CIS) in terms of their relative abilities to identify infants at risk of psychopathology in middle childhood.

Method: In a prospective longitudinal primary care study, 147 randomly selected women were administered both the CIS and the EPDS at three months postpartum. Childhood psychopathology was identified by face-to-face interview at 11 years.

Results: The risk for psychiatric disorder at 11 years was four times greater among children whose mothers were cases of PND on the CIS, compared to children whose mothers were not depressed. Using the EPDS to identify PND, there was no significant difference in the risk for children whose mothers scored above and below a conventional cut-off score.

Limitations: This study was retrospectively designed and was not part of the original study plan.

Conclusions: These data support the evidence that accurate detection of PND is better achieved by face-to-face clinical interview than through the use of the EPDS. They provide novel evidence that a simple diagnostic clinical interview for PND, in contrast to the EPDS, can identify mothers whose children will be at an increased risk of developing psychiatric disorder in later childhood.

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1. Introduction

Postnatal depression is now recognised as an important marker of the mother’s risk for subsequent depression (Campbell and Cohn, 1997) and her child’s risk for later psychopathology (Hay et al., 2003; Halligan et al., 2006). Because of these known risks, the recently published NICE guidelines for the clinical management of antenatal and postnatal mental health (2007) emphasised the importance of prediction and detection of maternal depression in pregnancy and the postnatal period.

Until recently, the use of screening was recommended for the detection of PND, the most commonly used instrument being the Edinburgh Postnatal Depression Scale (EPDS: Cox et al., 1987). However, concerns over
the accuracy of the EPDS to detect all true cases of PND have led to its rejection for use as a National Screening Test (Shakespeare, 2001).

In research, accurate classification of mothers with and without depression is necessary, in order that risk factors and possible mechanisms for childhood outcomes are properly understood. Even though epidemiological studies make it clear that EPDS scores should not be used to make psychiatric diagnoses, they have often used a threshold, the most common being >12 (Evans et al., 2001; Rubertsson et al., 2005), to identify groups of women with postnatal depression in order to investigate the effect of maternal depression on the child (O’Connor et al., 2002).

We have already shown (Hay et al., 2001, 2003) in previous analyses of data from this prospective, longitudinal community study, that a maternal diagnosis of postnatal depression predicts deficits in the children’s cognitive abilities and in their predisposition to violent behaviour when compared with children who have not been so exposed. In this analysis, we examined whether the mother’s diagnosis of postnatal depression derived from either clinical interview (CIS: Goldberg et al., 1970) or a score of >12 on the EPDS was equally likely to predict psychiatric disorders in the children 11 years later.

2. Method

2.1. Participants

One hundred and forty-seven1 women, representing 86% of a random sample drawn from antenatal patients in two general practices in South London, were recruited into a study of childbirth related emotional disorders in primary care (for further details see Hay et al., 2001). Based on 2001/2002 English data, the deprivation scores of these two South London communities, ranked on the 6th and 11th percentiles where a lower rank indicates greater deprivation (ONS, 2006).

The women were assessed for depression at 3 months postnatal, completing both the EPDS and the Clinical Interview Schedule (CIS). One hundred and thirty-two (90%) of these families were seen when the children were 11 years old. One hundred and twenty-nine children (60 boys and 69 girls) were assessed for psychopathology at age 11. Class teachers provided information on the strengths and difficulties of 127 of the children. There were no significant differences in EPDS scores or in CIS case status at 3 months postnatal between the women who did and did not take part with their children at 11 years.

All phases of the study were approved by the Ethics Committee of the Institute of Psychiatry, King’s College London.

2.2. Procedure

At 3 months postnatal, the mother’s mental health over the previous 2 weeks was assessed by a postal EPDS and a home interview with one of two general practitioners unknown to the participants. At 11 years, in independent interviews given by different research psychologists who were blind to the mothers’ original diagnosis, the primary caregivers (in all but two cases the mothers) and children were asked about the child’s psychological problems. All interviews took place in the families’ homes. Class teachers were also asked to fill in the Strengths and Difficulties Questionnaire (SDQ).

2.3. Measures

The Edinburgh Postnatal Depression Scale (EPDS: Cox et al., 1987): The EPDS is a 10-item self-report scale. Each item is rated on a scale from 0 to 3, resulting in a maximum score of 30.

The Clinical Interview Schedule (CIS: Goldberg et al., 1970) is a standardised psychiatric interview developed for use in community settings. On the basis of the information gathered an ICD-9 diagnosis (World Health Organisation, 1978) was given to women whose symptoms reached diagnostic threshold.

The Child and Adolescent Psychiatric Assessment (CAPA: Angold et al., 1995) is an interviewer-based diagnostic interview with versions for use with children and their parents that focuses on psychiatric symptoms occurring during the preceding 3-month period. Diagnoses are generated by computer algorithms. Separate algorithms are available for child and parent reports and ‘combined reports’ where a symptom is regarded as being present if either the parent or child reports it. In this paper

<table>
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<tr>
<th>T1able 1</th>
<th>Comparison of the CIS-ICD9 diagnosis and the &gt;12 EPDS threshold</th>
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<tbody>
<tr>
<td>CIS-ICD9</td>
<td>Not depressed</td>
</tr>
<tr>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>EPDS ≤ 12</td>
<td>112 (99)</td>
</tr>
<tr>
<td>EPDS &gt; 12</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
</tr>
</tbody>
</table>

1 One woman who completed the EPDS and the CIS and was diagnosed with an anxiety disorder without depression was excluded from the analyses.
we report DSM-IV diagnoses (American Psychiatric Association, 1994) based on combined reports.

The Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997) was used to obtain a measure of the child’s difficulties at age 11 as rated by an informant outside the family, in this case the class teacher. Here we use the total difficulties score.

3. Results

3.1. Prediction of postnatal depression

Analysis of the CIS data showed that 34/147 women (23%) met ICD-9 criteria for postnatal depression 3 months after the birth. The performance of the EPDS was investigated in accordance with the recommendations made by the originators of the scale (Cox et al., 1987) whereby those women with a score of greater than 12 were considered to be at high risk for postnatal depression. An ICD-9 diagnosis of depression, derived from the CIS, was used as the ‘gold standard’.

At this cut-off, the EPDS had a sensitivity of 35.3% (12/34) and a specificity of 99.1% (112/113) (Table 1). Some women who met diagnostic criteria for depression on the CIS had very low scores on the EPDS (Fig. 1).

3.2. Prevalence of childhood disorder at age 11

Of 129 children who were assessed for emotional and behavioural disorders at age 11, 31 (24%) met DSM-IV criteria. Eleven had emotional disorders (separation anxiety, social anxiety, depressive episode not otherwise

Fig. 1. Comparison of mother’s postnatal depression ratings (CIS-ICD9 and EPDS>12 threshold) with child diagnosis (CAPA–DSM-IV) at 11 years.
specified), 11 had behavioural disorders (oppositional-defiant disorder, conduct disorder, attention-deficit and hyperactivity disorder) and 9 were co-morbid for both types of disorder. Boys and girls were equally likely to have a disorder. Children who met DSM-IV criteria for psychiatric disorders also showed significantly higher rates of teacher-rated behavioural and emotional problems on the SDQ, \( t (125) = -3.46, p < .001 \). Thus the assessment of children’s psychopathology showed convergence across instruments and informants.

3.3. Prediction of children’s problems using mother’s ICD diagnosis

The children of mothers who met ICD criteria for postnatal depression at 3 months were four times as likely as those whose mothers had been well in the postnatal period to suffer from a psychiatric disorder themselves at 11 years of age (\( \chi^2(1) = 9.81, p < .01, OR = 4.0, CI 1.62 \) to 9.84).

3.4. Prediction of children’s disorders using EPDS

The children of mothers who had scores >12 on the EPDS were not significantly more likely than those whose mothers scored below this threshold to have a psychiatric disorder at 11 years (\( \chi^2(1) = 3.02, p < .09, OR = 2.95, CI 0.83 \) to 10.44) (Fig. 1).

Five of the 10 children (50%) whose mothers had EPDS scores >12 and an ICD diagnosis (‘true positives’) were diagnosed with disorders at age 11. Eighteen of 100 (18%) whose mothers scored <13 on the EPDS and did not have an ICD diagnosis (‘true negatives’) met DSM-IV criteria for disorder at age 11. Of 18 children of women with an ICD diagnosis of depression who were not identified on the EPDS (‘false negatives’), 8 (44.4%), were diagnosed with emotional or behavioural disorders at age 11. There was only one case where the mother scored above the >12 threshold on the EPDS and yet did not have an ICD diagnosis (‘false positive’) and her child did not have a psychiatric diagnosis. Children of mothers who were ‘true positives’ were more likely than the children of mothers who were ‘true negatives’ to be diagnosed with disorders at age 11, \( \chi^2(1) = 5.63, p < .05, OR = 4.56, CI 1.19 \) to 17.41. But the children of depressed women who had not been identified by the EPDS (‘false negatives’) were also significantly more likely to have disorders at age 11 than children of mothers who were ‘true negatives’, \( \chi^2(1) = 6.21, p < .01, OR = 3.64, CI 1.26 \) to 10.52. The children of ‘true positives’ (50%) and ‘false negatives’ (44.4%) did not significantly differ from each other in their risk for psychiatric illness at age 11.

4. Discussion

The findings from this prospective, longitudinal study, with an exceptionally high retention rate (90%) over 11 years, indicate that for a sample of women attending general practices in a socio-economically disadvantaged area in South London, the EPDS was a poor instrument for screening for depressive disorders at scores of >12 (detection rate of 35%) and for predicting psychopathology in the children. However, a notable limitation of our study is the comparison of the ICD-9 diagnoses obtained from the face-to-face clinical interview with the self-rated postal EPDS. Sending the EPDS through the post may account for its lower sensitivity in our study compared to others. A second limitation concerns the generalisability of the results as the number of participants in the study is relatively small and limited to an inner-city cohort with high rates of socio-economic deprivation and a low level of literacy in some of our participants. Although others have shown the EPDS to be feasible and acceptable for community samples (Cox et al., 1987; Murray and Carothers, 1990) anecdotal evidence recorded during some of our interviews reveals that some women were reluctant to disclose any negative feelings in a questionnaire because they feared that their babies may be removed from them. This highlights the sensitive nature of assessing a mother’s mental health in the postnatal period and concurs with findings from a qualitative study carried out in general practice (Shakespare et al., 2003).

Because suicide is the leading cause of death among women during the perinatal period (Confidential Enquiry into Maternal Deaths, 2004), screening for mood disorders is a very important public health issue, recommended by this and other public health reports (SIGN, 2002; National Institute for Health and Clinical Excellence (NICE), 2007) and professional bodies working in this clinical area (Adams, 2001; Shakespeare, 2001). Both the ease with which the EPDS can be administered and the relative simplicity of the questionnaire have meant that it has been translated into many languages. It has consequently become the screening tool of choice in many countries in both clinical and research contexts. The current study clearly identifies that although a high score on the EPDS can identify cases of postnatal depression, a large number of cases are not identified by the EPDS. The majority of women with a clinical diagnosis of depression were not identified by the EPDS and some of those ‘false negatives’ had extremely low EPDS scores. If clinical interviews confirming a diagnosis of depression are only given to women with an EPDS score of >12 (Speier, 2005), many women with depression may not come to the attention of the health
professionals and therefore not receive the treatment they need. In research, the EPDS has often been seen as an instrument of choice in large studies where it is not feasible to conduct detailed clinical interviews. The extent of ‘false negatives’ implies that comparison groups will contain many women who are depressed, which will reduce effect sizes and thus underestimate the extent of women’s and children’s problems.

The children of mothers who were ‘false negatives’ on the EPDS were just as likely as the children of mothers who had been correctly identified by the EPDS to have psychiatric disorder. Both groups of children were more likely than the children of mothers who were not cases on the basis of both interview and EPDS to have a disorder. Failure to identify cases of postnatal depression using the EPDS not only means that these mothers’ depression goes untreated but also that their children’s own risk for psychiatric problems is less likely to be detected. Our study supports the reports of the National Screening Committee (Shakespeare, 2001) and SIGN (2002): a brief, semi-structured, face-to-face clinical interview may be a more accurate way of detecting those women who are depressed following childbirth and thereby identify those children who are at risk of future psychiatric disorder.

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Conflict of interest
No conflict declared.

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