

Research report

Postnatal depression in Japanese women Detecting the early onset of postnatal depression by closely monitoring the postpartum mood

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Abstract

Objectives: The terminology and definition of mood disturbance during the early postpartum period has yet to be clearly elucidated among clinical practitioners. Criteria for maternity blues have not been well established, and it may overlap with the beginning of a postnatal depression. The aims of the present study, are firstly to survey the symptomatic features of mood disturbance in the very early postpartum period and secondary, to develop a guideline for detecting and predicting postnatal depression during the same period using a simple screening technique. **Subjects and methods:** Eighty-eight mothers recruited from a maternity ward for the prospective study completed the whole protocol. Two methods were used to survey the symptomatic features of mood disturbance; (1) interview and (2) self-report questionnaires. The interviews were carried out twice. At three weeks postpartum, the Schedule for Affective Disorder and Schizophrenia (SADS)/Research Diagnostic Criteria was administered, together with an interview of the symptoms of “maternity blues”. The SADS interview was re-administered at three months postnatally. Two self-report questionnaires addressing mood disturbance were administered: (1) Maternity Blues Scale; (Stein, 1980). (2) Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The Maternity Blues Scale was administered on the first five consecutive postnatal days. The EPDS was administered on the fifth day, one month and three months postnatally. In addition, the Life Event Scale (Burgha et al., 1985) was also administered at one month postnatally. Obstetric notes were also examined. **Results:** At the first interview, 12 mothers were diagnosed with postnatal depression and 10 of these had their onset within one week. At the second interview three additional mothers were newly diagnosed with depression. In all mothers, depression was detected at one month using the EPDS, with a cut-off of 8/9. The EPDS scores on the fifth postnatal day were also higher in the depressed mothers and could detect early onset of postnatal depression. **Conclusion:** The use of the EPDS during the early postnatal days, can be a simple and useful screening instrument for the onset of early postnatal depression. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Maternity blues; Postnatal depression; Early onset; EPDS; Japanese women

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1. Introduction

The terminology and definition of mood disturbance during the early postpartum period has not been clear-cut among clinical practitioners and there has been particular confusion/debate about a distinction between “maternity blues” and postnatal depression. So-called maternity blues which occur during the early postpartum period should be distinguished from other forms of mental disorder. According to most researchers maternity blues should remit within the first 10 days (Yalom et al., 1968; Pitt, 1973; Stein, 1980), while postnatal depression tends to occur at a relatively later period. It usually occurs a few weeks postnatally when maternity blues will already have remitted. “Maternity blues” are chiefly characterized by transient mood swing with low-spirited (Kennerley and Gath, 1989) or lability (Hapgood et al., 1988). Although “maternity blues” and postnatal depression may be distinguished in terms of onset and duration of symptoms, both conditions have similarity in their depressive symptomatology. As O’Hara et al. (1991) pointed out, there is a possibility that for some women, what is diagnosed as maternity blues may actually be the beginning of postnatal depression. Women who are recognized as having blues are not usually followed by medical staff. Owing to the lack of empirical data based on prospective studies, it is difficult to detect onset and to employ appropriate procedures for identifying depression during the early puerperium. For clinicians, the significant issue is whether they are able to discriminate or predict very early onset depression from a brief episode of mood disturbance like maternity blues. This is a clinically important issue because maternity blues is a self-remitting phenomenon which needs no intense medical treatment while postnatal depression needs to be detected and treated properly. A practical strategy is therefore required. The aim of this study was to carry out a prospective survey of the incidence, the onset and the correlates of maternity blues and postnatal depression in Japan. An additional goal was the development of an appropriate procedure for the detection of postnatal depression using a simple screening instrument.

2. Subjects, methods and materials

2.1. Subjects

2.1.1. Sampling

Subjects were recruited from mothers admitted for delivery to the maternity ward of Kyushu University Hospital from December 1994 to December 1996. One hundred and one consecutive admissions were asked to participate in the study and written informed consent was obtained from all. Eighty-eight mothers were interviewed over the telephone, first at three weeks and then at three months postnatally. The remaining 13 mothers were lost to follow-up (either they had moved, or in at least three cases returned to their mother’s homes for Satogaeri bunben¹).

2.1.2. Demographic characteristics of the sample

All of the subjects were married. The mean age of the subjects was 31 years (range; 19–41). Thirty-six mothers (41%) were primiparous. Twenty-eight mothers (32%) attended college or university. Social class was defined according to the Registrar General’s (1980) classification of partner’s occupations and divided into two groups: 68 (77%) were I, II, III non-manual and students; 20 (23%) were III, IV and V manual and unemployed.

Some Japanese authors regard the social support provided by the Satogaeri bunben as a protective factor against postnatal psychiatric disorder (Okano et al., 1991). Fifty-nine of 88 mothers (67%) delivered their babies with the support of Satogaeri bunben.

2.2. Methods

2.2.1. Instruments

The symptomatic features of mood disturbance were investigated by two types of instruments:

¹Satogaeri bunben is the traditional Japanese emotional and practical support system for mothers from their family of origin. At around 32–35 weeks gestation, many Japanese women return to their own family homes to give birth and receive support from their families, particularly their mothers. At about two months after delivery, they return to their marital homes to rejoin their husbands.

(1) **Diagnostic Interview:** Present psychiatric state was assessed on two occasions by telephone interviews at home by two psychiatrists using the Japanese translated version of the Schedule for Affective Disorders and Schizophrenia (SADS; Spitzer and Endicott, 1979; Hosaki et al., 1983). After the interview diagnosis was made based on Research Diagnostic Criteria (RDC; Spitzer et al., 1978). In addition, at three weeks postnatally External Criteria for maternity blues (Yamashita, 1994) were applied (see Appendix A). This instrument assesses the presence of symptoms usually recognized as characterizing maternity blues, and is administered in the style of the SADS/RDC.

(2) **Self-report questionnaires:**

(a) **The Maternity Blues Scale (Blues Scale; Stein, 1980).** A day-to-day self evaluation schedule is recommended for detecting maternity blues because of its transitory nature (Kennerley and Garth, 1989). The Blues Scale is a self-rating scale with 13 items, completed by mothers on each of the first five days after delivery. The sum of the scores for all 13 items provides the daily scores. Minimum and maximum total scores are 0 and 26, respectively, and a score of 8 or more usually signifies that a significant mood swing has occurred.

(b) **Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987).** The EPDS is a 10-item self-report scale. Each item is scored on a four-point scale (from

0 to 3), the minimum and maximum total scores being 0 and 30, respectively. The scale rates the intensity of depressive symptoms present within the previous seven days. Although in Western populations a score of 12/13 is regarded as indicative of postnatal depression (Cox et al., 1987; Harris et al., 1989; Murray and Carothers, 1990), among Japanese women a score of above 8 has been established as a cut-off point for depression (Okano et al., 1996).

(c) **Life Event Scale (Burgha et al., 1985).** Life stress covering the preceding 12 months was measured using the Life Event Scale at one month postnatally.

(d) In addition to these established self report questionnaires, a questionnaire covering perinatal complications and the experience of the delivery was administered. The questionnaire included items such as long labour (more than 12 h) and mothers' subjective experience of labour as being difficult. Further data regarding perinatal complications and mode of delivery were collected from the medical record database. All questionnaires used in the study were Japanese translated versions which had been back-translated.

2.2.2. Protocol (see Fig. 1)

On each of the first five days after delivery the Blues Scale was completed. On the fifth day, the

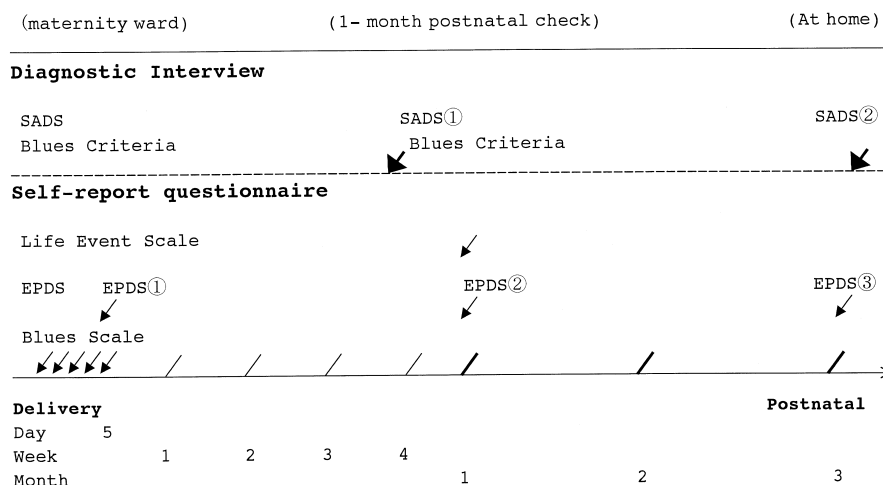


Fig. 1. Flow diagram of the study timetable.

EPDS and the perinatal questionnaire were also completed (EPDS 1).

At the end of the third postnatal week (days 22–28) the first telephone interview was carried out (three weeks interview: SADS 1). This timing was selected to include the onset of postnatal depression and to confirm the end of duration of maternity blues.

The second EPDS was completed at the routine one month postnatal check (EPDS 2) together with the Life Event Scale.

At three months postnatally the second telephone interview was undertaken (three months interview: SADS 2) and the EPDS was administered by mail (EPDS 3).

Past psychiatric history, demographic and personal history details were also collected during the telephone interview using the SADS Part II.

3. Results

3.1. Incidence of postnatal depression and timing of onset

As a result of the first telephone interview at three weeks postpartum, 21 (24%) of the 88 mothers were categorized as having had Maternity blues. Twelve (14%) were diagnosed as RDC depression cases (five with major depressive disorder, seven with minor depressive disorder). All these cases had an onset after delivery. Ten of the 12 mothers had an onset within one week postnatally (five major depressive disorder and five minor depressive disorder). The remaining two (both cases of minor depressive disorder) developed a depressive episode during the second week postnatally. By the time of the second interview at three months three women had newly

become depressed (two with a major depressive disorder and one with a minor depressive disorder). These three cases had their onset during the second month.

Fifteen (17%) of the 88 mothers were therefore categorized as RDC depression cases, seven with a major depressive disorder and eight with a minor depressive disorder, during the three months postnatal period. Six (one major depressive disorder and five minor depressive disorder) of the 15 mothers had already recovered by three months postpartum.

3.2. Demographic and clinical characteristics

Comparisons on demographic and clinical characteristics between the mothers who became depressed and those who remained well are summarized in Table 1. There were no differences in age, parity, educational level, social class and Satogaeri bunben.

Three mothers had a past history of psychiatric illness. Two of mothers who were not ill at the first interview had had other short-term (two week to one month) psychiatric disorders before the current pregnancy. One had an episode not related to child-birth and the other had an episode during the early puerperium of a previous child-birth. Their symptoms were mainly insomnia and tenseness. The unexpectedly small numbers of mothers with a psychiatric history did not allow for statistical analysis of differences between the two groups.

3.3. Psychological and obstetric stress

Measures of psychosocial and obstetric stress for mothers who became depressed and those who remained well are summarized in Table 2 together with the EPDS and Blues Scale results.

Table 1
Demographic characteristics of depressed and non-depressed subjects [mean (SD) and proportion (%)]

	Not ill (n = 73)	Depressed (n = 15)	Comparison
Age	32 (4.8)	29 (4.0)	ns
Parity (proportion of primiparous)	29/73 (40%)	7/15 (47%)	ns
Education level – college or university	24/73 (33%)	4/15 (27%)	ns
Social class – I, II, III-non manual vs. III-manual, IV, unemployed	56 vs. 17	12 vs. 3	ns
Past psychiatric history	2/73 (3%)	1/15 (7%)	ns
Satogaeri bunben	48/73 (66%)	11/15 (73%)	ns

Table 2

Life events, obstetric difficulties and early postpartum mood of depressed and non-depressed subjects [mean (SD) and proportion (%)]

	Not ill (<i>n</i> = 73)	Depressed (<i>n</i> = 15)	Comparison
Severe life event in 12 months before one month postpartum	20/61 (33%)	5/15 (33%)	ns
Long labor (more than 12 h)	6/73 (8%)	2/15 (13%)	ns
Delivery by forceps or Caesarean section	25/73 (34%)	3/15 (20%)	ns
Subjective experience of labour as difficult	17/73 (23%)	2/15 (13%)	ns
EPDS on fifth day postnatally (EPDS 1)	4.6 (2.9)	11.7 (4.6)	<i>t</i> = 6.69 <i>df</i> = 80 <i>P</i> < 0.0001
Blues score (maximum total score in the first five postnatal days)	5.3 (3.5)	11.9 (4.6)	<i>t</i> = 6.35 <i>df</i> = 86 <i>P</i> < 0.0001

3.3.1. Life events

There were no differences in the occurrence of severely stressful life events in the previous 12 months between mothers who became depressed and those who remained well.

3.3.2. Obstetric factors

There were no differences in perinatal complications. Depressed mothers were rather more likely to have had labours lasting longer than 12 h, but less likely to have had an obstetric intervention, either forceps delivery or Caesarean section, and less likely to report their experience of labour as difficult than well mothers, although there were no statistically significant differences in these variables.

3.3.3. Maternity Blues Scale and the EPDS at the fifth postnatal day

The self-report scales of both maternity blues and depression demonstrated higher scores in the mothers who were subsequently diagnosed, using the SADS/RDC as suffering from depression during three months. According to Stein's criterion 31 mothers

(35%) were categorized as suffering from maternity blues. Fifteen mothers who subsequently became depressed during three months had significantly higher maximum blues scores than those who remained well. Thirteen of the 15 mothers scored eight points or above on the Blues Scale and fulfilled Stein's criterion.

Mothers who were subsequently diagnosed as suffering from depression had significantly higher EPDS scores than those who remained well. Nineteen mothers had an EPDS score above 8 on the fifth day postnatally. Ten of 12 mothers who were diagnosed as depression at three weeks interview had an EPDS score above 8 on the fifth day postnatally.

3.4. Sensitivity and specificity of the EPDS when used with Japanese women

EPDS mean scores at one month and three months postnatally are shown in Table 3. At one month postnatally there was a highly significant difference between women who had a depression (both major and minor depressive disorders) as diagnosed at three

Table 3

EPDS scores of depressed and non-depressed subjects at one month and three months postnatally [mean (SD)]

Timing of assessment	Not ill	Depressed	Comparison
One month postnatal (EPDS 2)	4.0 (2.5) <i>n</i> = 64	11.3 (4.2) <i>n</i> = 11	<i>t</i> = 8.65 <i>df</i> = 73 <i>P</i> < 0.0001
Three months postnatal (EPDS 3)	3.3 (2.0) <i>n</i> = 71	11.0 (4.1) <i>n</i> = 15	<i>t</i> = 11.51 <i>df</i> = 84 <i>P</i> < 0.0001

weeks interview and those who did not. At three months postnatally differences in EPDS scores were also significant.

Table 4 shows the sensitivity and specificity of the EPDS administered at one month postnatally, using different cut-off points (13 data missing). At a cut-off score of ≤ 9 the sensitivity of the EPDS was 82%, and its specificity was 95%.

Table 5 shows how well individual items of the EPDS (at one month postnatally) discriminated between women who were depressed and those who were not. Two items did not discriminate. Reports of the feeling of self-blame and not coping were common, both in mothers who were depressed and in those who were not. Three items, difficulty sleeping, crying and thoughts of self-harm were both sensitive and specific for depressed women.

Additionally there was no statistically significant difference in EPDS scores on the fifth day, one month and three months postnatally between major and minor depressive disorder.

3.5. Usefulness of the EPDS on the fifth postnatal day for the prediction of postnatal depression

Both the Blues Scale and the EPDS could predict depression at three weeks interview at their recommended cut-off points (Sensitivity; Blues scale 83%, EPDS 83%). The EPDS is more specific for depression (Specificity; Blues scale 72%, EPDS 87%). Odds ratios for the appearance of postnatal depression at three weeks are Blues scale: 13 and the EPDS: 33, respectively.

All three cases with relatively later onset (two major depressive disorder, one minor depressive disorder) had Blues scale score 8 or above. Two of

Table 5

Discriminating power of individual EPDS items in a Japanese sample at one month postnatally^a

	RDC case		Significance
	Yes	No	
1. Less able to laugh	4/11	3/64	$\lambda^2 = 11.130, P = 0.0008$
2. Less enjoyment	4/11	3/64	$\lambda^2 = 11.130, P = 0.0008$
3. Self blame	12/12	55/64	ns
4. Anxious/worried	11/11	32/64	$\lambda^2 = 9.593, P = 0.0020$
5. Scared/panicky	9/11	21/64	$\lambda^2 = 9.393, P = 0.0022$
6. Not coping	10/11	57/64	ns
7. Difficulty sleeping	7/11	8/64	$\lambda^2 = 15.341, P < 0.0001$
8. Sad/miserable	9/11	22/64	$\lambda^2 = 8.713, P = 0.0032$
9. Crying	10/11	5/64	$\lambda^2 = 33.861, P \leq 0.0001$
10. Self-harm thought	8/11	6/64	$\lambda^2 = 24.814, P \leq 0.0001$

^a Proportion of women reporting symptoms (scoring greater than 0).

these three cases had an EPDS score below nine. Including these cases the EPDS predicts depression during three months postnatally with lower sensitivity and odds ratio (sensitivity 73%, specificity 88%, Odds ratio 20).

4. Discussion

4.1. Educational level and social background

Virtually all the women in this study had achieved at least secondary school education. Twenty-eight mothers (32%) progressed to colleges or universities. In Japan the proportion of female students who go on to colleges or universities is 49% (The Ministry of Education, Science, Sports and Culture, Japanese Government, 1997). Our subjects had a lower educational level than both the average populations in

Table 4

Sensitivity and specificity of EPDS in a Japanese sample at one month postnatally^a

EPDS (one month)	RDC case		Sensitivity/specificity (%)
	Yes	No	
12	6/11	1/64	55/98
10	8/11	1/64	73/98
9	9/11	3/64	82/95
8	9/11	4/64	82/94
6	10/11	10/64	91/84
4	11/11	21/64	100/67

^a Proportion of women categorized as cases of depression at different total score cut-offs.

Japan and Yoshida et al.'s sample of Japanese mothers living in England (1997). There were no significant differences in the educational level and social background of the mothers who became depressed and those who remained well. Our sample had the same morbidity levels of maternity blues and postnatal depression as that of Yoshida et al. (1997). Her subjects were Japanese women, the majority of whom were wives of Japanese businessman, living in England. They had a significantly higher educational level and social background than either our subjects or the average population in Japan reported by white paper. The results suggest that neither educational level nor social background have much impact on the morbidity of maternity blues and postnatal depression.

4.2. Incidence and timing of onset of maternity blues and postnatal depression

Few studies of postnatal depression among Japanese women in Japan have been published and even fewer have used the SADS interview for diagnostic purposes (e.g., Aoki et al., 1989; Okano et al., 1996). The incidence of postnatal depression following childbirth in this study is 14% assessed at three weeks postnatally (Major Depressive Disorder; 6%, Minor Depressive Disorder; 8%) and 17% during three months postnatally (Major Depressive Disorder; 8%, Minor Depressive Disorder; 9%). This is higher than found in other studies cited above (Aoki et al.; total 9.3%, Major: 2.8%, Minor: 6.5%, Okano et al.; total 8.6%, Major: 4.3% Minor: 4.3%). A study of Japanese women in England using the same methodology (Yoshida et al., 1997) also demonstrates a similar incidence (total 12%, Major: 6% and Minor: 6%) at three months as our result in spite of the difference in socio-cultural environment. In comparison to the preceding studies in Japan, both the present results and Yoshida et al.'s are similar to the incidence in the West (Cox et al., 1993; Kumar and Robson, 1984; O'Hara et al., 1984; Cooper et al. 1988; Murray and Carothers, 1990).

When Yamashita's external criteria for maternity blues (Appendix A) were applied, the incidence of maternity blues was 24%. Handley et al. (1980) also developed a set of external criteria for maternity blues modeled after SADS assessment of depression.

When applied by O'Hara et al. (1990) in a prospective study of postpartum mood disorder in US, the incidence of maternity blues was 26%. This is very similar to our result, even though several symptoms in the criteria differ.

By Stein's criterion 31 mothers (35%) had maternity blues (see Section 3.3.3 above). This incidence was similar to another study using self-report questionnaire in Japan (Okano et al., 1991) and lower than observed in the UK (e.g., Stein, 1980; Pitt, 1973).

4.3. The relationship between maternity blues and postnatal depression

Several studies suggest that maternity blues might predict postnatal depression (Kendell et al., 1981; Paykel et al., 1980; Hapgood et al., 1988; O'Hara et al., 1991; Hannah et al., 1992). According to Stein's criterion 31 mothers (35%) were considered to have maternity blues in the present study. Thirteen of these 31 mothers (42%) were subsequently depressed during the three months postpartum period. Interestingly 13 of the 15 mothers who were depressed (87%) were detected as maternity blues by Stein's criterion. These results show that a strong relation between maternity blues and postnatal depression.

If the EPDS could be applied for the assessment of dysphoria at three different times (the fifth day, three weeks and three months postnatally), the link between early maternal dysphoria (Hannah et al., 1992) and postnatal depression might be demonstrated more clearly. Patients scoring nine points or above on the fifth day postnatally were 33-times more likely to be diagnosed as depressed at three weeks postnatally than those with a score below nine points (odds ratio 33). Patients scoring nine or above at the fifth day postnatally were approximately 20-times more likely to be diagnosed as depressed during the three postnatal months than those with a score below nine points (odds ratio 20). This link has already been demonstrated by other authors comparing EPDS score between the fifth day and six weeks postnatally (Hannah et al., 1992). However this study did not investigate about the relation between early maternal dysphoria and the onset of postnatal depression.

The present study demonstrated that 10 out of 15 depressed mothers (67%) already had depressive symptoms within one week postnatally. All of these mothers had an EPDS score above eight. Similarly O'Hara (1986) demonstrated that half of the women in his study who experienced a major or minor depression during the first nine weeks postpartum developed symptoms within one week of delivery. In other words, the link between early maternal dysphoria and depression at one month and three months shown by EPDS longitudinal ratings might be reflecting the course of postnatal depression. This link also suggests that there is an overlap between the maternity blues and the onset of postnatal depression. One of the clinical implications of this finding is that if women with maternity blues were followed up for longer periods of time, fewer cases of postnatal depression would be overlooked.

4.4. Measuring instrument and timing of use for detecting and predicting postnatal depression

The EPDS is a well-established instrument for screening for postnatal depression with a recommended cut-off point of 12/13 (Cox et al., 1987; Harris et al., 1989; Murray and Carothers, 1990; Holden, 1991; Webster et al., 1994; Boyce et al., 1993). Recent validation studies in other cultures suggested a lower cut-off point of 10/11 (Lundh and Gyllang, 1993; Jadresic et al., 1995; Guedeney et al., 1995; Zekowitz and Tamara, 1995; Areias et al., 1996; Wickberg and Hwang, 1996; Ghubash et al., 1997). This lower cut-off point is still high for Japanese women both those living in Japan (Okano et al., 1996) and in England (Yoshida et al., 1997). In our study at one month postpartum, an appropriate cut-off point was 8/9. Our findings also suggest that the EPDS might be of use in screening Japanese women in Japan in one month postnatal clinics with a cut-off point of 8/9.

In Yoshida et al.'s (1997) study using the same methodology, the EPDS scores were lower and sensitivity was 25% at the cut off point of 8/9. Lower EPDS scores in Japanese women than in Western women (Okano et al., 1996; Yoshida et al., 1997) may arise from the likelihood that Japanese women are less likely to express their feelings than Western women (Yoshida et al., 1997). The differ-

ence in EPDS scoring found between Japanese women who lived in England (Yoshida et al., 1997) and two other studies conducted in Japan amongst Japanese women (Okano et al., 1996 and the present study) may be related to the difference in socioeconomic levels between women in Yoshida et al.'s study in England and the other two studies conducted in Japan.

We administered two instruments in the very early puerperium; the Blues Scale and the EPDS. Both instruments could predict depression at three weeks postnatally but the EPDS is more specific for depression. This difference might arise from the different symptom profiles of the two scales; the Blues Scale includes somatic symptoms while the EPDS exclusively consists of cognitive or emotional symptoms related to depression. From these results we may suggest that the EPDS would be an appropriate screening instrument for easy detection of the onset of postnatal depression in the very early puerperium.

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Appendix A

A.1. External criteria for maternity blues

(A) All of the following symptoms have been present and have remitted within the same two week period. The onset was between the first day and fifth day postnatally.

(1) Tearfulness; feeling like crying without specific reasons and actual crying (for a few minutes).

(2) Depressed mood, as indicated by either subjective report or observation made by others

(B) Two of the following symptoms have been present within the same two week period. The onset is between the first day and fifth day postnatally.

- (1) Anxiety
- (2) Tenseness
- (3) Restlessness
- (4) Fatigue or loss of energy
- (5) Poor appetite
- (6) Poor concentration

(C) The symptoms do not meet criteria for Major or Minor Depressive Disorder, Intermittent Depressive Disorder, Cyclothymic Personality, Labile personality, Antisocial personality, Alcoholism Bipolar Disorder, Panic Disorder, Generalized Anxiety Disorder, Obsessive–Compulsive Disorder, Phobic Disorder, Briquet's Disorder, Eating Disorder, Schizophrenia, Schizo-Affective Disorder, Unspecified Functional Psychosis.

(D) The symptoms are not due to the direct physiological effects of substance abuse or a general medical condition.

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