



## ON A COHORT OF SOUTH AFRICAN WOMEN

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Postnatal depression occurs in 10 - 15% of women. The Edinburgh Postnatal Depression Scale (EPDS) is a 10-item self-report scale designed specifically as a screening instrument for the postnatal period. It was initially validated for use in the UK, but has subsequently been validated for other communities. It has not been validated for an African community.

*Objective.* To determine whether the EPDS is a valid screening scale for depression in a Johannesburg community cohort.

*Participants and setting.* 103 women attending the postnatal clinic at Coronation Hospital, Johannesburg, South Africa.

*Method.* The EPDS was validated against the *Diagnostic and Statistical Manual (DSM-IV)* criteria for depression. It was administered verbally to participants and translated into one of six South African languages where necessary.

*Results.* A threshold of 11/12 on the EPDS identified 100% of women with major depression and 70.6% of women with minor depression. For major and minor depression combined, sensitivity was 80%, specificity 76.6%, positive predictive value 52.6% and negative predictive value 92.2%.

*Conclusion.* The EPDS, administered verbally, is a valid screening instrument in this urban South African community.

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Postnatal depression (PND) is considered by many to be the most common complication of the puerperium.<sup>1,2</sup> In a country like South Africa, where the majority of the population has been denied accessible health care in the past, it is not surprising that screening for PND has not been a priority. Generally, there has been very little systematic study of PND in non-Western cultures.<sup>3</sup> Despite this, there is reason to believe

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that PND is at least as common in our urban communities as the prevalence rates of 10 - 15% in Western countries. In a South African randomised controlled trial on the effect of labour support in primigravidas on postnatal depression, 0% of the support group and 22% of the control group scored higher than 34 on the Pitt Depression Inventory.<sup>4</sup> Psychosocial stressors associated with increased risk of depression,<sup>5</sup> namely high unemployment rates, high crime rates, poverty, divorce and single-parent families, are common in South Africa.

The 10-item Edinburgh Postnatal Depression Scale (EPDS) was developed as a screening tool for clinical and research purposes, and was initially validated on British women by Cox *et al.*<sup>6</sup> It is a self-report scale designed specifically for the postnatal period in that it makes little reference to the somatic symptoms of depression that may be caused by the normal physiological changes associated with childbearing. Most studies show the EPDS to be a valid and reliable screening scale. The initial validation of the EPDS against the Research Diagnostic Criteria of Cox *et al.*<sup>6</sup> suggested a threshold score of 12/13 out of 30 to identify women with major depression (sensitivity of 86%, specificity of 78% and positive predictive value of 73%). This is supported by Murray and Carothers,<sup>7</sup> Boyce *et al.*<sup>8</sup> and Webster *et al.*<sup>9</sup> However, some researchers have used a threshold score of 9/10<sup>10,11</sup> or 11/12<sup>12</sup> to identify cases of major depression. Cox<sup>13</sup> recommended a lower threshold of 9/10 to be used at primary care level; according to Murray and Carothers<sup>7</sup> this would identify 92.6% of cases of major depression and 73.2% of cases of minor depression.

The EPDS does not require the health worker to have special knowledge of psychiatry. Since its inception it has been used in a number of countries outside the UK, including the USA, Australia, New Zealand, Iceland, Sweden and the Netherlands.<sup>3</sup> It has also been translated into a number of languages.

There are 11 official languages in South Africa. However, many of the women in urban areas have a reasonable command of English or Afrikaans, the official languages of the apartheid era. As a result, a substantial number of clinician-patient interviews are conducted in English (the *de facto* lingua franca), or are facilitated with the help of a translator. The objective of this study was to determine whether the EPDS could be administered in this way to screen a cohort of South African women for PND, and if so, at which threshold. In addition to interest in its clinical value, this study was undertaken as a pilot study for a randomised placebo-controlled clinical trial of postpartum injectable progestogen, requiring the use of a self-report scale to identify women at risk of PND.

## METHOD

### Setting

The research project was conducted at Coronation Hospital, a

State-administered mother and child academic hospital in Johannesburg, South Africa. Coronation Hospital primarily serves a low-income, socially disadvantaged urban community. Approximately 7 000 deliveries are performed annually. Postnatal check-ups are no longer routinely booked at Coronation Hospital and only women who have experienced an obstetric complication, required a caesarean section, or requested sterilisation for family planning are seen 6 weeks after delivery. The postnatal clinic is open only 1 morning per week and is poorly attended.

### Instruments

The EPDS consists of 10 multiple-choice questions, each having 4 possible answers. The answers are scored 0, 1, 2, or 3 according to the severity of the symptom experienced in the previous 7 days.

During pilot interviews it became evident that some patients had difficulty with the language used in the scale and so some minor changes, which do not alter the meaning of the scale, were made. For example the phrases 'rather less than I used to' and 'definitely less than I used to' were changed to 'a little less than I used to', and 'much less than I used to', which were easier for the women to understand. The phrases 'very often', 'quite often' and 'not very often' were changed to 'very much', 'quite a lot' and 'not very much', respectively. In item 4 the word 'worried' replaced 'anxious', as it was better understood. Similarly, in item 6, 'cope' was replaced with 'manage'. Many women did not differentiate between difficulty in sleeping because of 'unhappiness' and that caused by the baby waking (item 7). To clarify this, 'not due to the baby' was added. 'Sometimes' replaced 'occasionally' in item 9. Literacy rates among South African women differ considerably. To avoid excluding a large number of potential subjects from the study and to make the study results more widely applicable, the EPDS was read to study participants. (See the Appendix for the EPDS version used and guidelines for its use.)

A structured psychiatric interview using the *Diagnostic and Statistical Manual (DSM-IV)* criteria for depression<sup>14</sup> was used to identify depressed women. In addition, the Montgomery-Asberg Depression Rating Scale (MADRS)<sup>15</sup> was included as an instrument. The MADRS is an observer rating scale composed of 10 items, each graded 0 to 6. It places less emphasis on somatic symptoms and is sensitive to changes in mood. This should, theoretically, make it a useful scale in the postnatal period.<sup>16</sup>

### Procedure

The study was conducted over a period of 3 months. One hundred and eight consecutive women attending the postnatal clinic were asked to participate in the study. All had delivered 6 weeks previously. Two French-speaking women and one Gugerati-speaking woman were excluded. Only 2 women refused to take part in the study. Verbal consent was obtained



from all participants. The EPDS was read to the women by the research midwife (M D) in a private consulting room, and translated, if necessary, by one of two multilingual nursing sisters experienced in translation. A doctor (T L), blind to the EPDS scores, conducted structured psychiatric interviews using *DSM-IV* criteria and the MADRS. If the participant had difficulty understanding preliminary questions with regard to her family, employment, health and recent pregnancy, a translator was used. The *DSM-IV* was considered the 'gold standard' and cases of depressive illness (major and minor) were defined according to the *DSM-IV* criteria.

The Epi-Info version 6.0 computer software package was used for data analysis. This includes sensitivity, specificity, positive predictive values (PPV) and negative predictive values (NPV) of the EPDS against the *DSM-IV* at various thresholds.

Ethics approval for the study was obtained from the University of the Witwatersrand Committee for Research on Human Subjects, Johannesburg.

## RESULTS

A total of 103 women were interviewed. One woman was excluded from analysis because of a missing questionnaire. The mean age of the women was 28.1 years, mean parity was 2.2, and 69.6% were married or cohabitant. Of the women, 19.6% had a primary school education or less, 55.8% had started but not completed secondary school, 19.6% had matriculated (O levels) and 4.9% had attended college. Over half were unemployed. The monthly household income in 24% of the women was less than R500, in 71% less than R2 000 and in 95% less than R5 000. Eight women (7.8%) had experienced PND with a previous pregnancy, for which none had sought or received treatment. Seven women recalled having suffered from depression in the past, one of whom had been treated. Most (88.2%) of the women had their babies delivered by caesarean section.

Table I shows how frequently spoken were the different South African languages among those interviewed, and the

Table I. Frequency of languages in the sample and the frequency of translation in each language group

| Language  | Language  |      | Translation |      |
|-----------|-----------|------|-------------|------|
|           | Frequency | %    | Frequency   | %    |
| Afrikaans | 30        | 29.4 | 10          | 33.3 |
| Zulu      | 21        | 20.6 | 10          | 47.6 |
| Tswana    | 19        | 18.6 | 4           | 21.1 |
| English   | 14        | 13.7 | 0           | 0.0  |
| Sotho     | 8         | 7.8  | 4           | 50.0 |
| Xhosa     | 4         | 3.9  | 2           | 50.0 |
| Other     | 6         | 5.9  | 2           | 33.3 |
| Total     | 102       | 100  | 32          | 31.4 |

Table II. Range of EPDS thresholds and corresponding sensitivity, specificity, PPV and NPV (%) for major depression only and major and minor depression combined

| Thres-<br>hold | Major depression |       |      |       | Major/minor depression |       |      |      |
|----------------|------------------|-------|------|-------|------------------------|-------|------|------|
|                | Sens.            | Spec. | PPV  | NPV   | Sens.                  | Spec. | PPV  | NPV  |
| 7/8            | 100.0            | 35.1  | 11.6 | 100.0 | 92.0                   | 40.3  | 33.3 | 93.9 |
| 8/9            | 100.0            | 43.6  | 13.1 | 100.0 | 84.0                   | 48.1  | 34.4 | 90.2 |
| 9/10           | 100.0            | 51.1  | 14.8 | 100.0 | 84.0                   | 57.1  | 38.9 | 91.7 |
| 10/11          | 100.0            | 58.5  | 17.0 | 100.0 | 80.0                   | 64.9  | 42.6 | 90.9 |
| 11/12          | 100.0            | 68.1  | 21.1 | 100.0 | 80.0                   | 76.6  | 52.6 | 92.2 |
| 12/13          | 87.5             | 72.3  | 21.2 | 98.6  | 76.0                   | 81.8  | 57.6 | 91.3 |
| 13/14          | 62.5             | 78.7  | 20.0 | 96.1  | 60.0                   | 87.0  | 60.0 | 87.0 |

percentage in each group requiring a translator. Afrikaans was the most common language spoken, followed by Zulu and Tswana. Thirty-two women were not sufficiently proficient in English, and needed a translator.

Table II shows a range of EPDS threshold for major depression only, and for major and minor depression combined. They are shown with the corresponding values for the sensitivity (the proportion of women with depression correctly identified), specificity (the proportion of well women correctly identified), PPV (the probability that a score above the threshold value will identify a depressed woman) and NPV (the probability that a low score will identify a well woman). Eight women fulfilled *DSM-IV* criteria for a major depressive disorder and 17 women for a minor depressive disorder. The recommended EPDS threshold of 12/13 identified 7 cases of major depression, resulting in a sensitivity of 87.5% and specificity of 72.3%. At this threshold, 12 of the 17 cases (70.6%) of minor depression were identified, resulting in a combined sensitivity of 76%, specificity of 81.8% and PPV of 57.6%. Lowering the threshold to 11/12 improved the combined sensitivity (80%) and the sensitivity for major depression alone (100%), but the number of cases of minor depression identified remained the same.

A total of 38 women scored above the 11/12 threshold, 20 of whom were true-positive and 18 false-positive cases. The threshold of 9/10 recommended for primary level use by Cox<sup>13</sup> seems a bit low for use in our setting, as in this study, for one more true positive, 15 more false positives would be identified.

The sensitivity, specificity, PPV and NPV of the MADRS against *DSM-IV* criteria for major and minor depression at a threshold of 9/10 was 80%, 100% and 93.9% respectively (although the MADRS and *DSM-IV* were performed by the same observer). When an EPDS threshold of 11/12 was compared with a MADRS threshold of 9/10, the sensitivity, specificity, PPV and NPV were similar to those when compared with the *DSM-IV* criteria (85.0%, 74.4%, 44.7% and 95.3%, respectively).



## DISCUSSION

The incidence of depression in our sample is quite high (24.5%). This possibly reflects the socially disadvantaged characteristics of the women in the sample. Another contributory factor could be that most of the women had undergone caesarean section and so were a select group. Those who chose to keep their appointments at the postnatal clinic may have had more problems than those who did not do so, although most studies show that depressed women do not exhibit treatment-seeking behaviour.<sup>2</sup>

Results shown are similar to those found by other researchers and validate the EPDS as a screening questionnaire for PND in our community. The 12/13 threshold recommended by Cox *et al.*<sup>6</sup> identified 7 of 8 women with major depression in our sample, but the lower threshold of 11/12 identified all women with major depression and improved the detection of minor depression. The 9/10 threshold increased false-positives from 18 to 33 cases.

PPVs in this study were lower than in other studies.<sup>6,7</sup> The mean score in the women who were not depressed was 9.0. This is rather high and may reflect difficulties the women encountered with certain items on the EPDS, in particular items 4 and 5. The subtlety of the statements 'I have felt worried for no very good reason' and 'I have felt scared or panicky for no very good reason' were often overlooked by the women, many of whom had very good reason to be anxious or scared. This resulted in high scores for items 4 and 5. A similar problem was encountered by Thome in Iceland (cited from O'Hara<sup>3</sup>).

Item 3 deals with self-blame. Almost half the women identified as not depressed scored a 2 or 3 for this item. This suggests that guilt, self-blame and low self-esteem is commonplace among women in our urban community.

Limitations of this study should be emphasised. The sample size is small. The cultural composition of the sample and its urban character do not make these results readily applicable to all South African women, particularly rural women. The use of a translator, although carefully instructed on the EPDS and the psychiatric interview, inevitably imposes certain limitations on the reliability of the data. Furthermore, a climate of openness has been distinctly lacking in South Africa for decades. Even the health services have been viewed with suspicion, which may have influenced some women not to answer honestly.

However, there are two unique aspects to this study. To our knowledge, this is the first time that the EPDS has been validated for use in a South African community. It is also, to our knowledge, the first time that the self-report scale has been read to women in an attempt to overcome the problem of illiteracy.

The primary motivation for doing this study was to validate the use of the EPDS for research purposes in this particular Johannesburg community. It is evident from this study and an earlier study<sup>4</sup> that PND is at least as common in our communities as in developed countries. Sadly, routine screening for PND in our postnatal clinics is far from a reality, and community psychiatry services are poorly organised and

overloaded. Systematic study of PND is urgently needed to quantify the extent of the problem among South African women.

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## APPENDIX 1. EDINBURGH POSTNATAL DEPRESSION SCALE (MODIFIED)

As you have recently had a baby, we would like to know how you are feeling. I am going to read some statements to you and give you a choice of four responses.

For example, I have felt happy:

- Yes, all the time
- Yes, most of the time
- No, not very much
- No, not at all

**Please choose an answer that comes closest to how you have felt in the past seven days, not just how you feel today.**

**In the past seven days:**

1. I have been able to see the funny side of things:
  - As much as I always could.
  - Not quite so much now.
  - Definitely not so much now.
  - Not at all.

2. I have looked forward with enjoyment to things:  
As much as I ever did.  
A little less than I used to.  
Much less than I used to.  
Hardly at all.
3. I have blamed myself unnecessarily when things went wrong:  
Yes, most of the time.  
Yes, some of the time.  
Not very much.  
No, never.
4. I have been worried for no good reason:  
No, not at all.  
Hardly ever.  
Yes, sometimes.  
Yes, very much.
5. I have felt scared or panicky for no very good reason:  
Yes, quite a lot.  
Yes, sometimes.  
No, not much.  
No, not at all.
6. Things have been getting on top of me:  
Yes, most of the time I haven't been managing at all.  
Yes, sometimes I haven't been managing as well as usual.  
No, most of the time I have managed quite well.  
No, I have been managing as well as ever.
7. I have been so unhappy that I have had difficulty sleeping (not because of the baby):  
Yes, most of the time.  
Yes, sometimes.  
Not very much.  
No, not at all.
8. I have felt sad and miserable:  
Yes, most of the time.  
Yes, quite a lot.  
Not very much.  
No, not at all.
9. I have been so unhappy that I have been crying:  
Yes, most of the time.  
Yes, quite a lot.  
Only sometimes.  
No, never.
10. The thought of harming myself has occurred to me:  
Yes, quite a lot.  
Sometimes.  
Hardly ever.  
Never.

### Guidelines for use

- The verbal EPDS should be read to the woman in the privacy of a consulting room.
- It may be read by health care workers not specifically trained in psychiatry.
- If the woman's English is poor, the appropriate language translator should translate the questionnaire.
- Responses are scored in the same way as the original EPDS, i.e. 0, 1, 2, and 3 according to increased severity of the symptom.
- If a woman scores 12 or more, she should be referred to a doctor for further psychiatric evaluation.