Maternal mental health and caregiver competence of HIV-positive and negative women caring for their singleton newborns in KwaZulu-Natal Province, South Africa

G Rencken,[1] MOccTher; **P Govender,**[1] PhD; **C J E Uys,**[2] PhD

[1] *Discipline of Occupational Therapy, School of Health Sciences, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa*
[2] *Department of Occupational Therapy, School of Healthcare Sciences, Faculty of Health Sciences, University of Pretoria, South Africa*

Corresponding author: *G Rencken (rencken@ukzn.ac.za)*

Background. Maternal mental health during the perinatal period has been of interest to many researchers, with antenatal depression and postnatal depression (PND) being a leading cause of morbidity. The adverse effects of maternal depression on the offspring throughout infancy, childhood and adolescence are well documented. Studies on the mental health of persons living with HIV have also reported a high prevalence of depression.
Objectives. To describe the prevalence of PND in a sample of HIV-positive and HIV-negative mothers delivering healthy singleton infants at one obstetric unit in KwaZulu-Natal (KZN) Province, South Africa, and the subsequent factors influencing neonatal behaviour and perceptions of caregiver competence. Correlations between the presence of PND and perceptions of caregiver competence (with the mother as caregiver), and between infant behaviour, the mother's confidence in her competence as caregiver, and demographic and medical variables, were also examined.
Methods. Demographic and clinical data were collected from 132 mothers at initial contact and from 32 mothers at the 6-week follow-up appointment. Mothers independently completed the Edinburgh Postnatal Depression Scale at each time point, and the Mother and Baby Scales (MABS) at the 6-week follow-up appointment.
Results. The prevalence of depression among all mothers at initial contact was 72.0%, remaining high (68.8%) among the mothers who returned for follow-up. There was a statistically significant correlation between depression and employment at follow-up (p=0.013), and between depression and delivery method (p=0.030). The majority of mothers reported being 'able to laugh and see the funny side of things' and 'looking forward with enjoyment to things' at initial contact and follow-up. Thoughts of self-harm were reported by 44.7% of mothers at baseline, and by 53.1% at follow-up. Although most infants scored in the average clinical band for neonatal behavioural factors in the MABS, mothers reported lack of confidence, globally and in caring for their infant.
Conclusion. This study of maternal mental health of a sample of HIV-positive and HIV-negative mothers of infants in KZN revealed a higher prevalence of PND than reported in other studies. This population of mothers and infants is at risk of adverse outcomes of maternal depression, in addition to other possible risk factors.

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Maternal mental health has been of interest to many researchers, who have studied the prevalence of depression and anxiety in the antenatal and postnatal periods, and the accompanying short- and long-term effects on the offspring. Depression developing during pregnancy and in the first year postpartum is the second leading factor contributing to the disease burden of childbearing women globally.[1] Prevalence studies in developed countries report postnatal depression (PND) rates of 9 - 21%,[2,3] while rates in developing countries, including South Africa (SA), are between 19.8% and 38.5%.[4,5] Many mothers with PND may have developed depressive symptoms during their pregnancy. Global estimates indicate that the reproductive years are a critical period for the onset of depression, with 1 in 10 women meeting the diagnostic criteria for depression during pregnancy.[6,7] The ICD-10 diagnostic criteria for PND stipulate that at least two features such as a depressed mood for most of the day, loss of interest or pleasure in ordinarily pleasurable activities (such as playing with the infant), tiredness, decreased energy, and fatigue must be present for at least 2 weeks. Moreover, the presence of any four other symptoms, including loss of confidence and self-esteem, feelings of guilt and blaming oneself, recurrent thoughts of suicide or death of self or child, difficulty in concentration, agitation or lethargy, appetite disturbance or sleep disturbance, are required for diagnosis.[8]

Risk factors for developing depression in pregnancy and the postnatal period have been identified in multiple studies;[2,3,5,9,10] however, the large number of these factors calls into question their usefulness as predictive measures. Risk factors include low self-esteem, low social support, life stressors during pregnancy, unemployment, ambivalent parenting, the mother's poor relationship with her own mother, unplanned pregnancy, low household income, younger age, single status, lack of partner support, sexual abuse, and intimate partner violence.[2,3,5,9,10] Depression in pregnancy and the postnatal period carries a known risk of adverse effects on the developing fetus, including low birthweight, preterm delivery and infant behavioural problems, possibly due to hyperactivity of the hypothalamopituitary axis and increased cortisol secretion.[5,11]

These alterations in the internal hormonal environment of mothers and fetuses affect postnatal information processing.[11] Newborns of depressed mothers are reported to cry more, and to have increased irritability and less optimal habituation, orientation, motor skills, range of state, and autonomic stability. These newborns take longer to overcome the effects of stimulation and return to a calm state.[12-15] Moreover, they may seem to be more challenging and less rewarding to care for. Studies of the effect of maternal depression on infant attachment show that in the absence of another mental disorder, maternal depression alone does not appear to have a significant effect on the attachment style of the newborn, or on the mother's ability to create adequate conditions for raising children.[16,17] However, maternal self-criticism and low socioeconomic status negatively contribute to the presence of maternal depression.[18-20]

HIV seropositivity in pregnant women has been identified as a significant risk factor for depression.[5] Data from a SA study utilising the Edinburgh Postnatal Depression Scale (EPDS) indicate a 42.4% prevalence of depression among HIV-positive pregnant women.[21] A systematic review of the mental health of persons living with HIV/AIDS[22] reports on multiple studies confirming HIV-positive pregnant women's experiences of depression, anxiety and psychological distress at prevalence rates equal to or higher than the 42.4% reported in the SA study.[21] These HIV-positive pregnant women reported an inferior quality of life and perceived discrimination when accessing healthcare. SA implemented the World Health Organization recommendation of lifelong antiretroviral (ARV) treatment for all HIV-positive pregnant women in Option B+ for prevention of mother-to-child transmission of HIV (PMTCT); however, many of the estimated 1.5 million HIV-positive pregnant women will face obstacles such as poverty and stigma in accessing antenatal care and ARV prescription, monitoring and collection to protect their fetus and newborn from vertical infection.[23,24]

In KwaZulu-Natal (KZN) Province in SA there are several environmental risk factors for mental disorders, a particularly perturbing profile. The province has been reported to have the highest prevalence of HIV in SA, the highest proportion of persons living below the poverty line, the highest poverty gap, high levels of income inequality and unemployment, and high rates of interpersonal violence and murder. All these are additional potential risk factors for the development of depression in pregnant and postpartum women, particularly women who are HIV positive.[25]

Protective factors have been identified that modify the influence of maternal depression on the newborn, and protect infant attachment. These include optimal parenting, specifically maternal sensitivity, emotional availability and time devoted to the infant.[6,17] However, mothers' perceptions of their competence as caregiver and their perceptions of their newborn have not been studied, specifically in the context of maternal HIV infection.

This study aimed to describe the prevalence of postnatal depression in a sample of HIV-positive and HIV-negative mothers delivering healthy singleton infants at a single obstetric unit in KZN and the subsequent factors influencing their mental health, including reported neonatal behaviour. Correlations between the presence of PND and perceptions of caregiver competence (with the mother as caregiver), and between infant behaviour, the mother's confidence in her competence as caregiver, and demographic and medical variables, were also examined.

Methods

Ethical approval was granted by the Biomedical Research Ethics Committee of the University of KwaZulu-Natal (ref. no. BFC354/15) and the KZN Health Research and Knowledge Management Directorate of the provincial Department of Health (ref. no. HRKM320/15 K2_2015RP40_914). Permission for access to the unit was granted by the hospital CEO and the matron in charge of obstetric nursing. All the mothers read and signed informed consent independently prior to testing.

Design

A descriptive approach to a pre-test time series design was conducted, where mothers and their healthy singleton infants were seen and assessed in the postnatal obstetric ward within 48 hours of giving birth, and again when the infant was 6 weeks old. The objective was to determine the prevalence of postnatal depression and factors affecting the mental health and perceived caregiver competence of HIV-positive and HIV-negative mothers of newborns.[26]

Setting

The study was conducted at King Edward VIII Hospital (KEH) in eThekwini metropole, KZN, an 825-bed tertiary level hospital providing services to KZN and part of Eastern Cape Province.[27] Initial contact data were collected in the postnatal obstetrics ward, a 70-bed unit where mothers and their stable infants are accommodated until discharge or transfer to another unit. Follow-up visits were conducted in a private space in the occupational therapy (OT) department of the same hospital.

Participants

Mothers delivering full-term, healthy singleton infants at KEH and meeting the inclusion criteria were recruited into the study from April to September 2017. Inclusion criteria stipulated that mothers were of black African origin, aged 21 - 39 years and booked for delivery at KEH, had an HIV test with results available in the medical file, were taking ARVs if positive, had an uncomplicated pregnancy with no high-care admissions, had no alcohol, tobacco or drug use declared during pregnancy, and lived in the eThekwini municipal area. Mothers with healthy newborns were recruited from the postnatal obstetrics ward. The ward intake book was accessed every morning during the study period to identify possible participants meeting the inclusion criteria. These mothers were approached, informed of the study, invited to participate with their infant, and allowed some time to read over the participant information sheet attached to the informed consent letter. A total of 132 mother-infant pairs were recruited and provided consent. Of these, 80 were HIV positive and on the B+ protocol for PMTCT, and 52 were HIV negative. The mothers agreed to the initial assessment in the ward, and to follow-up assessment in the OT department 6 weeks later. Reminder messages were sent via SMS and WhatsApp (text messages) to the mothers' mobile phones following the initial contact assessment, and at two intervals before the follow-up appointment. Follow-up appointments were adhered to by 32 mother-infant pairs. Mothers whose initial EPDS scores indicated depression, or who had reported thoughts of self-harm, were referred for counselling and intervention.

Outcome measures

Demographic and background medical information on age, HIV status, number of years on ARVs (if HIV positive), employment status, relationship status with a partner, parity status, delivery method, newborn's gender, feeding type, newborn prophylaxis (if HIV exposed) and newborn anthropometrics were collected from the medical file. Contact details were verified for further communication. Mothers completed the EPDS independently while the principal investigator was present in the ward or in the follow-up

appointment venue. The EPDS is a 10-item self-report questionnaire scored on a Likert scale with severity rated between 0 and 3 and summed to yield a total score with a maximum of 30. It includes questions related to anhedonia, anxiety, tearfulness, helplessness, motivation, and thoughts of self-harm. It is an effective diagnostic tool, with a sensitivity of 86% and a specificity of 78%.[28] A cut-off score of ≥10 was used, to align with the original validation study[28] and to avoid the possibility of false negatives in this population.[29] All mothers were English literate, and completed the English version of the scale.

The Mother and Baby Scales (MABS) was administered at the 6-week follow-up appointment. This is a measure of maternal reporting on neonatal behaviour and a self-perception of caregiver competence. Included in this scale are five aspects of neonatal behaviour (unsettled-irregular, irritable during feeds, alertness-responsiveness, alertness during feeds, and easiness) and three caregiver confidence measures (lack of confidence in caretaking, lack of confidence in feeding, and global confidence). Each item is rated on a 6-point scale ranging from '0: not at all' to '6: very much/very often'. Neonatal easiness and global confidence are rated on a 7-point scale from –3 to +3. All subscales have shown high internal consistency (α=0.81 - 0.93).[30] Mothers completed this questionnaire independently while the primary investigator was present in the follow-up venue.

Data were input to Excel 2016 (Microsoft Corp., USA), and imported into SPSS Statistics 21 (IBM Corp., USA). Frequencies and percentages were used to describe categorical data. Continuous data were summarised in means, with 95% confidence intervals. Clinical and demographic variables were analysed using χ^2 tests and independent-sample *t*-tests. Bivariate analysis at initial contact and across the two time points was completed for the EPDS scores.

Results

A total of 132 mother-infant pairs were evaluated at the initial contact visit. The mean age of the mothers was 30 years. At initial contact, 60.6% (*n*=80) of the mothers were HIV positive and on ARVs, 60.6% (*n*=80) had delivered their infant via caesarean section, 68.9% (*n*=91) were unemployed, and 86.4% (*n*=114) were not married. Of the 32 mothers who attended the follow-up appointment 6 weeks later, 68.8% (*n*=22) were unemployed, 81.3% (*n*=26) were not married, and 71.9% (*n*=23) had delivered their infant via caesarean section. Table 1 shows maternal and infant demographic data as well as clinical variables.

The prevalence of PND in the sample, measured as a total score ≥10 on the EPDS,[28,29] was 72.0% (*n*=95) at the initial contact visit. No statistically significant correlations between clinical variables and reported maternal depression at the initial contact visit were determined by χ^2 tests. In the follow-up group, 68.8% (*n*=22) presented with possible depression. There was a significant correlation between maternal depression and employment status (*p*=0.013) and delivery method (*p*=0.030), with 71.9% (*n*=23) of these mothers having had a caesarean section. In data reduction for clearer analysis of the EPDS results, answers in varying degrees of the affirmative (including 'yes', 'most of the time', 'quite often' or 'occasionally') were accounted for as 'yes', while answers in the negative ('no', 'never' or 'not at all') were accounted for as 'no'. In the initial EPDS[28] assessment, the majority of mothers responded in the affirmative to the positive items 'I have been able to laugh and see the funny side of things' (87.9%; *n*=116) and 'I have looked forward with enjoyment to things' (90.2%; *n*=119) (Fig. 1). More mothers answered 'no' or 'not very often' than 'yes' to 'I have felt sad or miserable' (59.1%; *n*=78), or 'I have been so unhappy that I have been crying' (58.3%; *n*=77). However, more mothers responded 'yes' than 'no' to the items 'I have blamed myself unnecessarily when things went wrong' (59.1%; *n*=78), 'I have been anxious or worried for no reason' (58.3%; *n*=77), 'Things have been getting on top of me' (61.4%; *n*=81) and 'I have been so unhappy that I have had difficulty sleeping' (68.2%; *n*=90). The same trends were noted in the follow-up assessment, apart from a change in the percentage of mothers reporting 'I have felt sad or miserable' (65.6%; *n*=21) and 'I have been so unhappy that I have been crying' (56.3%; *n*=18), showing an increase in feelings of sadness, but a slight decrease in expressing these through crying. Thoughts of self-harm had occurred in 44.7% (*n*=59) of the mothers on initial assessment and in 53.1% (*n*=17) at 6 weeks (Fig. 2).

Independent-sample *t*-tests for correlations between HIV status and individual EPDS questions at initial contact revealed a significant association between HIV status and being 'anxious or worried for no reason' (*p*=0.004) and 'been so unhappy that I have been crying' (*p*=0.038). At the 6-week follow-up appointment, there were significant associations between HIV status and reports of 'looking forward with enjoyment to things' (*p*=0.002), 'blaming self unnecessarily when things go wrong' (*p*=0.024), and 'been so unhappy that I have been crying' (*p*=0.045). Table 2 reports the frequencies of positive and negative responses to each of the EPDS questions in HIV-positive and HIV-negative mothers at the initial assessment and again at follow-up. Bivariate analysis of self-reported depression at the two time points indicated a significant correlation (*p*=0.00).

The MABS was completed independently by the 32 mothers who attended the follow-up appointment with their infant. Table 3 reports the means and standard deviations of scores in the five neonate subscales and the three parent subscales. The frequency of scores in each clinical band is indicated.[30] The majority of the infants scored within the average clinical band for the unsettled-irregular (71.9%), irritable during feeds (83.4%), alertness-responsiveness (93.8%) and alertness during feeds (65.6%) subscales. A total of 87.6% of infants at follow-up were considered average or above average on the easiness subscale. Of the 4 infants (12.5%) considered less easy by their mothers, 2 were male, 2 were female, and all 4 were HIV exposed. No significant differences were found between *t*-tests for scores on the neonatal subscales and infant gender or HIV exposure at the 95% confidence interval.

The majority of the mothers reported low confidence in caretaking (62.5%) and low global confidence (68.7%). There was a statistically significant correlation between low confidence in caretaking and female infant gender (*p*=0.038). Although the majority of mothers reported average confidence in feeding (78.1%; *n*=25), 3 of the mothers (9.4%) reported less confidence, and 4 of the mothers (12.5%) reported having higher confidence. A statistically significant correlation was shown between confidence in feeding and HIV status (*p*=0.000), with more HIV-positive mothers reporting higher confidence in feeding. There was also a significant correlation between confidence in feeding and relationship status (*p*=0.016), with married mothers being more confident, as well as global confidence (*p*=0.003), with unmarried mothers being less confident. Of the 68.7% (*n*=22) of mothers who reported low confidence, 90.9%, (*n*=20/22) were unmarried.

Discussion

The 72% prevalence of PND self-reported by mothers in this study is higher than the global average (9 - 21%) and studies in population groups in developing countries (19.8 - 45.1%).[2-5,21] Although the present study used a cut-off score of ≥10 on the EPDS, [28,29] as

Table 1. Maternal and infant demographic and clinical profile

Demographic/ clinical variable	All participants (*N*=132), *n* (%)	*p*-value (Fisher's exact test)	At follow-up (*n*=32), *n* (%)	*p*-value (Fisher's exact test)
Depression status				-
Possible depression	95 (72.0)		22 (68.8)	
No depression	37 (28.0)		10 (31.3)	
HIV status (maternal)		0.559		0.683
HIV positive	80 (60.6)		22 (68.8)	
HIV negative	52 (39.4)		10 (31.3)	
Employment		0.676		0.013*
Unemployed	91 (68.9)		22 (68.8)	
Employed	41 (31.1)		10 (31.3)	
Relationship status		0.582		0.198 (*t*-test)
Married	18 (13.6)		6 (18.8)	
Not married	114 (86.4)		26 (81.3)	
Parity		0.697		0.124
Primiparous	54 (40.9)		14 (43.8)	
Multiparous	78 (59.1)		18 (56.3)	
Birth		0.078		0.030*
Normal vaginal delivery	52 (39.4)		9 (28.1)	
Caesarean section	80 (60.6)		23 (71.9)	
Infant gender		0.167		0.450
Male	79 (59.8)		15 (46.9)	
Female	53 (40.2)		17 (53.1)	
Infant feeding		0.351		0.163 (*t*-test)
Breast	119 (90.1)		22 (68.8)	
Formula	13 (9.9)		10 (31.3)	

*Significant at $p<0.05$.

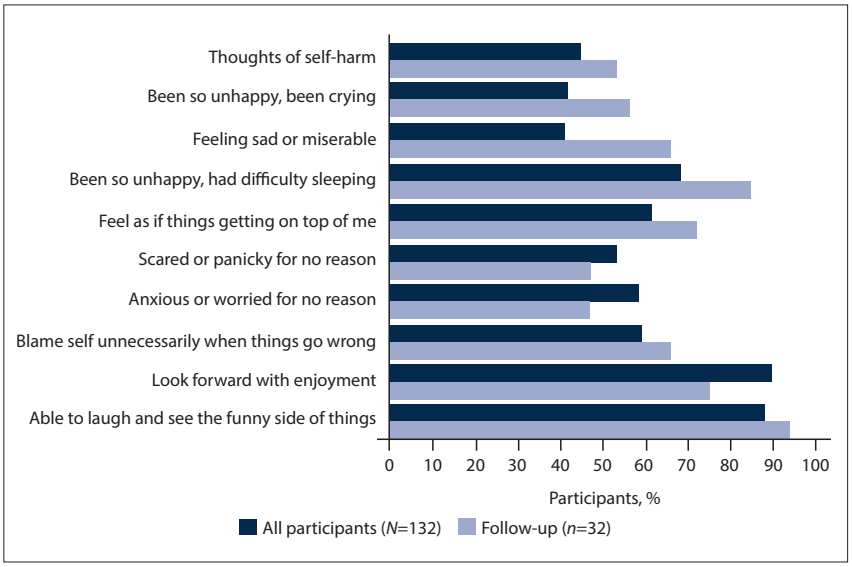

Fig. 1. Frequencies of responses to all Edinburgh Postnatal Depression Scale questions at initial contact and follow-up.

opposed to a cut-off of 12 or 13 in other studies, we found higher PND rates than a population-based study in Australia, which reported a prevalence of 12% with an EPDS cut-off score of 9.[31] Of these mothers, 60.6% were HIV positive, slightly higher than the prevalence rate found in another SA study.[21] Among mothers returning for their follow-up appointment, the prevalence of depression was 68.8%, with a significant association with birth type. Caesarean sections are not done by maternal choice in state hospitals, yet 60.6% (*n*=80) of the mothers at initial contact and 71.9% (*n*=22) of those at follow-up delivered this way. The main reason for caesarean section in this population was previous caesarean sections in the multiparous mothers. The depression reported by these mothers could be due to the physical difficulty of recovering from a caesarean section, failure to have a natural birth when this was desired, or expectations from society to recover quickly.[32,33]

The mothers in the population sampled were exposed to many risk factors for depression prior to delivering their infant, including unemployment (68.9%; *n*=91), single status (86.4%; *n*=114) and being HIV positive (60.6%; *n*=80). Unemployment is linked to poverty, with social grants for qualifying individuals being the only potential source of reliable income. Single status may be an additional poverty risk factor, without the potential financial support from an employed spouse or partner. It is not known whether these mothers experienced interpersonal violence, and this was beyond the scope of this study. Some participants did disclose that their partner had told them to leave, with the baby. Such an unstable relationship, with the potential of interpersonal violence or emotional abuse, is likely to be a risk factor contributing to depression.[2,3,5,9,10] In addition to socioeconomic factors, the transition to motherhood is multifaceted. As her body changes and the fetus develops, a woman simultaneously undergoes psychological preparation for parenthood. In

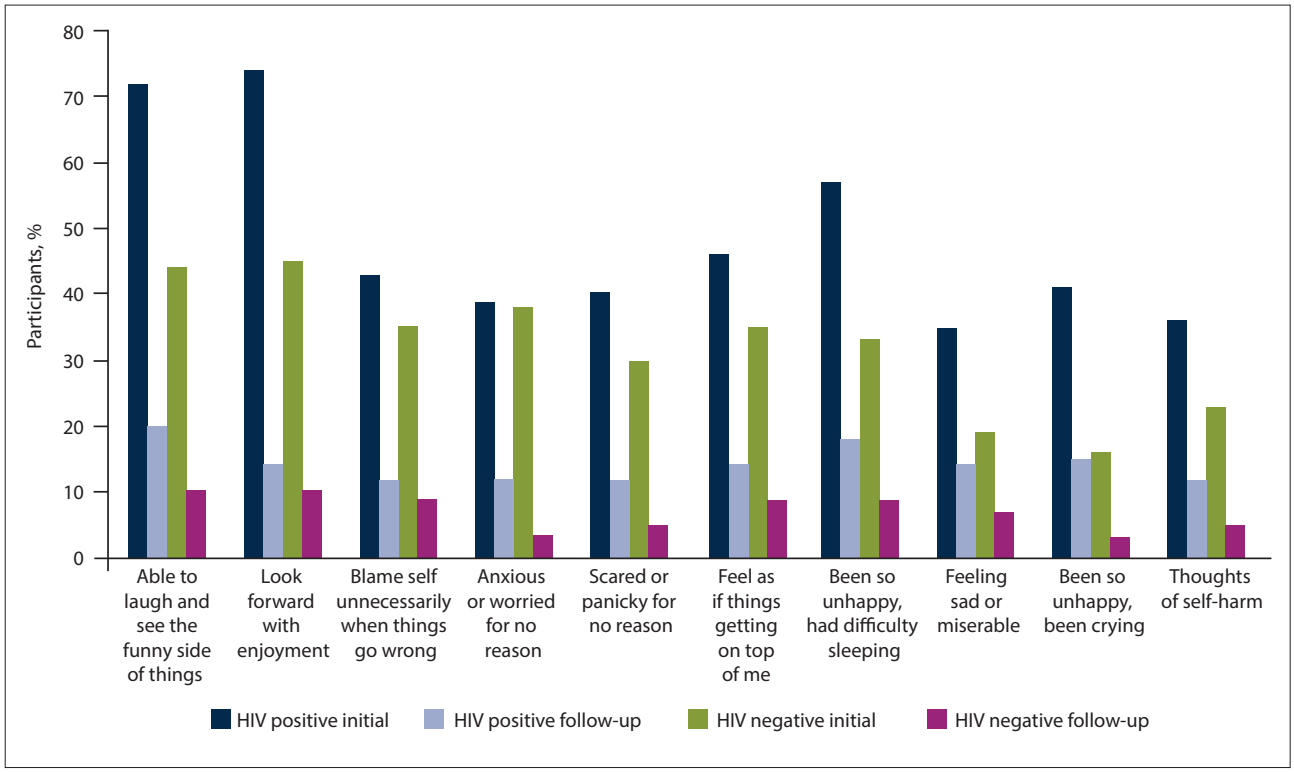

Fig. 2. Frequencies of 'yes' responses to Edinburgh Postnatal Depression Scale questions by HIV-positive and HIV-negative mothers at initial contact (N=*132) and follow-up* (n=*32).*

this process, her role and occupational identity change in the relationship with her partner, her professional or employment domain, her social domain and her self-identity.[34,35] 'Baby blues', usually starting on the third day after delivery, are experienced by up to 80% of women globally, primarily as a result of the hormonal and physiological changes during and after the birth process, and characterised by tearfulness, fatigue, anxiety, high emotionality, low spirits and muddled thinking.[36,37] The symptoms of baby blues last from a few hours to 2 weeks after delivery, with a reported 20% of mothers experiencing them going on to develop depression.[37] Initial contact data were collected on the second day after delivery, too early for baby blues to be a meaningful contributor to the high prevalence of reported depression in this sample. In the postpartum period, mothers may experience occupational disruption, with a loss of their ability to participate in occupations that are meaningful to them, a sense of loss of control over their lives and occupational engagement, loss of their former identity (such as worker or employee, or girlfriend), and the burden of societal expectation to experience enjoyment and fulfilment.[36-38] A new mother is expected to meet the occupational roles of motherhood, and in so doing ensure the survival, growth and wellbeing of a new infant, attach to and love her infant, establish a support network of experienced women succeeding in this role, and find her own unique identity.[34] Each of these tasks on its own requires significant psychological reorganisation, and a disruption with inadequate performance in these roles can be expected in the presence of high rates of PND.

Loss to follow-up in the present study was high, with only 24.2% of mothers (*n*=32) attending the scheduled appointment, despite reminders sent via SMS and WhatsApp messages to their registered and verified phone numbers. This high figure could be attributed to the high prevalence of depression, with studies reporting that maternal depression is associated with poor adherence to preventive child healthcare, including vaccinations.[39] Despite the high prevalence of depression, many mothers reported positive experiences, including laughing, humour and enjoyment. This may be a protective factor in mother-infant attachment and subsequent infant social, cognitive and behavioural development.[17,40] The prevalence of depression was high in both the HIV-positive (70.0%; *n*=56) and HIV-negative (75.0%; *n*=39) groups. Thoughts of self-harm are an important consideration in interpreting the results of the EPDS,[28] and were consistently high throughout the initial and follow-up assessments in both the HIV-positive and HIV-negative groups. This was also noted in a Nigerian study, in which 45.5% of the respondents had suicidal ideation as a symptom of PND.[41] Negative symptoms of anxiety, difficulty sleeping due to being sad, feeling sad or miserable, and crying from unhappiness, of which the prevalence was high, pose an additional obstacle to these mothers in fulfilling their occupational roles of mothering, caring for and nurturing their infant.

Analysis of scores in the neonatal subscales on the MABS in the present study indicated that the majority of the infants were functioning in the average clinical bands. This is to be expected, as all were born at full term and considered healthy. The infants who were considered less easy by their mothers were all HIV exposed. HIV exposure has been shown to correlate with difficulty in feeding, poorer orientation and poorer reflex scores in the Neonatal Behavioural Assessment Scale.[42,43] The maternal confidence subscale scores showed a significant association with infant gender, specifically female in this sample, in contrast to a Chinese study that showed no correlation.[44] Further investigation of the effect of infant gender is needed. Mothers receive information on the value and safety of exclusive breastfeeding throughout their antenatal visits, and in the baby-friendly hospital initiatives in the ward where breastfeeding is encouraged, which may have contributed towards their confidence in feeding. The importance of breastfeeding is particularly emphasised in the context of HIV.[45,46] There was a statistically significant association between global confidence and

Table 2. EPDS individual questions, frequencies of responses at initial contact and follow-up

EPDS individual questions and responses*	All participants (*N*=132), *n* (%)	HIV positive, *n* (%)		HIV negative, *n* (%)		Follow-up participants (*n*=32), *n* (%)
		Initial (*n*=80)	Follow-up (*n*=22)	Initial (*n*=52)	Follow-up (*n*=10)	
Able to laugh and see the funny side of things						
Yes	116 (87.9)	72 (90.0)	20 (90.9)	44 (84.6)	10 (100)	30 (93.8)
No	16 (12.1)	8 (10.0)	2 (9.1)	8 (15.4)	0	2 (6.2)
p-value	0.007†					0.162
Look forward with enjoyment to things						
Yes	119 (90.2)	74 (92.5)	14 (63.6)	45 (86.5)	10 (100)	24 (75.0)
No	13 (9.8)	6 (7.5)	8 (36.4)	7 (13.5)	0	8 (25.0)
p-value	0.292					0.002†
Blame self unnecessarily when things go wrong						
Yes	78 (59.1)	43 (53.8)	12 (54.5)	35 (67.3)	9 (90.0)	21 (65.6)
No	54 (40.9)	37 (46.2)	10 (45.5)	17 (32.7)	1 (10.0)	11 (34.4)
p-value	0.119					0.024†
Anxious or worried for no reason						
Yes	77 (58.3)	39 (48.8)	12 (54.5)	38 (73.1)	3 (30.0)	15 (46.9)
No	55 (41.7)	41 (51.2)	10 (45.5)	14 (26.9)	7 (70.0)	17 (53.1)
p-value	0.004†					0.209
Scared or panicky for no good reason						
Yes	70 (53.0)	40 (50.0)	12 (54.5)	30 (57.7)	5 (50.0)	17 (53.1)
No	62 (47.0)	40 (50.0)	10 (45.5)	22 (42.3)	5 (50.0)	15 (46.9)
p-value	0.391					0.819
Feel as if things getting on top of me						
Yes	81 (61.4)	46 (57.5)	14 (63.6)	35 (67.3)	9 (90.0)	23 (71.9)
No	51 (38.6)	34 (42.5)	8 (36.4)	17 (32.7)	1 (10.0)	9 (28.1)
p-value	0.257					0.080
Been so unhappy, had difficulty sleeping						
Yes	90 (68.2)	57 (71.3)	18 (81.8)	33 (63.5)	9 (90.0)	27 (84.4)
No	42 (31.8)	23 (28.7)	4 (18.2)	19 (36.5)	1 (10.0)	5 (15.6)
p-value	0.352					0.569
Feeling sad or miserable						
Yes	54 (40.9)	35 (43.8)	14 (63.6)	19 (36.5)	7 (70.0)	21 (65.6)
No	78 (59.1)	45 (56.2)	8 (36.4)	33 (63.5)	3 (30.0)	11 (34.4)
p-value	0.414					0.736
Been so unhappy, been crying						
Yes	55 (41.7)	41 (51.3)	15 (68.2)	16 (30.8)	3 (30.0)	18 (56.3)
No	77 (58.3)	39 (47.7)	7 (31.8)	36 (69.2)	7 (70.0)	14 (43.7)
p-value	0.038†					0.045†
Thoughts of self-harm						
Yes	59 (44.7)	36 (45.0)	12 (54.5)	23 (44.2)	5 (50.0)	17 (53.1)
No	73 (55.3)	44 (55.0)	10 (45.5)	29 (55.8)	5 (50.0)	15 (46.9)
p-value	0.931					0.819

EPDS = Edinburgh Postnatal Depression Scale.
*'Yes' includes answers marked 'yes', 'most of the time', 'quite often' or 'occasionally. 'No' includes answers marked 'no', 'never' or 'not at all'.
†Significant at $p<0.05$.

marital status, with married mothers perhaps finding a supportive environment in which to undergo this psychological transition.[34,41] The notable percentage of mothers reporting low global confidence (68.7%; *n*=22) and lack of confidence in caretaking (62.5%; *n*=20) could indicate a difficult transition to motherhood and that the new occupational roles and identity that the mother needs to take on had not yet been mastered.

Study strengths and limitations

We studied a representative sample, with mothers and their full-term, healthy infants from a single unit, presenting important information on the mental health of a population group that is not considered high risk and is often not adequately followed up. Maternal mental health was assessed at the first baby follow-up after the initial assessment, and the small sample of mothers and infants who attended speaks to the vulnerability of this population group. Possible reasons for the poor follow-up could include public transport challenges with a young infant, maternal depression with low motivation to participate in additional tasks, and family pressure. Early intervention to support maternal mental health should have occurred in this population, and it should be included in routine care after delivery and at all infant follow-ups.

Table 3. Mother and baby scales subscale scores and clinical bands (*N*=32)

Subscale	Mean (SD)	Clinical bands* ≤–1 SD, *n* (%)	Clinical bands* Average, *n* (%)	Clinical bands* ≥+1 SD, *n* (%)	*p*-values, *t*-test (gender) (HIV exposure)	*p*-values, *t*-test (HIV) (parity) (employment) (relationships) (gender)
Neonate						
Unsettled-irregular	42.25 (10.540)	0	23 (71.9)	9 (28.1)	0.377 0.489	-
Irritable during feeds	13.16 (7.185)	0	27 (83.4)	5 (15.6)	0.724 0.421	-
Alertness-responsiveness	30.09 (4.350)	0	30 (93.8)	2 (6.2)	0.656 0.665	-
Alertness during feeds	16.06 (2.951)	0	21 (65.6)	11 (34.4)	0.189 0.421	-
Easiness	11.63 (4.353)	4 (12.5)	14 (43.8)	14 (43.8)	0.407 0.311	-
Parent						
Lack of confidence in caretaking	25.47 (12.664)	0	12 (37.5)	20 (62.5)	-	0.077 0.298 0.73 0.969 0.038†
Lack of confidence in feeding	11.72 (7.493)	3 (9.4)	25 (78.1)	4 (12.5)	-	0.000† 0.335 0.105 0.016† 0.311
Global confidence	13.25 (5.273)	6 (18.8)	4 (12.5)	22 (68.7)	-	0.544 0.928 0.085 0.003† 0.658

SD = standard deviation; MABS = Mother and Baby Scales.
†Clinical bands from psychometric indices and clinically relevant cut-off points of MABS-neonatal.[30]
*Significant at $p<0.05$.

Conclusion

The prevalence of PND in this study, although higher than in previous studies, is in line with trends of depression being a significant global public health concern and a leading cause of morbidity in the perinatal period. With a significant burden of HIV infection, poverty, interpersonal violence and unemployment, the KZN context is likely to predispose these mothers to PND and simultaneously increases infant vulnerability. The occupational disruption to motherhood, a life phase that is supposed to be enjoyable, becomes distressing. Mothers, as the infant's primary love relationship, pave the way for all other relationships to follow. A disrupted motherhood experience may have far-reaching consequences throughout the life of the child and the greater community. Maternal mental health is too often overlooked, and does not form part of routine care in maternal or infant follow-up post delivery. Many awareness forums largely rely on mothers self-identifying problems and self-initiating a search for assistance, with many mothers remaining unidentified and unassisted. Future studies could look into qualitative insights into the experience of birth, hospitalisation and the early transition into motherhood in this population.

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Conflicts of interest. None.

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