Tilburg University

Prediction of depression in the postpartum period

Verkerk, G.J.M.; Pop, V.J.M.; van Son, M.J.; van Heck, G.L.

Published in:
Journal of Affective Disorders

Publication date:
2003

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
Verkerk, G. J. M., Pop, V. J. M., van Son, M. J., & van Heck, G. L. (2003). Prediction of depression in the postpartum period: a longitudinal follow-up study in high-risk and low-risk women. *Journal of Affective Disorders*, 77, 158-166.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Research report

Prediction of depression in the postpartum period: a longitudinal follow-up study in high-risk and low-risk women

Gerda J.M. Verkerk^{a,*}, Victor J.M. Pop^a, Maarten J.M. Van Son^b, Guus L. Van Heck^a

^aDepartment of Psychology and Health, PO Box 90153, Tilburg University, 5000 LE, Tilburg, The Netherlands

^bUtrecht University, Utrecht, The Netherlands

Received 23 January 2002; received in revised form 26 April 2002; accepted 13 May 2002

Abstract

Aim: The present study investigates both the antenatal prediction of the occurrence of depression during the first year postpartum and the course of depression in populations at different degrees of risk. **Methods:** In a population-based prospective study, 1618 women were screened during mid-pregnancy for risk factors with regard to depression. High-risk and low-risk women were identified, and depression (Research Diagnostic Criteria, RDC) was assessed at 32 weeks gestation and at 3, 6, and 12 months postpartum. **Results:** In the high-risk group ($n=97$), 25% of the women were depressed during the first year postpartum compared to 6% of the low-risk women ($n=87$). At 3 months postpartum, significantly more high-risk (17%) than low-risk women (1%) were depressed. While prevalence rates decreased after 3 months postpartum in the high-risk group, no significant fluctuations of prevalence rates were found in the low-risk group. Two risk factors were independently predictive of depression during the postpartum period: a personal history of depression, and high depressive symptomatology during mid-pregnancy. **Conclusions:** Women at high risk and low risk for depression during the early postpartum period can be detected during pregnancy. High-risk women were only at particular risk during the first 3 months postpartum.

© 2002 Elsevier B.V. All rights reserved.

Keywords: Postpartum depression; Pregnancy; Prediction; Edinburgh Postnatal Depression Scale (EPDS); Research Diagnostic Criteria (RDC)

1. Introduction

The prevalence rate of postpartum depression in Western countries is 10–15% (O'Hara and Swain, 1996; Beck and Gable, 2001). In non-Western countries prevalence rates range from 5 to 60% (Lee et al., 1998; Cooper et al., 1999; Affonso et al., 2000),

indicating that populations differ considerably in terms of risk (Henshaw, 2000). As maternal depressive symptoms may have an impact on both infant and family, continued exploration of the prevalence and degree of postpartum depressive symptomatology is important (Affonso et al., 2000). In particular, for accurate prevention, diagnosis, and treatment, more information is needed about the differences between populations with various degrees of risk in the prevalence and course of postpartum depression.

* Corresponding author. Tel.: +31-13-466-8169.

E-mail address: g.j.m.verkerk@kub.nl (G.J.M. Verkerk).

Psychosocial risk factors for postpartum depression have been identified: past history of psychopathology, psychological disturbance during pregnancy, poor relationship between the parents during childhood, poor marital relationship, low self-esteem, low socioeconomic status, low social support, stressful life events, and unwanted pregnancy (Kumar and Robson, 1984; O'Hara and Swain, 1996; Bernazzani et al., 1997; Rigetti-Veltema et al., 1998; Da Costa et al., 2000; Beck, 2001; Logsdon and Usui, 2001). Furthermore, studies have indicated that a family history of depression is a risk factor for postpartum depression (O'Hara et al., 1984; Watson et al., 1984; Campbell et al., 1992).

Although Appleby et al. (1994) were not successful in antenatal differentiation between women at different degrees of risk for postpartum depression, others were. Cooper et al. (1996) developed a predictive index of risk factors for postpartum depression at 6–10 weeks postpartum. Nielsen Forman et al. (2000) produced a similar index for depressive symptomatology at 4 months postpartum. However, for populations at different degrees of risk, the course of depression during the first year postpartum is not known, predominantly due to the fact that earlier research has only assessed depression on one single occasion, and only took into account a follow-up period covering the first months postpartum.

The present study investigates whether the occurrence of depression during the first year postpartum can be predicted during mid-pregnancy, and examines the course of depression in populations at different degrees of risk. This paper describes a longitudinal follow-up study in a large community sample of pregnant women in the Netherlands. Risk factors were assessed during mid-gestation. Subsequently, women with high-risk and low-risk profiles were defined and followed up during the first year postpartum involving assessment of depression at three different measurement points.

2. Method

2.1. Measures

2.1.1. High risk and low risk for depression

A risk profile of depression was a priori defined as follows: (i) poor relationship between the parents

during the participant's childhood, (ii) family history (first degree) of depression, (iii) personal history of depression, or (iv) high depressive symptomatology during mid-pregnancy (>11 on the Edinburgh Postnatal Depression Scale; EPDS). Women who reported positive on one of these four risk factors were assigned to the high-risk group. Those reporting none of the first three risk factors and low depressive symptomatology ($EPDS < 8$) were assigned to the low-risk group.

For mid-pregnancy screening a questionnaire was used that covered sociodemographic (e.g. age, marital status) and obstetrical data (e.g. weeks of pregnancy, parity) in the first part. In the second part the first three risk factors were each represented by a single item with a two-point response scale ('yes' vs. 'no') as follows: (i) Did your parents have a good relationship when you lived at home (before your 16th birthday)?, (ii) Did anyone in your family (father, mother, brothers or sisters) suffer from depression?, and (iii) Did you ever suffer from depression during your life? In the last part, the fourth risk factor (depressive symptomatology) was assessed by means of the EPDS (Cox et al., 1987). The EPDS is a 10-item self-report scale. Each item is scored from 0 to 3, according to the increasing severity of the symptoms. It has good psychometric properties (Cox et al., 1987, 1996; Leverton and Elliott, 2000) and has been validated in the Netherlands (Pop et al., 1992). In the present study a cut-off of 12 was used to define 'high depressive symptomatology', representing an adequate level of specificity while avoiding the more extreme cut-offs as suggested by Green and Green (1994). Although there is a risk of missing some cases (Guedeny et al., 2000), a cut-off of 12 avoids inclusion of too many women who are not at high-risk. A score of less than 8 defined 'low symptomatology' (Cox et al., 1987).

2.1.2. Postpartum depression

Postpartum depression (major and minor) was assessed in the context of a semi-structured interview using the Research Diagnostic Criteria (RDC; Spitzer et al., 1978).

2.2. Participants

A total of 2157 women, who visited an obstetrician or midwife for antenatal care, were invited to

complete a questionnaire concerning risk factors for depression. They were recruited from two hospitals and four midwifery practices in the southern part of the Netherlands.

A total of 1618 (75%) women returned the questionnaire, and, of these 1162 (72%) were eligible for further participation: Dutch speaking with a term of 20–30 weeks pregnancy, living in the region, and having returned a fully completed questionnaire. Of these, 1031 (89%) women consented to participate in a follow-up study during pregnancy (Fig. 1).

Within this group of participants ($n = 1031$), high-risk and low-risk women were identified on the basis of the screening. Of those in the high-risk group ($n = 435$), 124 randomly selected women consented to continue to participate in this study on postpartum depression. A total of 20 high-risk women (16%)

dropped out postpartum, and some data were missing for seven high-risk women. Of the 103 randomly selected women in the low-risk group ($n = 478$), ten women (10%) dropped out during the postpartum period. In the case of six low-risk women, some data were missing.

All data were available for 97 high-risk and 87 low-risk women, and analyses involved these participants. Sample characteristics are presented in Table 1. Women who dropped out of the study did not differ significantly from those who did not with regard to demographic characteristics.

2.3. Procedure

Based upon screening at 20–30 weeks pregnancy (mean: 25 weeks) high-risk and low-risk women were defined. Interviews at home followed at 32 weeks pregnancy and 3, 6, and 12 months postpartum. Using the RDC, depression was assessed in a semi-structured interview, during which the assessor was blinded to the high-risk or low-risk status of the participants. Interviewers were advanced psychology students who were extensively trained in the specific diagnostic interview and who were monitored and supervised every 2 weeks by the first and third authors of this study. The protocol was approved by the Medical Ethical Committees of the St Joseph Hospital, Veldhoven and the Two Cities Hospital, Tilburg. The design of the study and the number of women visited at each measurement point are shown in Fig. 1.

2.4. Statistical analyses

Differences in demographic variables between the high-risk and low-risk group were tested using chi-square tests, t -tests, and Mann–Whitney U -tests. Differences in prevalence rates between the groups were investigated by chi-square tests. Multiple logistic regression analyses were used to test whether the four risk factors played an independent role in the prediction of postpartum depression. A minimum of 78 women in each group would be required to detect a difference of 20% ($\alpha = 0.05$, $1 - \beta = 0.9$) in the point-prevalence of depression between the high-risk and low-risk group (Pocock, 1995).

Fig. 1. Design of the study and number of women interviewed at each assessment point. A total of 87 low-risk and 97 high-risk women were visited at each assessment point. ^a1031 of 2157 (48%) women were eligible; ^b478 of 1031 (46%) women were identified as low-risk; ^c435 of 1031 (42%) women were identified as high-risk.

Table 1
Demographic characteristics

Variable	High-risk sample, <i>n</i> = 97	Low-risk sample, <i>n</i> = 87
<i>Age (years)</i>		
Mean (S.D.)	30.5 (4.0)	30.7 (4.0)
Range	19–39	22–43
<i>Educational level</i>		
Low (%)	41.2	24.4
Middle (%)	33.0	48.8
High (%)	25.8	26.7
<i>Marital status</i>		
With partner (%)	94.8	92.0
Divorced (%)	1.1	1.1
Single (%)	4.1	6.9
<i>Parity</i>		
Primiparous (%)	47.4	49.4
Multiparous (%)	52.6	50.6
<i>Risk factors</i>		
Personal history of depression (%)	62.9	
Family history of depression (%)	44.3	
Relationship problems between subject's parents (%)	39.2	
High depressive symptomatology during pregnancy (%)	33.0	

3. Results

3.1. Sample characteristics

From Table 1, it can be seen that there were no significant differences between the high-risk and low-risk group with regard to demographic characteristics.

In the high-risk group, the most commonly reported risk factor (63%) was a personal history of depression (Table 1). Moreover, in the high-risk group, 47% of the participants reported only one risk factor, 35% a combination of two factors, and 18% a combination of three or more factors. A total of 75% of the women in the high-risk group reported a personal history of depression and/or high depressive symptomatology during pregnancy. Of all women screened during pregnancy (*n* = 1618), 21% reported a personal history of depression, 14% a family history of depression, 14% relationship problems between the parents during subject's childhood, and 14% high depressive symptomatology during pregnancy. Furthermore, 29% of the women reported a personal

history of depression and/or high depressive symptomatology during pregnancy, 56% reported no risk factors at all in combination with low depressive symptomatology (EPDS < 8), and 15% reported no risk factors and moderate depressive symptomatology (EPDS 8–11).

3.2. Incidence and prevalence of depression

3.2.1. High-risk women

At 32 weeks pregnancy, 21 high-risk women (22%) were depressed according to the RDC. The incidence of postpartum depression, i.e. the percentage of new cases during the first year postpartum, was 17% (13 of 76 women who were not depressed antenatally). The year prevalence was 25%: 24 high-risk women were depressed at one or more measurement points during the first year postpartum. Of these, 15 (62.5%) were depressed at one measurement point only, six (25%) were depressed at two measurement points, and three (12.5%) were depressed at three measurement points. Moreover, of

the 24 depressed high-risk women, 11 (46%) were also depressed during pregnancy. Of the 13 postpartum depressed high-risk women who were not depressed antenatally, ten (76.9%) were new cases at 3 months postpartum, two (15.4%) at 6 months postpartum, and only one woman (7.7%) was a new case at 12 months postpartum.

The point-prevalence rates of depression (major and minor) in the high-risk group are presented in Fig. 2. The highest point-prevalence (17.5%) of postpartum depression was found at 3 months. Of the women depressed at 3 months postpartum, 41% had also been depressed during pregnancy. The point-prevalence dropped to 11.3% at 6 months and to 8.2% at 12 months postpartum. Point-prevalence rates for major depression were 7.2, 5.2 and 4.1%, at 3, 6 and 12 months postpartum, respectively. Point-prevalence rates for minor depression were 10.3, 6.2 and 4.1%, respectively.

3.2.2. Low-risk women

At 32 weeks pregnancy, two women from the low-risk group (2.3%) were depressed. The incidence of postpartum depression was 4.7% (four of 86 women who were not depressed antenatally). The year prevalence was 5.7%: a total of five women were depressed at one or more measurement points during the postpartum. Of the five postpartum depressed women, four (80%) were only depressed at one measurement point, and one (20%) was depressed at three measurement points.

Only one of the five women depressed during the postpartum was depressed during pregnancy. In this group, the point-prevalence did not fluctuate significantly during the first postpartum year (Fig. 2). Only one woman met the criteria for major depression at 3 months as well as at 12 months postpartum; all four others met the criteria for minor depression.

Fig. 2. Proportion of women depressed (RDC) in the high-risk and low-risk groups at 3, 6 and 12 months postpartum.

3.2.3. High-risk versus low-risk women

There was a significant difference between the high-risk and low-risk women with respect to the incidence of depression (χ^2 (1, $n=161$) = 6.53, $P<0.05$) and to the year prevalence (χ^2 (1, $N=184$) = 12.46, $P<0.001$). At 3 months postpartum, the point-prevalence of depression was significantly higher in the high-risk compared to the low-risk women: 17.5 versus 1.1%, respectively (χ^2 (1, $N=184$) = 13.94, $P<0.001$). No significant differences in point-prevalence were found at 6 or 12 months postpartum. In order to control for depression during late pregnancy, analyses were repeated excluding women diagnosed as depressed during pregnancy. Again, only at 3 months postpartum, was the point-prevalence of depression significantly higher in the high-risk ($n=76$) compared to the low-risk women ($n=85$): 13.2 versus 1.2%, respectively (χ^2 (1, $N=161$) = 9.05, $P<0.05$).

3.3. Prediction of depression

3.3.1. Postpartum

Logistic regression analysis of the high-risk group data revealed two risk factors, each independently related to the year prevalence of depression during the postpartum period: personal history of depression (OR: 4.5, 95% CI: 1.32–15.64, $P=0.017$), and high depressive symptomatology during pregnancy (OR: 2.9, 95% CI: 1.07–8.04, $P=0.036$).

Of the postpartum depressed women in the high-risk group 83% reported a personal history of depression, compared to 56% of those who were not depressed (χ^2 (1, $n=97$) = 5.7, $P<0.05$). A total of 50% of the postpartum depressed women reported high depressive symptomatology during pregnancy compared to 28% of those who were not depressed (χ^2 (1, $N=97$) = 4.17, $P<0.05$). All postpartum depressed women in the high-risk group reported at least one of the following risk factors: personal history of depression or high depressive symptomatology during pregnancy.

3.3.2. Pregnancy

Logistic regression analysis shows that, of the four risk factors, only high depressive symptomatology at 25 weeks pregnancy was related to depression at 32 weeks pregnancy. Interestingly, a personal history of depression did not predict depression

during pregnancy. A total of 62% of the women who were depressed at 32 weeks pregnancy reported high depressive symptomatology 7 weeks earlier, compared to 25% of the non-depressed women.

4. Discussion

Prediction during mid-pregnancy of the occurrence of postpartum depression depends on the time of assessment of depression postnatally.

Our results confirm and extend those obtained by Cooper et al. (1996) and Nielsen Forman et al. (2000): we found that differentiation between women at high and low risk of postpartum depression proves to be possible. In addition, the present study shows that differentiation is limited to depression in the early 3-month postpartum period, excluding the later 6- and 12-month period. The decrease in prevalence rates of depression in the high-risk group may be due to recovery over time of women depressed during mid-pregnancy. However, even when controlled for depression during late pregnancy, it was found once again that differentiation was only possible at 3 months postpartum. The findings may indicate that the etiology of depression in high-risk and low-risk women may be different during the early postpartum period. Stress associated with pregnancy and birth may enhance the development of depression, but only for women highly vulnerable for depression.

In this study, the highest point-prevalence rates of postpartum depression in the high-risk group were observed at 3 months postpartum. While the point-prevalence rates in the high-risk group decreased after 3 months postpartum, no significant fluctuations of point-prevalence rates were seen in the low-risk group. Moreover, of the high-risk women who became depressed during the first year postpartum and who were not depressed during pregnancy, 77% were new cases at 3 months postpartum. These findings indicate that, in women who are vulnerable to depression, there is an increased risk shortly after delivery, confirming other studies in community samples which reported an increased risk of depression in the first 3 months after childbirth (Cooper et al., 1988; Cox et al., 1993; Pop et al., 1993; Areias et al., 1996). In contrast, other authors found no relationship between childbirth and the timing of the onset of depression

(Nott, 1987; Ballard et al., 1994). An explanation for the discrepancies in the results of earlier studies could be the different degrees of risk in the various samples of respondents.

In accordance with other studies, high depressive symptomatology during pregnancy and a personal history of depression proved to be the most important predictors of postpartum depression (Cooper et al., 1996; O'Hara and Swain, 1996). These two predictors may suggest a predisposition for the development of depression.

Moreover, the present results, in line with earlier studies (Da Costa et al., 2000; Josefsson et al., 2001), show that two groups of postpartum depressed women could be distinguished: women who were also depressed during late pregnancy, and women who were not depressed during late pregnancy. Risk factors may predict differentially postpartum depression with pre- or postpartum onset. This could be important for improving the predictive ability of the risk profile, specifically for detecting high-risk women.

Point-prevalence rates at 3 months postpartum were 1% for the low-risk and 17% for the high-risk women. Up to now, there have been no figures published of the prevalence rates of postpartum depression in high-risk and low-risk women. An earlier prospective study of a community sample in the Netherlands found a mean point-prevalence of 9.7% of depression during the first 9 months postpartum, with a peak at 10 weeks postpartum (Pop et al., 1993).

Recently, a large study on international prevalence rates reported sizeable differences in levels of depressive symptomatology throughout different countries (Affonso et al., 2000). However, in that study, women with a history of depression and women with a history of depression therapy during the last 12 months were excluded. It should be noted that, in the current study, these were the women at increased risk. Therefore, on the basis of the results of the present study, it can be hypothesised that prevalence rates reported in the study of Affonso et al. (2000) would have been much higher if those women had not been excluded. The present findings suggest the importance of the distribution of risk factors in the population and the time of assessment of symptomatology during the postpartum.

Obviously, a minority (25%) of the women, identified during pregnancy as being at high-risk, actually

developed depression during the first postpartum year. With regard to the total population screened, almost one-third (29%) presented with either one or both of the most important risk factors: a personal history of depression and high depressive symptomatology during pregnancy. In addition, 56% of the general population was identified as low-risk, and of these, almost no women developed an episode of depression. So, by applying these two risk factors in a simple screening instrument during pregnancy, high-risk women who need to be screened during pregnancy as well as postpartum can be differentiated from low-risk women who do not require this special attention and care for depression. Early screening on the risk factors for depression could contribute to early diagnosis and therefore to appropriate treatment. It provides the opportunity to prevent depression in the postpartum period. This assessment only takes 5 min to complete and can easily be implemented during antenatal care at the obstetrical practice.

In conclusion, women at high-risk and low-risk for depression during the early postpartum period can already be identified during mid-pregnancy. Women with a personal history of depression and with high depressive symptomatology during the second trimester of pregnancy are at increased risk for depression, especially at 3 months after delivery.

References

- Affonso, D.D., De, A.K., Horowitz, J.A., Mayberry, L.J., 2000. An international study exploring levels of postpartum depressive symptomatology. *J. Psychosom. Res.* 49, 207–216.
- Appleby, L., Gregoire, A., Platz, C., Prince, M., Kumar, R., 1994. Screening women for high risk of postnatal depression. *J. Psychosom. Res.* 38, 539–545.
- Areias, M.E.G., Kumar, R., Barros, H., Figueiredo, E., 1996. Comparative incidence of depression in women and men, during pregnancy and after childbirth. *Br. J. Psychiatry* 169, 30–35.
- Ballard, C.G., Davis, R., Cullen, P.C., Mohan, R.N., Dean, C., 1994. Prevalence of postnatal psychiatric morbidity in mothers and fathers. *Br. J. Psychiatry* 164, 782–788.
- Beck, C.T., 2001. Predictors of postpartum depression. *Nurs. Res.* 50, 275–285.
- Beck, C.T., Gable, R.K., 2001. Further validation of the Postpartum Depression Screening Scale. *Nurs. Res.* 50, 155–164.
- Bernazzani, O., Saucier, J., David, H., Borgeat, F., 1997. Psychosocial predictors of depressive symptomatology level in postpartum women. *J. Affect. Disord.* 46, 39–40.

- Campbell, S.B., Cohn, J.F., Flanagan, C., Popper, S., Meyers, T., 1992. Course and correlates of postpartum depression during the transition to parenthood. *Dev. Psychopathol.* 4, 29–47.
- Cooper, P.J., Campbell, E.A., Day, A., Kennerly, H., Bond, A., 1988. Non-psychotic psychiatric disorder after childbirth. A prospective study of prevalence, incidence, course and nature. *Br. J. Psychiatry* 152, 799–806.
- Cooper, P.J., Murray, L., Hooper, R., West, A., 1996. The development of a predictive index for postpartum depression. *Psychol. Med.* 26, 627–634.
- Cooper, P.J., Tomlinson, M., Schwartz, L., Woolgar, M., Murray, L., Moltenao, C., 1999. Post-partum depression and the mother–infant relationship in a South African peri-urban settlement. *Br. J. Psychiatry* 175, 554–558.
- Cox, J.L., Holden, J.M., Sagovsky, R., 1987. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *Br. J. Psychiatry* 150, 782–786.
- Cox, J.L., Murray, D., Chapman, G., 1993. A controlled study of the onset, duration and prevalence of postnatal depression. *Br. J. Psychiatry* 163, 27–31.
- Cox, J.L., Chapman, G., Murray, D., Jones, P., 1996. Validation of the Edinburgh Postnatal Depression Scale (EPDS) in non-postnatal women. *J. Affect. Disord.* 39, 185–189.
- Da Costa, D., Larouche, J., Dritsa, M., Brender, W., 2000. Psychosocial correlates of prepartum and postpartum depressed mood. *J. Affect. Disord.* 59, 31–40.
- Green, J.M., Green, D., 1994. The use of the Edinburgh Postnatal Depression Scale in research to explore the relationship between antenatal and postnatal dysphoria. In: Cox, J., Holden, J. (Eds.), *Perinatal Psychiatry: Use and Misuse of the Edinburgh Postnatal Depression Scale*. Gaskell, London, pp. 180–199.
- Guedeny, N., Fermanian, J., Guelfi, J.D., Kumar, R.C., 2000. The Edinburgh Postnatal Depression Scale (EPDS) and the detection of major depressive disorders in early postpartum: some concerns about false negatives. *J. Affect. Disord.* 61, 107–112.
- Henshaw, C., 2000. Clinical and biological aspects of postpartum blues and depression. *Curr. Opin. Psychiatry* 13, 635–638.
- Josefsson, A., Berg, G., Nordin, C., Sydsjö, G., 2001. Prevalence of depressive symptoms in late pregnancy and postpartum. *Acta Obstet. Gynecol. Scand.* 80, 251–255.
- Kumar, R., Robson, K.M., 1984. A prospective study of emotional disorders in childbearing women. *Br. J. Psychiatry* 144, 35–47.
- Lee, D.T.S., Yip, S.K., Chiu, H.F.K., Leung, T.Y.S., Chan, K.P.M., Chau, I.O.L., Leung, H.C.M., Chung, T.K.H., 1998. Detecting postnatal depression in Chinese women: validation of the Chinese version of the Edinburgh Postnatal Depression Scale. *Br. J. Psychiatry* 172, 433–437.
- Leverton, T.J., Elliott, S.A., 2000. Is the EPDS a magic wand?: 1. A comparison of the Edinburgh Postnatal Depression Scale and health visitors report as predictors of diagnosis on the Present State Examination. *J. Reprod. Infant Psychol.* 18, 279–296.
- Logsdon, M.C., Usui, W., 2001. Psychosocial predictors of postpartum depression in diverse groups of women. *West. J. Nurs. Res.* 23, 563–574.
- Nielsen Forman, D., Videbech, P., Hedegaard, M., Dalby Salvig, J., Secher, N.J., 2000. Postpartum depression: identification of women at risk. *Br. J. Obstet. Gynaecol.* 107, 1210–1217.
- Nott, P.N., 1987. Extent, timing and persistence of emotional disorders following childbirth. *Br. J. Psychiatry* 151, 523–527.
- O'Hara, M., Swain, A.M., 1996. Rates and risks of postpartum depression. A meta-analysis. *Int. Rev. Psychiatry* 8, 37–54.
- O'Hara, M.W., Neunaber, D.J., Zeskoski, E.M., 1984. A prospective study of postpartum depression: prevalence, course and predictive factors. *J. Abnorm. Psychol.* 93, 158–171.
- Pocock, S.J., 1995. *Clinical Trials. A Practical Approach*. Wiley, Chichester.
- Pop, V.J., Komproe, I.H., Van Son, M.J., 1992. Characteristics of the Edinburgh Postnatal Depression Scale in the Netherlands. *J. Affect. Disord.* 26, 105–110.
- Pop, V.J.M., Essed, G.G., De Geus, C.A., Van Son, M.M., Komproe, I.H., 1993. Prevalence of postpartum depression—or is it post-puerperium depression? *Acta Obstet. Gynecol. Scand.* 72, 354–358.
- Rigetti-Veltema, M., Conne-Perreard, E., Bosquet, A., Manzano, J., 1998. Risk factors and predictive signs of postpartum depression. *J. Affect. Disord.* 49, 167–180.
- Spitzer, L., Endicott, J., Robins, E., 1978. Research diagnostic criteria. *Arch. Gen. Psychiatry* 35, 773–778.
- Watson, J.P., Elliot, S.A., Rugg, A.J., Brough, D.I., 1984. Psychiatric disorder in pregnancy and the first postnatal year. *Br. J. Psychiatry* 144, 453–462.