Journal of Affective Disorders 173 (2015) 239–244

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research Report

Predictors of post-natal depression are shaped distinctly by the measure of 'depression'

Gordon B. Parker [a,b,*], Bronwyn Hegarty [a,b], Amelia Paterson [a,b], Dusan Hadzi-Pavlovic [a,b], Isabelle Granville-Smith [a,b], Aniela Gokiert [a,b]

[a] School of Psychiatry, University of New South Wales, Australia
[b] Black Dog Institute, Australia

ARTICLE INFO

Article history:
Received 2 May 2014
Received in revised form
29 October 2014
Accepted 30 October 2014
Available online 20 November 2014

Keywords:
Post-natal depression
Depression
Measure

ABSTRACT

Background: Many variables have been proposed as predictive of post-natal depression (PND).
Aims: To investigate and refine PND risk variables.
Method: We recruited a large sample and employed two measures of PND (the dimensional Edinburgh Postnatal Depression Scale or EPDS, and DSM-defined major depression).
Results: High levels of stress in the post-natal period, previous depression and higher depression scores during pregnancy were the only consistent predictors across measures. Those exceeding the EPDS cut-off had additional psychosocial risk factors while those meeting criteria for major depression were strongly predicted by a past history of depression as well as higher pre-natal state depression scores.
Limitations: The EPDS has been used with variable cut off scores across multiple studies. We used only nine of the 10 EPDS items, electing to exclude the self-harm related question, but preserving the recommended EPDS cut-off score, and which might have impacted on predictions.
Conclusions: Study results generated a refined set of predictors of PND but, more importantly, identified that predictors of PND status are distinctly influenced by the measure of PND. Such inconsistencies are intrinsically noteworthy and of potential key importance in shaping intervention strategies.

1. Introduction

Predicting those likely to develop post-natal depression (PND) is an important public health and clinical priority, with the condition quantified as affecting 10–15% of mothers in international reviews (Markhus et al., 2013) and 8–12% in Australian studies of respective non-indigenous and indigenous women (Bowen et al., 2014). Post-natal depression is commonly diagnosed using DSM criteria with the specifier "with peripartum onset," or by use of specifically designed dimensional measures. Our currently reported study used DSM-IV criteria as that manual was current at the time of study design. Those criteria include either a depressed mood and/or a loss of interest or pleasure, with at least three other symptoms (four if only one of depressed mood/loss of pleasure is endorsed) including weight change, sleep alterations, psychomotor agitation or retardation, fatigue, worthlessness or guilt, diminished ability to think or concentrate and recurrent thoughts of death for two weeks or more. The Edinburgh Postnatal Depression Rating Scale or EPDS (Cox et al., 1987) is the most commonly used dimensional measure of PND and is a 10-item self-report measure containing items such as "I have blamed myself unnecessarily" and "I have been anxious or worried for no good reason".

The current study sought to refine a range of previously identified and suggested risk factors for PND. Candidate risk factors were derived by reference to several key sources. First, a systematic review of published studies reviewed by the Australian National Health and Medical Research Council (NHMRC) (Pope et al., 2000), which quantified PND risk factors by their consistency of identification across studies. 'Confirmed' factors (defined as being identified in 75% of studies) included a personal history of depression, depression during the pregnancy, marital difficulties, lack of support and stressful life events. 'Probable' factors (i.e. identified in 40–60% of studies) included a family history of psychopathology, single parenthood, severe maternity blues, personality nuances (e.g. neuroticism, interpersonal sensitivity), negative cognitive style, birth experiences and obstetric complications, partner's level of depression, as well as the infant's health and temperament. 'Possible' risk factors, in the sense of providing

* Corresponding author at: School of Psychiatry, University of New South Wales, Australia. Tel.: +61 2 9382 4372.
E-mail address: g.parker@unsw.edu.au (G.B. Parker).

http://dx.doi.org/10.1016/j.jad.2014.10.066
0165-0327/

little evidential support, included thyroid dysfunction, hormonal changes, early discharge from hospital, premature delivery, breast-feeding, poor relationship with parents, maternal age and parity. The authors noted that the status of risk factors (i.e. 'confirmed', 'probable' and 'possible') was influenced by the actual measure of PND, an issue central to our study. A more recent national guideline published by Healthcare Improvement Scotland (Scottish Intercollegiate Guidelines Network (SIGN), 2012) nominated most of the variables listed in the NHMRC report as risk factors but also listed domestic violence, unplanned pregnancy, unemployment, inability to breast feed, longer time to conception and having two or more children.

We elected to assess the most commonly nominated factors within those summary documents. While many studies have been undertaken to identify PND risk factors, our study had three key advantages – a large sample, a substantive set of potential predictors and two principal outcome measures of PND – presence of a DSM-IV-defined episode of major depression and rating positively above a defined cut-off score on the EPDS (Cox et al., 1987). We report analyses quantifying low consistency of predictors across the two measures. Although many studies have used both the EPDS and DSM criteria, to our knowledge only one study (Yonkers et al., 2001) has directly examined the predictors of a high EPDS score and of a DSM-IV diagnosis of major depression. In that study, an EPDS diagnosis of depression was more likely for more highly educated women and less likely for women who were breastfeeding. By contrast, a DSM diagnosis of major depression was predicted by higher previous scores on the EPDS and the Inventory of Depressive Symptoms (Rush et al., 1986), and living at home with an extended family. Interestingly, although the predictors of PND have not been compared using self-report and interview methods, it is recognized that interview methods result in much lower levels of reported depression (O'Hara and Swain, 1996).

2. Materials and method

2.1. Participants

We recruited women between 34 and 37 weeks of their pregnancy from obstetric units based in one large Sydney hospital and one coastal hospital north of Sydney, with their contrasting regional profiles ensuring a broad socioeconomic range of participants. Inclusion criteria were: age over 18 years, proficiency in English and the ability to provide informed consent. Potentially eligible women were invited by midwives or research assistants to take part in the study and detailed study hypotheses and components. We did not record the number of women approached or any reasons for declining. The study was formally approved by the Sydney South West Area Health Service Human Research Ethics Committee and ratified by the University of New South Wales Human Research Ethics Committee.

2.2. Measures

Socio-economic variables were assessed via a self-report questionnaire. These included age, education level (7 categories from primary school to postgraduate degree), current employment (8 categories including full-time, part-time, student, home duties and receiving benefits) as well as the number of hours worked, marital status (6 categories) and family income (3 categories, less than $750 per week, $751–1596 per week and more than $1596 per week). A medical history was also assessed via the self-report questionnaire, including the number of prior children, previous stillbirths (yes/no), previous terminations (yes/no), previous miscarriages (yes/no), thyroid difficulties (yes/no), food allergies (yes/no) and a history of premenstrual syndrome (yes/no and their level of impairment from 1= no impairment to 5= severely impaired). Food consumption habits were also assessed, and included coffee consumption (cups per day), alcohol consumption (standard drinks per week), smoking status (yes/no) and cigarettes per day, as well as any illicit drug use (yes/no). Mood history was assessed by questioning if the women had ever had a severe, impairing depressive episode lasting for two weeks or more (yes/no) and whether it was unipolar or bipolar. Levels of stress during pregnancy were rated by the participant from 1 (no stress) to 10 (severely stressed). Medication use was assessed by asking if antidepressants or benzodiazepines were currently or previously used (yes/no).

The subject's levels of introversion and neuroticism was quantified by subscales of the self-report Temperament and Personality Scale (Parker et al., 2006). The impact of life events was assessed by 47 items of the 79-item Life Events Questionnaire (LEQ) (Norbeck, 1984; Sarason et al., 1978) – with irrelevant or inappropriate items deleted (e.g. pregnancy and addition of a new family member). Participants were asked to record whether they experienced any of the events in the previous year and, if so, whether each event was essentially positive or negative (and whether it had 'no', 'some', 'moderate' or a 'great' effect; being respectively scored 0, 1, 2 or 3). Data were analyzed on the separate positive and negative impact scores. Mood levels were assessed using the Costello–Comrey Anxiety scale (Costello and Comrey, 1967) as well as the Depression, Anxiety and Stress (DASS) (Lovibond and Lovibond, 1995) state depression and anxiety subscales (for the previous week). The quality of interpersonal relationships was assessed using the Interpersonal Relationship Inventory (IPRI) (Tilden et al., 1994) which generates 'supportive relationship' and 'conflictual relationship' scores in relation to the individual's support figures (whether partner, family members or others).

We had two principal outcome measures of depression. Firstly, the first nine items of the ten-item Edinburgh Postnatal Depression Scale or EPDS (Cox et al., 1987). We elected to exclude the final self-harming question as those administering the EPDS were untrained in mental health crisis management and not necessarily able to provide the necessary services to women who might have affirmed this item. We imposed a cut-off score (then and postnatally) of 10 or more, reflecting judgments made by Matthey et al. (2006) that not only was this the cut-off score recommended by its developers (albeit for the 10-item measure) but had also been confirmed in other studies, while additionally optimizing sensitivity. Our second measure assessed whether they met DSM-IV criteria for major depression, assessed via the MINI International Neuropsychiatric Interview (Sheehan et al., 1998).

At follow up, food consumption, the quality of interpersonal relationships and outcome measures were again assessed. Additional information as to whether the baby had any settling problems (yes/no) was assessed during a telephone interview and participants were asked if they had commenced taking antidepressants (yes/no).

2.3. Baseline assessment

Participants were asked to complete a number of questionnaires, as detailed above and all participants were assessed for mood using both the EPDS and MINI via telephone interviews.

2.4. Follow-up assessments

The follow-up questionnaire was completed by study participants three months post-natally. Respondents were requested to