

ORIGINAL RESEARCH ARTICLE

Pregnancy outcomes, early separation, and psychiatric relapse experienced by South African women with peripartum psychosis: a descriptive exploration

DOI: 10.29063/ajrh2020/v24i4.7

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Abstract

The peripartum is associated with increased incidence of severe mental illness (SMI), a greater occurrence of psychotic symptoms and psychiatric admissions. This study aimed to describe the psychiatric, medical and psycho-social risk factors affecting South African mothers who experienced peripartum psychosis. Using a prospective, descriptive design, we conducted a detailed interview and supplementary information was collected by review of clinical records. The study examined the accounts of forty mothers who experienced peripartum psychosis between 6 and 18 months postpartum. Descriptive statistics for demographic and clinical variables were completed with SPSS for Windows, version 25. Pregnancies were predominantly unplanned and more than half of participants reported prenatal substance use. Medical or psychiatric problems during pregnancy were common and the majority of dyads experienced periods of early separation. Socio-demographic factors exacerbated the challenges this group of women at high risk face, in providing nurturing care to their infants. Results highlight the need for close follow-up for women with SMI, with particular attention to substance screening and psychosocial stressors. Integrated maternal and infant mental health services are recommended. (*Afr J Reprod Health* 2020; 24[4]: 58-68).

Keywords: Peripartum psychosis, pregnancy outcome, mother-infant separation, prenatal substance use, postpartum relapse

Résumé

Le péripartum est associé à une incidence accrue de maladie mentale grave (SMI), à une plus grande fréquence de symptômes psychotiques et à des admissions psychiatriques. Cette étude visait à décrire les facteurs de risque psychiatriques, médicaux et psychosociaux affectant les mères sud-africaines ayant subi une psychose péripartum. En utilisant une conception prospective et descriptive, nous avons mené une entrevue détaillée et des informations supplémentaires ont été recueillies par examen des dossiers cliniques. L'étude a examiné les récits de quarante mères qui ont connu une psychose péripartum entre 6 et 18 mois post-partum. Des statistiques descriptives pour les variables démographiques et cliniques ont été complétées avec SPSS pour Windows, version 25. Les grossesses étaient majoritairement non planifiées et plus de la moitié des participantes ont signalé une consommation prénatale de substances. Les problèmes médicaux ou psychiatriques pendant la grossesse étaient courants et la majorité des dyades ont connu des périodes de séparation précoce. Des facteurs sociodémographiques ont exacerbé les défis auxquels ce groupe de femmes à haut risque est confronté pour fournir des soins attentifs à leurs nourrissons. Les résultats mettent en évidence la nécessité d'un suivi étroit pour les femmes souffrant d'IHS, en accordant une attention particulière au dépistage de substances et aux facteurs de stress psychosociaux. Des services intégrés de santé mentale maternelle et infantile sont recommandés. (*Afr J Reprod Health* 2020; 24[4]: 58-68).

Mots-clés: Psychose péripartum, issue de la grossesse, séparation mère-enfant, consommation prénatale de substances, rechute post-partum

Introduction

Pregnancy and the postpartum period are often experienced as a time of great joy and excitement for many women. However, this phase is also associated with vulnerability to mental illness, risk

of relapse of pre-existing mental illness, and the development of new psychiatric symptoms¹.

During pregnancy and postpartum, there is an increased incidence of severe mental disorders (SMI), which may include disorders such as schizophrenia, bipolar and schizoaffective

disorder². Postpartum, there is a dramatic increase in the frequency of psychotic symptoms and psychiatric admissions^{2,3}. Factors that contribute to the increased incidence of relapse and new-onset mental disorders during the perinatal period include discontinuing medication during pregnancy, sleep deprivation, hormonal variation, as well as the physical and psychological demands of pregnancy and infant care^{2,4}. Serious mental illness (SMI) in the perinatal period can have potentially devastating consequences for the mother, infant and family system and may adversely affect the mother's capacity to parent^{5,6}. The presence of psychotic disorders in particular, places the mother and unborn infant at greater risk for adverse obstetric and neonatal outcomes, psychiatric admission and early separation⁷.

Expectant mothers who have a pre-existing psychotic disorder may be at greater risk for obstetric complications than those mothers who develop postpartum psychotic disorders⁸, with the risk for stillbirth or low birthweight doubling if the psychotic episode occurred during pregnancy⁹. Pregnancy outcomes of mothers with affective psychoses carry double the risk for a preterm birth, low birthweight or small for gestational age babies¹⁰.

Although women with schizophrenia and bipolar disorder have somewhat lower fertility rates than women in the general population, the majority of these women are parents². However, Miller and Finnerty¹¹ reported a greater likelihood that the pregnancies of women with schizophrenia would be unplanned and unwanted when compared to women without the disease.

Du Toit and colleagues identified several risk factors contributing to unplanned pregnancies in a sample of South African women with psychiatric illness¹². These include being of younger age, two or more pregnancies in the past, being of mixed ancestry, African or Indian ethnicity, being unmarried, below tertiary level of education, being unemployed, low socio-economic status, substance abuse, previous psychiatric admissions and previous suicide attempts. The presence of maternal mental illness in combination with unplanned pregnancy significantly increases the vulnerability of these mothers to adverse pregnancy outcomes^{12,13}.

Substance use during pregnancy also contributes to the risk for adverse obstetric and child outcomes¹⁴. Zhao and colleagues¹⁵ reported that poorer birth outcomes among women with mental illness were more likely when the mother used substances during pregnancy. The high rates of substance use among South African pregnant women has been recognised by two surveys of women attending Midwife Obstetric Units in Cape Town where alcohol consumption and smoking were found to be especially prevalent^{16,17}.

According to Cès and colleagues¹⁸, mothers suffering from psychotic disorders are at greater risk of being separated from their infants due to hospitalization or other adverse incidents. During the first half of the twentieth century, separation between mothers with postpartum psychotic disorders and babies were considered advantageous for both parties¹⁹. The emergence of social psychiatry, changes in psychiatric treatment, and research by Bowlby²⁰ and Spitz²¹ on the adverse effects of early separation from attachment figures questioned this approach¹⁹. Recent studies have provided further support for the notion that early separation between infants and mothers have adverse consequences. Separations between the mother and infant occurring during the infant's first year pose a risk to the development of a secure attachment relationship²². Howard and colleagues²³ found that mother-infant separation within the first two years of life was associated with child negativity at age three and aggression at ages three and five. In recognition of the benefits of maintaining proximity of mothers and infants during the postpartum period, psychiatric mother-baby units (MBUs) emerged in several developed countries with favorable outcomes for postpartum mothers²⁴.

In 1959, the first joint admissions of mothers with schizophrenia and their babies by Baker and colleagues²⁵ demonstrated that joint admissions were shorter, mothers were more likely to care for their babies upon discharge and had lower rates of relapse than mothers admitted without their babies. This practice has now become more widespread and is recommended by the National Institute for Health and Clinical Excellence²⁶. Despite the benefits of joint admissions, mothers with psychotic disorders may

still be separated from their infants. Cès and colleagues¹⁸ analyzed joint admissions of mothers with psychotic disorders and their infants and linked early separation to the placement of the mother in an institution during childhood, being single, early hospitalization of the baby and maternal psychiatric decomposition during pregnancy.

Mothers utilizing mental health services may experience more significant challenges in their roles as parents, which may be of particular significance during infancy, when there is greater dependence on the parent²⁷. Children in care of mothers with psychiatric illnesses may be more vulnerable to developing insecure or disorganized attachment, particularly when maternal psychopathology is severe and prolonged, and when other risk factors such as parental trauma are present²⁸. The presence of both maternal psychiatric symptoms and separations may adversely affect the quality of the mother-child relationship, as well as parental sensitivity and capacity²⁹.

Specific features of psychotic disorders, such as withdrawal, delusional thinking, disorganized behavior and reduced responsiveness, may separately and in combination hamper the mother's ability to provide a consistent, attuned presence for her infant, which may compromise the development of a secure attachment, especially if early separation occurs^{5,23}.

Nurturing care, defined by the World Health Organization (WHO) as "giving young children opportunities for early learning, through interactions that are responsive and emotionally supportive"³⁰, emphasises the importance of the period from pregnancy to age 3. The components that make up nurturing care include: behaviors, attitudes, knowledge regarding caregiving, stimulation, responsiveness and safety³¹. Mothers with peripartum psychosis may require additional support in the provision of nurturing care in order to provide adequate opportunities for learning and development for their infants.

In the South African context of widespread socio-economic risks and limited resources, it is imperative to identify vulnerable dyads for early intervention. To our knowledge, there has not been a study among South African women with experiences of peripartum psychosis. This descriptive study of South African mothers who

experienced serious psychiatric symptoms in the peripartum aims to provide a description of the socio-demographic factors and pregnancy outcomes for this group of women. By gaining a better understanding of the potential difficulties that mothers with this severe form of peripartum psychiatric illness face, dyads who may be at particular risk for adverse maternal and infant outcomes may be identified for further treatment.

Methods

Study design

This prospective study followed a quantitative and descriptive design. Forty mothers who had experienced peripartum psychosis were recruited from three public hospitals in South Africa between 2016 and 2020.

Study setting

The recruitment sites included Stikland Hospital, a psychiatric facility providing care for adult in- and outpatients; Tygerberg Hospital, a tertiary and academic hospital; and Karl Bremer Hospital, a district hospital in the Western Cape. These hospitals serve a South African community with predominantly low to middle socio-economic circumstances.

Participants

We used purposive sampling to specifically recruit mothers who had experienced peripartum psychosis. Mothers were eligible if they gave birth to a healthy infant in the last 18 months, if they experienced psychotic symptoms during their pregnancy and/or within six months postpartum and if they resided with their infants. In cases where mothers exhibited moderate to severe psychotic symptoms at the time of assessment, inclusion was delayed until the symptoms were resolved.

Procedure

Participants were referred to the study and invited for a research visit at Stikland Hospital between 6 and 18 months postpartum. Participants were determined to have capacity to provide consent for the study if they understood the information

provided and could appreciate the implications of their participation³². Participants were informed of the nature and procedure of the study, and informed consent was obtained. Thereafter, demographic information was collected through a detailed interview and information was supplemented by review of clinical records. The positive subscale of the Structured Clinical Interview for the Positive and Negative Symptoms Scale (SCI-PANSS) was completed to assess for current psychotic symptoms.

Peripartum psychosis was identified by multi-disciplinary treatment teams who verified the presence of psychotic symptoms in the peripartum period and the primary investigator reviewed clinical records for additional information. At the time of the research visit, the stability of symptoms was evaluated from clinical records and a clinical interview with all participants. Two individuals experienced moderate to severe psychotic symptoms at the time of initial interview as assessed by the SCI-PANSS and were offered a later date to complete the interview when their clinical symptoms had stabilized. One mother relapsed and was admitted for psychiatric treatment, which delayed her research visit until 21 months postpartum.

Instruments

Demographic interview

A demographic interview explored aspects of the mothers' accounts of their current circumstances, pregnancy, birth and postpartum experiences. Demographic information collected include age, level of education, marital status, periods of separation, medical and psychiatric history. Where possible, information was verified through an audit of the clinical files.

Positive and negative symptoms scale (PANSS)

Current psychotic symptoms were assessed by the Structured Clinical Interview for the Positive and Negative Symptoms Scale (SCI-PANSS). The Positive and Negative Symptoms Scale (PANSS) is a widely-used tool for evaluating symptoms in schizophrenia that has been found to have adequate internal consistency and reliability³³ and has been utilized to assess psychopathology symptoms in South African populations³⁴. Positive subscales

were completed, and each item assessed on a 7-point Likert scale ranging from 1 (absent) to 7 (extreme). A cut-off score of 4 on the positive subscale items was used. Scores of 4 and above indicate the presence of at least moderate psychotic symptoms. Participants who scored above 3 on any item were provided with support to access psychiatric review and provided with a later date to complete the assessment.

Data analysis

Data were analyzed with SPSS for Windows, version 25. The distribution and descriptive statistics are provided for demographic and clinical variables.

Results

Demographic information

Forty mothers were eligible for the study and their demographic information is provided in Table 1. Mothers ranged in age between 21 and 44 years (mean=29.6) and had between 1 (35.0%) and 4 children (12.5%). The majority of mothers achieved a secondary level of education (70.0%). Less than a third of the mothers were married (30.0%), with the remainder categorized as in a relationship (35.0%) or single (35.0%). Half of the mothers were unemployed (50.0%), and less than a quarter (22.5%) receive a disability grant. The majority of mothers (85.0%) had an annual household income of less than R100 000 (approximately \$6 685).

Lifetime and current stressors

Almost two-thirds of the mothers ($n=26$; 65.0%) reported a lifetime experience of trauma. Fewer mothers reported a lifetime history of abuse ($n=18$, 45.0%). A slightly higher proportion reported lifetime physical abuse ($n=11$; 27.5%) than sexual abuse ($n=9$; 22.5%). The majority of abuse was experienced prior to falling pregnant ($n=16$; 88.9%) and less than a third occurred in the postpartum ($n=5$; 27.8%).

Partners were reported as perpetrators of abuse by 8 individuals (44.4%), however 4 of the 5 mothers who reported postpartum abuse, experienced this at the hands of their partners (80.0%).

Table 1: Demographic variables ($n=40$, unless otherwise noted)

Variable	Statistic
Mean age (years)	29.6 ($SD = 5.3$)
Level of education	% (n)
Primary school	12.5 (5)
Secondary school	70.0 (28)
Tertiary education	17.5 (7)
Relationship status	
Single	35.0 (14)
In a relationship	35.0 (14)
Married	30.0 (12)
Employment status	
Unemployed	50.0 (20)
Employed	27.5 (11)
Receiving a disability grant	22.5 (9)
Socio-economic status as indicated by annual household income	
Receiving a social grant	10.0 (4)
<R100 000	75.0 (30)
<R350 000	7.5 (3)
>R350 000	2.5 (1)
On private medical aid	5.0 (2)

Table 2: Primary psychiatric diagnosis and comorbidity

Primary psychiatric diagnosis	% ($n = 40$)
Bipolar disorder	40.0 (16)
Schizophrenia	32.5 (13)
Schizoaffective disorder	7.5 (3)
MDD with psychosis	7.5 (3)
Schizophreniform disorder	7.5 (3)
Substance-induced psychotic disorder	5.0 (2)
Comorbid diagnosis categories	
Substance use disorder	17.5 (7)
Personality disorder/traits	5.0 (2)
Intellectual disability	7.5 (3)
Conversion disorder	2.5 (1)

Table 3: Use of substances during pregnancy

Substance	Substance abuse group % ($n = 21$)	Total sample % ($n = 40$)
Smoking	85.7 (18)	45.0 (18)
Alcohol	42.9 (9)	22.5 (9)
Illicit drugs	33.3 (7)	17.5 (7)

The most frequently reported psychosocial stressor at the time of assessment, was lack of partner support ($n=20$; 50.0%), with financial difficulties reported by 15 mothers (37.5%). Other stressors endorsed were physical or verbal abuse by partner ($n=7$; 20.0%), and unemployment of the participant

($n=5$; 12.5%). Although the majority of mothers were in a significant relationship, half reported experiencing a lack of partner support as their main stressor.

Maternal medical and psychiatric information

Bipolar disorder was the most prevalent diagnosis (40.0%), 13 were diagnosed with schizophrenia (32.5%), and 3 mothers had a diagnosis of major depressive disorder with psychosis, schizophreniform or schizoaffective disorder (7.5%). The distribution of diagnoses and comorbidities are provided in Table 2. All but one of the mothers (97.5%) have had at least one psychiatric admission, with half (50.0%) being admitted prior to their pregnancy, 25.0% admitted during their pregnancy and over half (55.0%) admitted subsequent to their pregnancy. One mother was admitted during late pregnancy and discharged 8 weeks after delivery. Of the further 22 mothers who were admitted during the postpartum period, 12 (30.0%) were admitted within 12 weeks postpartum. Total scores for the positive subscale of the PANSS at the time of the assessments ranged between 7 and 16, with a median of 9, and a mean of 9.4 (standard deviation, $sd=2.1$). The median item score was 2 and the maximum score for any item was 3, which indicates the presence of mild symptoms that do not generally interfere with functioning.

Pregnancy and delivery

More than four-fifths of the pregnancies were unplanned (85.0%), but only 7 (17.5%) were unwanted. The frequencies of substances used during pregnancy are provided in Table 3. Substance use during pregnancy was reported by over half ($n=21$; 52.5%) of mothers, with cigarette smoking being most prevalent (45.0%), and lower rates of alcohol use (22.5%) and illicit substances (17.5%). Eight mothers (20.0%) used more than one substance during pregnancy. Post-pregnancy, some mothers abstained from using substances, with 19 mothers (47.5%) reporting substance use at the time of interview. The majority of mothers ($n=28$; 70.0%) reported medical or psychiatric

Table 4: Early separation between mother and infant

Time of separation	% (n = 29)	Length of separation in days	Average length of separation in days
After birth	37.9 (11)	1 to 93	19.7 (sd = 30.2)
0- 3 months postpartum	41.4 (12)	2 to 212	42.8 (sd = 55.0)
3 - 6 months postpartum	27.6 (8)	4 to 246	80.1 (sd = 69.2)
6 - 12 months postpartum	17.2 (5)	14 to 76	38.2 (sd = 21.0)
12 - 24 months postpartum	6.9 (2)	17 to 27	22.0 (sd = 5.0)
Unknown	6.9 (2)	2	2.0 (sd = 0.0)
Reasons for separation			
Psychiatric admission of mother	75.9 (22)	7 to 107	46.2 (sd = 28.6)
Medical reasons	34.5 (10)	1 to 14	5.4 (sd = 4.8)
Child visiting or staying with family members	17.2 (5)	2 to 246	100.6 (sd = 106.3)

* 11 dyads experienced more than one separation

problems during their pregnancy and almost half ($n=18$; 45.0%) reported psychotic symptoms during their pregnancy.

Births took place between 30 weeks and 43 weeks gestation, with a mean gestational age of 38 weeks. Twenty-one mothers delivered via vertex delivery (52.5%) and there were twelve emergency caesarean sections (30.0%). A high number of mothers ($n=31$, 77.5%) self-reported complications during the delivery, including “pre-eclampsia” ($n=3$; 10.3%), “cervix not dilating” ($n=4$; 13.8%), “tearing” ($n=9$; 31.0%), and “excessive pain” ($n=6$; 20.7%). Mothers reported that infants experienced “distress” ($n=4$; 13.8%), “were placed in an incubator” ($n=7$; 24.1%), “were cyanotic or blue” or “needed oxygen” ($n=5$; 17.2%), and had “a low birth weight” ($n=7$; 24.1%).

Post-partum: Separation

The majority of mothers ($n=29$; 72.5%) experienced a form of separation from their infants and over half ($n=24$; 60.0%) were separated for a week or more. Reasons for separation included medical procedures ($n=10$; 34.5%), maternal psychiatric admission ($n=22$; 75.9%), and infants visiting or staying with family members ($n=5$; 17.2%). Six mothers (20.7%) returned to work, which were not classified as separations. Separations ranged from the time of birth to 1 year 9 months postpartum and the length of separation ranged from 1 day to 9 months, with an average duration of 51 days. Eleven mothers (37.9%) experienced multiple separations from their infants during the first 18 months postpartum. Timing of

and reasons for separation are summarized in Table 4.

The majority of mothers ($n=31$; 77.5%) identified themselves as the primary caregiver of their infants and family members assumed primary responsibility for the remaining infants. Four mothers did not live with their infants full-time, one due to work commitments and three due to arrangements made following their psychiatric admissions.

Discussion

This study aimed to describe the socio-demographic factors and pregnancy outcomes for South African mothers who experienced peripartum psychosis, in order to understand the impact of psychotic experiences on mothers’ experience of parenthood. This group of mothers experienced several factors that contributed to their vulnerability, including obstetric and birth complications, separations from their infants, emergence and/or relapse of psychiatric symptoms, high rates of trauma, substance abuse and significant psychosocial stressors.

The rate of unplanned pregnancy (85.0%) in this group of mothers with peripartum psychosis is higher than the 47.2% rate in mothers with mental illness examined by Du Toit and colleagues¹² and that of a group of mothers attending Midwife Obstetric Units (MOUs) in Cape Town (68.2%)¹⁷. The higher rate of unplanned pregnancy could be a consequence of the nature of their preexisting psychiatric illnesses. Similar to previous studies of mothers with mental illness, the majority of mothers

who took part in this study experienced psychiatric and obstetric problems during their pregnancy and delivery^{7,8}. However, the present study focused on peripartum psychosis, which comprises a significantly smaller portion of the population of mothers with mental illness than those described in Hoirisch-Clapauch *et al.*⁷ and Jablensky *et al.*⁸.

Prenatal substance use was common (52.5%), with the use of tobacco being the most commonly used substance. The rates of smoking (45.0%) and alcohol use (22.5%) reported here, were higher than what Vythilingum and colleagues¹⁶ found among women presenting for antenatal visits at a MOU in Cape Town (smoking in 36.8%, and alcohol use in 20.2%). The self-reported prevalence of alcohol use was lower than the 36.9% found by Williams and colleagues¹⁷ among pregnant women attending MOUs in Cape Town. Illicit substance use was reported by 17.5% of women in this study, which exceeded the rates of 4.0% and 3.6% found in other South African studies in pregnancy^{16,17}. The higher rate of substance use found in this sample may be due to multiple demographic and risk factors found among individuals with psychosis³⁵. The relative prevalence of prenatal substance use is cause for concern, as it is associated with adverse pregnancy outcomes and long-term negative child health, behavior and development outcomes¹⁴. Similar to findings reported by Zhao, McCauley and Sheeran¹⁵, the presence of both maternal mental illness and substance abuse may have contributed to the frequency of obstetric problems and poor birth outcomes found in this study.

Multiple psychosocial risk factors were prevalent among this group of women, including lack of partner support, financial difficulties, trauma and abuse histories, similar to findings reported by Stein *et al.*³⁶. Our study found a lower rate of lifetime abuse (45.0%) than the 63.8% reported by Vythilingum and colleagues³⁷ among women attending an obstetric clinic in Cape Town, South Africa. Although the reported abuse was experienced predominantly prior to pregnancy, most of the women who reported abuse during pregnancy experienced abuse by their partners. These factors may have contributed to the fact that 53.1% of mothers experienced an emergence or relapse of symptoms that necessitated psychiatric

admission, a rate higher than reported by Munk-Olsen and colleagues³⁸.

Early separation was prevalent among the mother-infant dyads in this study (71.9%), the majority of which were as a result of psychiatric admissions and occurred during the first three months postpartum. Separations during this early period are particularly concerning, as infants rely on their mother's physical proximity as the primary indicator of her availability, which is necessary for the development of secure mother-infant attachment²³. Our study found a higher rate of separation than Cès and colleagues¹⁸, who reported separation in 27.2% of mothers with psychotic disorders following joint admission to mother-baby units. During these joint admissions, mother-infant interaction could be observed: 4.4% of mothers displayed abusive behavior, while more than half displayed neglect (51.7%)¹⁸. During pregnancy, 56.0% of women in their study experienced decompensation, a higher rate than the 45.0% of mothers in our study who experienced psychotic symptoms. Factors similar to those identified by Cès and colleagues contributed to our group of mothers' early separation from their infants, including maternal psychiatric relapse during pregnancy, infant health, and characteristics of mothers' environmental support and social history¹⁸. Although the separations in our study were not due to social service intervention, the potential infant risks for neglect or maltreatment remain. Due to the absence of treatment facilities where joint admissions and longitudinal observation of mother-infant interaction were possible, potential risks could not be assessed for each dyad.

Implications for healthcare policy and practice

In combination, the risk factors described in this study highlight the challenges facing a group of women who, as a consequence of their psychiatric illness, may experience challenges in fulfilling their parental role. Mothers with SMI, particularly those with non-affective psychoses frequently experience potentially modifiable risk factors that may jeopardize their pregnancy outcomes⁶, similar to those of the population studied in the present sample, such as substance abuse and relational difficulties. Concerningly high rates of substance

abuse during pregnancy highlight the need for routine screening and psychoeducation at primary care level, implementation of preventative interventions, with close follow-up and if needed, targeted substance abuse interventions within this population. In addition to identifying the psychosocial risk factors during pregnancy, these women may benefit from close obstetric and psychiatric follow-up during pregnancy and beyond. As there appears to be an increased risk for post-natal relapse and admission, more frequent psychiatric follow-up is indicated for early detection of relapse. An integrated care strategy is necessary to provide tailored psycho-social support to assist these mothers in developing healthy attachments to their infants in light of the frequent early separations experienced. These interventions may be in the form of home visits, referral to parent-infant clinics for outpatient support, provision of parenting support or mother-infant psychotherapy that support the attachment relationship. Future pregnancies carry a significant risk for post-partum psychosis³⁹, and women may benefit from specific counselling regarding reproductive risks and subsequent vulnerability to illness.

Separations between mothers and infants due to mother-only psychiatric admissions pose several dilemmas, including refusal of and longer periods of admission, undermining of breastfeeding, and transfer of responsibility of caring for the infant to spouses and extended family⁴⁰. The National Institute for Health and Care Excellence (NICE) recognizes that women with mental illness may experience difficulties within the mother-infant relationship and recommends admission to a specialized mother-and-baby unit if the mother requires inpatient treatment within the first year postpartum²⁶. Patients admitted to mother-baby units typically require specialist care in the fields of Psychiatry and Paediatrics, with consultation to Obstetricians and Gynaecologists in the early postpartum⁴¹. The current absence of public sector mother-baby units in the Western Cape region of South Africa, where some of the risks to mother-infant interaction and attachment could be observed and potentially mitigated, is of particular concern in this group of women who experienced frequent early separations and multiple psychosocial stressors in addition to their mental illness.

The establishment of mother-baby units within the South African public health sector would provide post-natal psychiatric and psychological care for this group of women who may otherwise be at high risk of developing insecure or disorganized attachments with their infants. These units could provide specialist care and interventions to these vulnerable dyads, which would limit the need for and length of separation between mother and infant within the early postpartum period. In the absence of dedicated mother-baby units, the accommodation of mothers with mental illness and their infants within maternal and newborn health (MNH) units at district facilities is recommended. Given the elevated risks associated with pregnancy and delivery for this group of women, close psychiatric and obstetric follow-up and targeted substance abuse interventions may improve maternal and child outcomes. The development of greater awareness and early detection of SMI symptoms of bipolar disorder by implementing screening in antenatal settings is also recommended.

Ethical Considerations

Permission to conduct the study and ethical approval for the study was obtained in accordance to the provisions and approval of the Health Research Ethics Committee of Stellenbosch University (S16/01/014). Consent for participation in the study was obtained from the participants. Participation in the study was voluntary and the participants could withdraw at any point without coercion or any negative consequences. Participants were provided with transport, received refreshments during the procedure and were given payment for their participation.

Limitations

The generalizability of this data is limited due to the small sample size and heterogenous nature of the sample. The sample size was comparable to observational studies of mothers with serious mental illnesses in the postpartum⁴²⁻⁴⁴, as these patients were relatively scarce. Information on pregnancy and obstetric complications, substance use and stressors were obtained from self-reports, which may have been

more reliable if obtained through obstetric records and structured assessment tools. As no long-term follow-up information is currently available, the implications for infant outcomes are unclear. However, the high rate of complications reported may have impacted negatively on mothers' experiences of pregnancy and delivery, and their early experiences of their infants.

Conclusion

This group of mothers who experienced peripartum psychosis faced several challenges, including early separation from their infants, high rates of peripartum psychiatric relapse and admission, substance abuse difficulties, socio-economic risk factors and widespread trauma histories. All these factors impact on the caregiving environment and may compromise the mothers' ability to provide sensitive and nurturing care. This is a sample of women at high risk who would benefit from close follow-up by a multi-disciplinary team able to assist with a comprehensive bio-psychosocial care approach to the mother-infant dyad.

Acknowledgements

The authors wish to thank the mothers who participated in the study. We are grateful for the assistance of Karis Moxley for research support. We appreciate the funding support provided by grants from the South African National Research Foundation (TTK180502325336) and the Harry Crossley Foundation.

Contribution of Authors

JV conceptualised and designed the study, collected and analysed data, prepared the manuscript in collaboration with AB and DJHN. AB and DJHN provided inputs in finalising the manuscript. All authors approved the manuscript.

References

1. Meltzer-Brody S, Howard LM, Bergink V, et al. Postpartum psychiatric disorders. *Nat Rev Dis Prim.* 2018;4:1-18. doi:10.1038/nrdp.2018.22
2. Jones I, Chandra PS, Dazzan P, Howard LM. Bipolar disorder, affective psychosis, and schizophrenia in pregnancy and the post-partum period. *Lancet.*

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- 2014;384(9956):1789-1799. doi:https://doi.org/10.1016/S0140-6736(14)61278-2
3. Kendell RE, Chalmers JC, Platz C. Epidemiology of puerperal psychoses. *Br J Psychiatry.* 1987;150(5):662-673.
4. Doucet S, Jones I, Letourneau N, Dennis CL, Blackmore ER. Interventions for the prevention and treatment of postpartum psychosis: A systematic review. *Arch Womens Ment Health.* 2011;14(2):89-98. doi:10.1007/s00737-010-0199-6
5. Howard LM. Fertility and pregnancy in women with psychotic disorders. *Eur J Obstet Gynecol Reprod Biol.* 2005;119(1):3-10. doi:10.1016/j.ejogrb.2004.06.026
6. Taylor CL, Stewart R, Ogden J, Broadbent M, Pasupathy D, Howard LM. The characteristics and health needs of pregnant women with schizophrenia compared with bipolar disorder and affective psychoses. *BMC Psychiatry.* 2015. doi:10.1186/s12888-015-0451-8
7. Hoirisch-Clapauch S, Brenner B, Nardi AE. Adverse obstetric and neonatal outcomes in women with mental disorders. *Thromb Res.* 2015;135(Suppl. 1):S60-S63. doi:10.1016/S0049-3848(15)50446-5
8. Jablensky A V, Morgan V, Stephen Z, Bower C, Yellachich L-A. Pregnancy, Delivery, and Neonatal Complications in a Population Cohort of Women With Schizophrenia and Major Affective Disorders. *Am J Psychiatry.* 2005;162:79-91. http://ajp.psychiatryonline.org. Accessed March 14, 2019.
9. Nilsson E, Lichtenstein P, Cnattingius S, Murray RM, Hultman CM. Women with schizophrenia: Pregnancy outcome and infant death among their offspring. *Schizophr Res.* 2002;58:221-229. doi:10.1016/S0920-9964(01)00370-X
10. MacCabe JH, Martinsson L, Lichtenstein P, et al. Adverse pregnancy outcomes in mothers with affective psychosis. *Bipolar Disord.* 2007;9:305-309. doi:10.1111/j.1399-5618.2007.00382.x
11. Miller LJ, Finnerty M. Sexuality, pregnancy, and childrearing among women with schizophrenia-spectrum disorders. *Psychiatr Serv.* 1996;47:502-505.
12. Du Toit E, Jordaan E, Niehaus D, Koen L, Leppanen J. Risk factors for unplanned pregnancy in women with mental illness living in a developing country. *Arch Womens Ment Health.* 2018;21(3):323-331. doi:https://doi.org/10.1007/s00737-017-0797-7
13. Hauck Y, Nguyen T, Frayne J, Garefalakis M, Rock D. Sexual and Reproductive Health Trends Among Women With Enduring Mental Illness: A Survey of Western Australian Community Mental Health Services. *Health Care Women Int.* 2015;36(4):499-510. doi:10.1080/07399332.2014.973957
14. Louw K-A. Substance use in pregnancy: The medical challenge. *Obstet Med.* 2018;11(2):54-66. doi:10.1177/1753495X17750299
15. Zhao L, McCauley K, Sheeran L. The interaction of pregnancy, substance use and mental illness on birthing outcomes in Australia. *Midwifery.*

- 2017;54:81-88. doi:10.1016/j.midw.2017.08.007
16. Vythilingum B, Roos A, Faure SC, Geerts L, Stein DJ. Risk factors for substance use in pregnant women in South Africa. *South African Med J*. 2012;102(11):851. doi:10.7196/SAMJ.5019
 17. Williams PP, Jordaan E, Mathews C, Lombard C, Parry CDH. Alcohol and Other Drug Use during Pregnancy among Women Attending Midwife Obstetric Units in the Cape Metropole, South Africa. *Adv Prev Med*. 2014;2014:1-10. doi:10.1155/2014/871427
 18. Cès A, Falissard B, Glangeaud-Freudenthal NMCC, Sutter-Dallay A-LL, Gressier F. Pregnancy in women with psychotic disorders: risk factors associated with mother-baby separation. *Arch Womens Ment Health*. 2018;21(6):699-706. doi:10.1007/s00737-018-0848-8
 19. Howard LM. The separation of mothers and babies in the treatment of postpartum psychotic disorders in Britain 1900-1960. *Arch Womens Ment Health*. 2000;3(1):1-5. doi:10.1007/PL00010323
 20. Bowlby J. The effect of separation from the mother in early life. *Ir J Med Sci*. 1954;29(3):121-126. doi:10.1007/BF02952876
 21. Spitz RA. Hospitalism: An inquiry into the genesis of psychiatric conditions in early childhood. *Psychoanal Study Child*. 1945;1(1):53-74. doi:10.1080/00797308.1945.11823126
 22. Konishi A, So R, Yoshimura B. Mother-infant separation among mothers with mental illness: An exploratory observational study in Japan. *Asian J Psychiatr*. 2018;32:1-4. doi:10.1016/j.ajp.2017.11.024
 23. Howard K, Martin A, Berlin LJ, Brooks-Gunn J. Early mother-child separation, parenting, and child well-being in Early Head Start families. *Attach Hum Dev*. 2011;13(1):5-26. doi:10.1080/14616734.2010.488119
 24. Connellan K, Bartholomaeus C, Due C, Riggs DW. A systematic review of research on psychiatric mother-baby units. *Arch Womens Ment Health*. 2017;20(3):373-388. doi:10.1007/s00737-017-0718-9
 25. Baker AA, Morison M, Game JA, Thorpe JG. Admitting Schizophrenic Mothers With Their Babies. *Lancet*. 1961;278(7201):237-239. doi:10.1016/S0140-6736(61)92998-1
 26. National Institute for Health and Clinical Excellence (NICE). Antenatal and Postnatal Mental Health: the NICE Guideline on Clinical Management. *NICE Clin Guidel*. 2014:1-919. doi:92-5-105177-1
 27. Suchman NE, Ordway MR, de las Heras L, McMahon TJ. Mothering from the Inside Out: results of a pilot study testing a mentalization-based therapy for mothers enrolled in mental health services. *Attach Hum Dev*. 2016;18(6):596-617. doi:10.1080/14616734.2016.1226371
 28. Wan MW, Green J. The impact of maternal psychopathology on child-mother attachment. *Arch Womens Ment Health*. 2009;12(3):123-134. doi:10.1007/s00737-009-0066-5
 29. Fonagy P, Sled M, Baradon T. Randomized Controlled Trial of Parent-Infant Psychotherapy for Parents With Mental Health Problems and Young Infants. *Infant Ment Health J*. 2016;37(2):97-114. doi:10.1002/imhj.21553
 30. World Health Organization, United Nations Children's Fund, World Bank Group. *Nurturing Care for Early Childhood Development: A Framework for Helping Children Survive and Thrive to Transform Health and Human Potential*. Geneva: World Health Organization; 2018.
 31. Britto PR, Lye SJ, Proulx K, et al. Nurturing care: promoting early childhood development. *Lancet*. 2017;389(10064):91-102. doi:10.1016/S0140-6736(16)31390-3
 32. Zabow T. Competence and decision-making: Ethics and clinical psychiatric practice. *South African J Bioeth Law*. 2008;1(2):61-63. doi:10.7196/SAJBL.29
 33. Kay SR, Fiszbein A, Opler LA. The Positive and Negative Syndrome Scale (PANSS) for Schizophrenia. *Schizophr Bull*. 1987;13(2):261-276. doi:10.1016/0006-3223(91)91039-t
 34. Luckhoff H, Phahladira L, Scheffler F, et al. Weight gain and metabolic change as predictors of symptom improvement in first-episode schizophrenia spectrum disorder patients treated over 12 months. *Schizophr Res*. 2019;206:171-176. doi:10.1016/j.schres.2018.11.031
 35. Gregg L, Barrowclough C, Haddock G. Reasons for increased substance use in psychosis. *Clin Psychol Rev*. 2007;27(4):494-510. doi:10.1016/j.cpr.2006.09.004
 36. Stein DJ, Koen N, Donald KA, et al. Investigating the psychosocial determinants of child health in Africa: The Drakenstein Child Health Study. *J Neurosci Methods*. 2015;252:27-35. doi:10.1016/j.jneumeth.2015.03.016
 37. Vythilingum B, Field S, Kafaar Z, et al. Screening and pathways to maternal mental health care in a South African antenatal setting. *Arch Womens Ment Health*. 2013;16:371-379. doi:10.1007/s00737-013-0343-1
 38. Munk-Olsen T, Laursen TM, Mendelson T, Pedersen CB, Mors O, Mortensen PB. Risks and predictors of readmission for a mental disorder during the postpartum period. *Arch Gen Psychiatry*. 2009;66(2):189-195. doi:10.1001/archgenpsychiatry.2008.528
 39. Blackmore ER, Rubinow DR, O'Connor TG, et al. Reproductive outcomes and risk of subsequent illness in women diagnosed with postpartum psychosis. *Bipolar Disord*. 2013;15(4):394-404. doi:10.1111/bdi.12071
 40. Wisner KL, Jennings KD, Conley B. Clinical Dilemmas Due to the Lack of Inpatient Mother-Baby Units. *Int J Psychiatry Med*. 1996;26(4):479-493. doi:10.2190/NFJK-A4V7-CXUU-AM89
 41. Glangeaud-Freudenthal NMC, Howard LM, Sutter-Dallay A-L. Treatment – Mother-infant inpatient units. *Best Pract Res Clin Obstet Gynaecol*. 2014;28(1):147-157. doi:10.1016/j.bpobgyn.2013.08.015

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42. Pawlby S, Fernyhough C, Meins E, Pariante CM, Seneviratne G, Bental RP. Mind-mindedness and maternal responsiveness in infant–mother interactions in mothers with severe mental illness. *Psychol Med.* 2010;40(11):1861-1869. doi:10.1017/s0033291709992340
43. Rigby J, Conroy S, Miele-Norton M, Pawlby S, Happé F. Theory of mind as a predictor of maternal sensitivity

Pregnancy outcome in peripartum psychosis

- in women with severe mental illness. *Psychol Med.* 2016;46(9):1853-1863. doi:10.1017/S0033291716000337
44. Wan MW, Warren K, Salmon MP, Abel KM. Patterns of maternal responding in postpartum mothers with schizophrenia. *Infant Behav Dev.* 2008;31:532-538. doi:10.1016/j.infbeh.2008.04.003.