Royal Australian and New Zealand College of Psychiatrists

Scholarly Project

Prevalence and characteristics of women with borderline personality pathology referred to a perinatal consultation liaison service

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Abstract

Objective

The aim of this study was to examine the following clinical characteristics of pregnant women referred to a perinatal consultation-liaison psychiatry service: prevalence of borderline personality pathology (defined as borderline personality disorder and borderline personality traits); whether this diagnosis was identified at time of referral; and involvement with child safety services.

Method

Over an 18-month period 318 women were referred to and seen by the perinatal consultation-liaison psychiatry service. Socio-demographic and clinical data were recorded and diagnoses (DSM-5[1]) made following clinical interview and review of past history. Data were analysed using descriptive statistics and logistic regression analysis.

Results

The most common diagnoses found were depressive disorder (25.5%) and anxiety disorder (15.1%). Borderline personality disorder was found in 10.1% of women and almost one in five women had two or more borderline personality traits (19.5%). Only four women (1.3%) were referred for personality issues or aggression. When compared to women with other diagnoses, women with borderline personality pathology had higher rates of unplanned pregnancy and being unpartnered, as well as substance use during pregnancy and higher rates of child safety services

involvement as a child or in a previous pregnancy. Over 40% of women with borderline personality pathology were referred to child safety services in the current pregnancy and a diagnosis of borderline personality pathology increased the risk of child safety services involvement by almost six-fold (OR: 5.5; 95% CI 1.50-20.17).

Conclusion

The findings suggest that borderline personality pathology in the perinatal period is a common occurrence, which may be underrecognised. Socio-demographic issues, substance use and child safety services involvement, currently and in the past, were more common for women with these diagnoses, suggesting a general vulnerability and transgenerational effects of adversity. There is scope to expand on strategies of identifying these women early in the perinatal period and to offer targeted and evidence-based interventions, which may prevent negative outcomes for mothers and offspring. A more inclusive approach, involving partners and other family members may be of benefit.

Introduction

Over the past two decades, there has been increasing recognition of the importance of the perinatal period and infancy for development of neurological and psychological capacities and functioning in later life. The quality of the caregiver-infant relationship and interactions within this context, as well as presence or absence of adverse influences in utero, are critically important in determining neurological, psychological and social development and long-term mental well-being[2-4]. There is growing interest in distortions of early experiences, such as insecure or disorganised attachment, insensitive interactions, neglect and trauma, and their potential impact on development [5].

Attachment research is exploring a model of 'transgenerational transmission' of attachment disturbance in which parents who have experienced early adversity may develop difficulties with respect to recognising and responding to their infant's needs and are therefore at risk of repeating parenting disturbances[6-8]. This transgenerational framework has been significant in theorising about the repetition of dysfunctional relationship patterns, such as child abuse and disturbances of attachment across generations[9 10], and has broadened the understanding of early difficulties in parenting.

Thus it has been proposed that increased efforts should focus on identifying and working with 'high-risk' caregivers, i.e. caregivers who are likely to have more complex difficulties, such as attachment and relationship difficulties with their infant[11]. One group identified as 'high-risk' caregivers are women with borderline personality pathology (BPP), who have frequently experienced early trauma and

disorganised attachment with resulting personality dysfunction and parenting identity disturbances, often complicated by co-morbid substance use, depression and anxiety[12-14].

BPP encompasses both borderline personality disorder (BPD), a serious disturbance of personality functioning characterised by affective instability and emotional dysregulation, identity disturbance, poor impulse control and difficulties in interpersonal functioning[1], as well as subthreshold borderline personality symptoms or traits. BPD is associated with increased morbidity and mortality and there is a lifetime incidence of 70% for self-injury and 10% for suicide[15]. There are also high rates of psychiatric co-morbidity, distress, stigma, substance use and use of healthcare resources[16-18]. Making a diagnosis of BPD can be challenging due to the heterogeneity of the condition and concerns about appropriate thresholds[16 19]. There is evidence that even subthreshold BPD features are clinically significant and that early intervention programs should have broad inclusion criteria[20 21]. Some clinicians and researchers therefore prefer a dimensional approach of conceptualising BPD[22] and inclusion of sub-clinical BPD symptoms, as captured by BPP[23].

BPD affects approximately 1-4 % of the population[24], but the prevalence in general psychiatric populations has been estimated as high as 22%[25]. The figures for significant borderline traits are not known. Whilst BPD is still predominantly diagnosed in females[1], epidemiological studies have found equal prevalence of BPD in men and women[17]. The prevalence of BPD (and subthreshold symptoms) in antenatal clinics or in groups of postnatal women is unknown[26], but presumably lies somewhere between the general population prevalence and that seen in psychiatric

outpatient populations. The limited studies available suggest that BPP is a common problem among women who receive psychiatric treatment in the perinatal period. For example, in a recent study examining the range of diagnoses found in 200 women who were referred to and seen by a perinatal consultation-liaison service, Judd et al found that 11.5% had BPD and a further 19.5% had two or more BPD traits[27]. By contrast, Harvey and Pun in a study examining the prevalence of antenatal depression and other psychiatric conditions in 52 women referred with a score of ≥12 on the Edinburgh Postnatal Depression Scale (EPDS), found only 2% of women had BPD. Of note, women were only included in the study if the EPDS score was the only reason for referral; women referred for current or past depression or other psychiatric symptoms were excluded[28]. Similarly, in a retrospective case review Blankley et al found only 5.7% of women referred to a perinatal service had a diagnosis of BPD, but the authors suggested this may be an underrepresentation and related to only women with greater symptom severity being referred[29].

Studies undertaken in the postnatal period also suggest BPP is a common problem. Yelland et al assessed 117 women admitted to an Australian Mother-Baby-Unit over an 18-month period, and found rates of BPD as high as 23.1% (including principal diagnosis and co-morbid diagnosis) and a further 11.1% with BPD traits[30]. Nair et al examined diagnoses and other characteristics of 149 women admitted to a specialist inpatient parent-infant psychiatric service, the majority of women seen in the postnatal period, and noted that 4% of women had a primary diagnosis of BPD and 15% had co-morbid BPD[31].

Newman (2011), a key proponent of the importance of early identification of and intervention with 'high-risk' caregivers, has proposed BPD as a model of disturbed

parenting, referring to possible neurodevelopmental effects of early childhood trauma seen in adults with BPD. Affect dysregulation and deficits in socio-emotional processing have been recognised as key elements relating to parenting difficulties in these individuals[32]. Consistent with the proposed transgenerational transmission of attachment disturbance, Newman and colleagues explored interactional patterns between women with BPD and their infants, and found these mothers to be less sensitive in interactions with their infant when compared to controls[33]. These women also tended to rate their parenting satisfaction as low and may feel incompetence and disappointment when caring for their infants. Hobson et al found that a higher proportion of women with BPD, compared with groups of women with depression or without psychopathology, showed disrupted affective communication with their infants[34].

Two systematic reviews have examined parenting in mothers with BPP. Eyden et al found that mothers with BPP were more likely to engage in maladaptive interactions with their children and that adverse offspring outcomes may be transmitted via maladaptive parenting and maternal emotional dysfunction[23]. Petfield et al came to similar conclusions, noting high parenting stress and low parenting satisfaction in mothers with BPD, and poor outcomes for their children with regard to interpersonal relationships and cognitive-behavioural risk factors[35].

Studies demonstrate offspring of women with BPP may be at risk of negative outcomes across a wide range of domains throughout different developmental stages. Indeed, there are possible physical implications for mothers with BPD and their infants; these include associations with obstetric and neonatal complications, such as gestational diabetes, premature rupture of membranes, preterm birth and

low Apgar scores[29 36]. In addition, there are associations between maternal BPD and higher prevalence of psychiatric disorders in offspring[37], as well as difficulties with psychosocial functioning later in life[38]. Macfie and Swan demonstrated an impact of parental BPD on the representation of the child-caregiver relationship in the narratives of pre-school children, showing more themes of role reversal, fear of abandonment, negative relationship expectations and emotional dysregulation when compared to controls. The authors postulated that these experiences might be a risk factor for psychopathology in later life[39]. Berg-Nielsen and Wichström examined preschool children of parents with symptoms of BPD, antisocial personality disorder or narcissistic personality disorder and concluded that even subclinical levels of parental personality disorder predicted symptoms of behavioural and emotional diagnoses in the children[40]. Barnow et al found maternal BPD, as well as sub-threshold BPD symptoms, predicted offspring BPD symptoms in adolescence and early adulthood, again supporting the theory of a transgenerational transmission[41].

Importantly, the difficulties experienced by offspring of women with BPP may relate not only to the emotional interactions which occur in the mother-infant relationship, but also to adverse influences in utero and following the baby's birth. These adversities include exposure to maternal substance use, maternal stress and domestic violence. In a retrospective case review, Blankley et al found women with BPD had high rates of co-morbid substance use in the perinatal period. The overall perinatal experiences of these women were also rated as more distressing than in the control group[29]. These findings confirm that 'high-risk' caregivers experience

significant challenges, which may harbour the potential for child maltreatment in the form of neglect, rejection or physical abuse[33].

Until recently, the Australian Clinical Practice Guideline for Mental Health Care in the Perinatal Period did not include women with BPP. However, the updated guideline (2017) does include BPD[42]. Reflecting the findings regarding parenting difficulties experienced by women with BPP, the need for intensive support in the early postnatal period is emphasised. Furthermore, the guideline notes that targeted mother-infant therapy to assist women deal with emotional dysregulation may be required. It is also noted that child protection risks must be assessed and if necessary addressed[42]. Similarly, clinical guidelines for treatment of BPD now include recommendations to support parenting skills and attachment relationships[24], recognising the association between maternal BPD and negative offspring outcomes.

Despite the recognition of the importance of assessing child protection risk, there is little data available regarding child safety services (CSS) involvement in mothers with BPP. However, the existing data indicates relatively high rates. For instance, Blankley et al found over 50% of women with BPD, who were referred to a perinatal inpatient and outpatient psychiatric service and subsequently examined in a retrospective case review study, were referred to CSS[29]. A retrospective cohort study by O'Donnell et al found a diagnosis of personality disorder, among other psychiatric diagnoses, was a risk factor for child maltreatment allegations[43]. In a Canadian study, Laporte and colleagues surveyed 291 caseworkers working with mothers whose children were involved with CSS and found the prevalence of maternal BPD was 34.3%. In addition, 48.9% of mothers with BPD had a history of CSS involvement in their own childhood[44]. In a cohort study, Perepletchikova and colleagues examined the history

of childhood maltreatment and BPD in mothers whose children were removed from home by CSS and compared them with community controls without CSS involvement. The findings showed that 50% of mothers with CSS involvement self-reported elevated BPD features compared with only 15% of the controls. Furthermore, mothers involved with CSS scored significantly higher on measures of self-reported childhood maltreatment history than the controls[45].

This study sought to add to the existing literature regarding women with BPP in the perinatal period. Consistent with previous research, the study included both women with BPD and those with borderline traits - here summarised as BPP. The study examined the frequency of diagnosis of BPP, and the past and current involvement of pregnant women with BPP with CSS. This may provide further understanding of the transgenerational cycle of development of severe personality disturbance and ways of interrupting this.

Aims and Hypotheses

Aims

The aims of this study were:

1) To examine the frequency of diagnosis of BPP in antenatal referrals.
2) To examine how many women referred to the service, who were found to have BPP, were referred for this reason and/or currently identified.
3) To examine the frequency of past history of involvement with CSS in women with BPP vs. other diagnoses.
4) To examine the frequency of notification to CSS in the current pregnancy in women with BPP vs. other diagnoses.

Hypotheses

1) The rate of BPP among antenatal referrals will be greater than Australian population rates.
2) A known diagnosis of BPP will not be a common reason for initial referral and may not be identified at time of referral.
3) Women with BPP will be more likely than other women seen by the service to have past involvement with CSS.
4) Women with BPP will be more likely than other women seen by the service to be notified to CSS during the current pregnancy.

Method

Setting

This study was undertaken through the perinatal consultation-liaison psychiatry (PCLP) service of a tertiary public hospital. The hospital services a population of over 250,000 people, and within the maternity service there are approximately 2,000 deliveries per year. Women attending the maternity service are offered routine antenatal screening using the Edinburgh Postnatal Depression Scale (EPDS) at the antenatal booking-in visit. All women are also asked a series of questions about their psychosocial circumstances. This practice is in accordance with the current Clinical Practice Guideline for Mental Health Care in the Perinatal Period[42].

Participants

Study participants were all women who were referred in the antenatal period and who were seen by the PCLP team over an 18 month period. Women referred to the PCLP service were: those who scored ≥13 on the EPDS, women who had a known or self-reported past history and/or current diagnosis of depression, anxiety, personality disorder or major mental illness, such as bipolar disorder or schizophrenia; and women currently prescribed psychotropic medications.

Procedure

All women were seen for assessment by the consultant psychiatrist or psychiatric registrar. The assessment included a clinical diagnostic interview and review of past psychiatric history, including previous involvement with mental health services and

whether there was any substance use prior to or during the current pregnancy. Following the initial assessment, women continued to be seen as frequently as clinically indicated.

Socio-demographic data collected included age and relationship status (partner/no partner). It was also recorded whether the pregnancy was planned or unplanned, and whether there had been any previous involvement with CSS either as a child or in previous pregnancies.

Following the clinical interview, diagnoses were made according to DSM-5[1] criteria and grouped as shown in table 1. Of note, when present, both personality disorder and clinically significant personality traits were recorded.

[Insert table 1 here]

Patient information was collected on a data form designed for the study. The data were entered into an excel database with each patient assigned a study number, and identifying information removed. Hard copies of the data were securely filed and stored, and electronic data was password protected.

Statistical analysis

Descriptive statistics were used to analyse the socio-demographic and clinical characteristics of the sample, and to test hypotheses 1-3. Data processing and frequency analyses were performed using SPSS v17.0. To test hypothesis 4, a hierarchical binary logistic regression was performed, looking at the impact of various risk factors as dependent variables that together might predict notification

to CSS in the current pregnancy. Predictor variables entered initially were age, unplanned pregnancy, being unpartnered, CSS involvement as a child, CSS involvement in previous pregnancy, DSM-5 diagnosis (substance use disorder, anxiety disorder, depressive disorder and other DSM-5 diagnoses, except BPD and borderline personality traits). These predictors were entered into the equation simultaneously to determine the influence of predictor variables in the presence of other variables. BPP was entered in a second step to look at the effect of BPP adjusted for the confounding role of the other variables. The author received external assistance with the statistical analysis.

Ethics

Approval for the study was granted from the local Human Research Ethics Committee.

Results

Over the study period, 459 women were referred to the service. Of these, 318 women (69.3%) were seen for assessment, 141 (30.7%) declined the offered appointment or did not attend a scheduled appointment.

Socio-demographic and clinical characteristics of the total sample

Characteristics of the women involved in the study are presented in table 2. The mean age was 27.5 years with a range between 13-43. Almost two-thirds of pregnancies were unplanned (n=193; 60.7%) and a significant number of women were unpartnered (n=58; 18.2%). Substance use in pregnancy was substantial with 43 women (13.5%) describing any substance use and cannabis being the most commonly used substance (n=28; 8.8%), followed by alcohol (n=14; 4.4%). Relatively high rates of CSS notification for the current pregnancy were found (n=53; 16.7%), and 37 women (11.6%) had been involved with CSS as a child.

[Insert table 2 here]

Reasons for referral

The reasons for referral for the total sample are shown in table 3. The main reason for referral was past anxiety or depression (n=153; 48.1%), followed by an elevated EPDS score (n=117; 36.8%) and current symptoms of anxiety or depression (n=80; 25.2%). Of note, only a very small number of women were referred for personality issues or aggression (n=4; 1.3%). Frequently more than one reason was given for

referral, therefore the total number of reasons for referral was larger than the total sample size.

[Insert table 3 here]

Diagnoses

Approximately one third of women (n= 110; 34.6%) were found to have no diagnosis, a quarter of the women (n=81; 25.5%) had a depressive disorder and 48 women (15.1%) had an anxiety disorder. A substantial number of women were found to have BPD (n= 32; 10.1%), and almost one in five women had clinically significant borderline personality traits (n=62; 19.5%). These were noted in the list of diagnoses if two or more traits were present, most commonly affective instability and inappropriate intense anger. Of note was a relatively high rate of cannabis use disorder in the sample (n= 27; 8.5%). A range of other diagnoses were made and can be found in table 4. The total number of diagnoses exceeded the number of patients because comorbidity was common.

[Insert table 4 here]

Socio-demographic and clinical characteristics of women with BPP vs. no BPP

Table 5 compares socio-demographic and clinical characteristics of women with BPD, borderline personality traits, BPP and no BPP in separate columns. BPP (n=94; 29.6%) is the sum of BPD and borderline personality traits. There were no major differences

in age between the groups. A higher percentage of women with BPP had an unplanned pregnancy compared to women without BPP (77.7% vs. 53.6%). The rate of being unpartnered was slightly lower in the 'no BPP' group compared to the other three groups.

Women with BPP consistently had a higher percentage of substance use during pregnancy throughout all substances; the difference was particularly marked when comparing cannabis use in women with BPP to women with no BPP (21.3% vs. 3.6%). CSS involvement was more common in women with BPP. A quarter of the women with BPP had CSS involvement as a child (25.5%) versus 5.8% of women with no BPP. Almost a third of women with BPP had a CSS notification made in a previous pregnancy (31.9%) and 42.6% were notified to CSS in the current pregnancy. Women with no BPP only had a notification made in 5.8% of both cases. Women who had a diagnosis of BPD were notified to CSS in 50% of cases.

[Insert table 5 here]

Likelihood of CSS notification in current pregnancy (BPP vs. no BPP)

Results of the hierarchical binary logistic regression analysis, performed to examine the influence of identified risk factors to predict CSS notification in the current pregnancy, are displayed in table 6. After accounting for all the variables in the equation, factors that were independent predictors of CSS notification were involvement with CSS as a child, CSS notification in a previous pregnancy, substance use disorder, other DSM-5 diagnoses and BPP. BPP was responsible for an almost six-fold increase in risk of notification to CSS (OR 5.5; 95% CI 1.50-20.17). Overall the

model accounted for 70.5% of the variance (Nagelkerke R^2). The full model was a good fit (Hosmer & Lemeshow p=0.887).

[Insert table 6 here]

Discussion

This study sought to expand on the existing literature around BPP in the perinatal period by examining prevalence of BPP and characteristics of pregnant women referred to a PCLP service.

Approximately 30% of women referred and offered an appointment did not attend. Other studies found similar, if not higher, non-attendance rates[28 46]. The reasons for this were not explored in this study, but socioeconomic and patient factors have been postulated[28]. Psychiatric services offered to women in the antenatal period should be convenient to access and potential barriers to engagement need to be addressed.

Whilst it was not possible to make a direct comparison with population rates, the rate of BPD found (10.1%) was between general population rates and psychiatric outpatient rates[24 25]. The rate of clinically significant borderline personality traits was 19.5%, therefore almost one third of women were found to have BPP. Several studies examining postnatal women referred to Mother-Baby-Units found higher rates of BPD than in this study[30 31], which is to be expected, as these populations would likely include a higher percentage of women with acute psychiatric illness, whereas the sample of this study was derived largely through an antenatal screening process.

Consistent with the second hypothesis, very few women were detected to have BPP after initial assessment and screening through maternity services. Consistent with these findings, Judd et al found that many women referred to a perinatal consultation liaison service after scoring above cut-off in the EPDS did not have a

depressive or anxiety disorder but BPP[27]. Further assessment by trained clinicians is therefore required to identify women at risk.

Of note were the socio-demographic characteristics of the sample. There were high rates of unplanned pregnancy in women with BPP (77.7%), whereas the rates for women without BPP (53.6%) were closer to general population rates of approximately 50%[47].

The study also found that women with BPP had higher rates of being unpartnered, compared with other women referred to the service. These findings are not surprising, considering that problems with interpersonal relationships are a central aspect of BPP. This may make women with BPP more vulnerable to lacking emotional and social supports and may exacerbate parenting difficulties.

Substance use during pregnancy was found to be substantial in the total sample with 13.5%; again higher rates in women with BPP were noted when compared to women without BPP (30.9% vs. 6.3%), reflecting established associations between BPP and substance use[12 16 31]. Interestingly, cannabis was the most commonly used substance, followed by alcohol, and 8.5% of the total sample had a diagnosis of cannabis use disorder. Women with BPP had a high rate of cannabis use during pregnancy (21.3%), which was higher than the rate of recent use in the general population (10.2%) and higher than the rate of reported illicit substance use in pregnancy (2.2%)[48]. Of note, this study did not collect data on nicotine use; presumably the rates for cigarette smoking would exceed cannabis use.

As hypothesised, CSS involvement in childhood, previous pregnancies and in the current pregnancy was considerably higher in women with BPP. A quarter of women with BPP had CSS involvement in their childhood and over 40% were notified in the

current pregnancy. BPP alone increased the risk of CSS notification by almost six-fold. Several other studies showed equally high rates of CSS involvement[29 44]. These findings underscore the impression that childhood adversity may be transmitted across generations. Although many parents who experienced childhood adversity do not become perpetrators of abuse themselves, early parental experience of maltreatment in childhood is a risk factor for CSS involvement[49] and for engaging in abusive behaviours[45]. Similarly, data around parenting with BPP and effects of BPP on mother-infant interactions found significant parenting and interactional disturbances in this population[33]. It is therefore understandable that women with BPP may have a higher risk of CSS involvement than women without the pathology.

This study focused exclusively on the mother as the caregiver, not including fathers, partners or other family members. This was partially due to the setting being a PCLP service, reviewing women referred from a maternity outpatient clinic. More often than not, women attended alone. Impact of partners can be positive or negative - they may mitigate or exacerbate risks to the child and family environment may also have an effect. Even if mothers do not directly maltreat or neglect their children, maternal BPP is associated with certain clinical and socio-demographic factors, such as high rates of unstable relationships, marital distress, domestic violence and financial disadvantage, which may impair the provision of a safe environment for the child[50].

These findings support calls for targeted and evidence-based early interventions, which ideally should begin before birth of the child, and address modifiable risk factors and difficulties this vulnerable population experiences across a wide range of domains.

Interventions that have been developed include for instance the 'Parenting with Personality Disorder' brief intervention through the Project Air Strategy Parenting Project[51], as well as specialised dialectical behaviour therapy with focus on parenting and the mother-infant relationship, which has shown promising results[52]. The 'Parenting with Feeling Infant-Parent Intervention Program' focuses on early emotional interactions and specifically includes the infant as a partner in the process[53]. The involvement of fathers, partners and families is an area that deserves further exploration, and research suggests that including and supporting families may yield promising results[47].

More prospective studies expanding on existing research are needed in order to increase understanding of possible mechanisms of transmission of adversity and interventions that may mitigate negative offspring outcomes and break the cycle of transgenerational transmission.

Strengths and limitations

In this study, there was no standardised procedure for diagnosis, for example a structured clinical interview. Different diagnostic tools can produce different prevalence of a disorder and unstructured assessments have been described as less likely to result in diagnosis of BPD[54]. Another limitation was the absence of formal assessment of inter-rater reliability, therefore potentially affecting diagnoses made. However, diagnoses were made after a clinical interview was conducted and a strength of the study was that most patients were seen for more than a single assessment, which allowed ongoing review of the diagnosis. Clinicians also had access to electronic medical records and were able to review past contacts with the local mental health service. Additionally, patients were discussed in regular clinical

multidisciplinary review meetings. The study population, whilst being a real-life sample, was a convenience sample potentially affecting generalisability of results to the wider population.

Conclusion

The findings of this study suggest that perinatal BPP is fairly common and possibly underrecognised in certain populations. Socio-demographic and clinical characteristics of antenatal women with BPP indicate vulnerabilities, such as having an unplanned pregnancy, being unpartnered and having high rates of substance use. Additionally, these women also tend to have high rates of CSS involvement as a child, in previous pregnancies and a higher risk of being notified to CSS in their current pregnancy. These findings underpin the existing model of transgenerational transmission of adversity. Future studies should include partners and focus on evaluation of early interventions.

Tables

Table 1. Diagnosis groups

Depressive disorder	
Major depressive disorder	**Adjustment disorder**
Persistent depressive disorder	**- with depressed mood**
	- with mixed anxiety & depressed mood
Anxiety disorder	
Social phobia	**Generalised anxiety disorder**
Panic disorder	**Adjustment disorder with anxiety**
Agoraphobia	
Personality disorder	
Borderline	**Antisocial**
Narcissistic	**Other**
Personality traits	
Borderline	**Antisocial**
Dependent	**Other**
Substance use disorder	
Alcohol	**Amphetamines**
Cannabis	**Benzodiazepines**
Opiates	
Other	
Schizophrenia	**Acute stress disorder**
Bipolar disorder	**Post-traumatic stress disorder**
Obsessive compulsive disorder	**Intellectual disability**
Eating disorder	

Table 2. Sample characteristics

Total Sample n = 318	
Mean Age (SD)	**27.5 (6.2)**
Age Range - years	**13-43**
Unplanned pregnancy - number (%)	**193 (60.7%)**
Unpartnered - number (%)	**58 (18.2%)**
Substance use in pregnancy - number (%)	
ANY	**43 (13.5%)**
Alcohol	**14 (4.4%)**
Cannabis	**28 (8.8%)**
Amphetamines	**7 (2.2%)**
Opiates	**4 (1.3%)**
CSS involvement - number (%)	
As child	**37 (11.6%)**
In previous pregnancy	**43 (13.5%)**
Notification made this pregnancy	**53 (16.7%)**

Table 3. Reason for referral

Total Sample n = 318	number (%)
Elevated EPDS	**117 (36.8%)**
Current symptoms of anxiety or depression	**80 (25.2%)**
Past anxiety or depression	**153 (48.1%)**
Self-harm risk or suicide risk	**9 (2.8%)**
"Known"* diagnosis of bipolar disorder or schizophrenia or psychosis	**24 (7.5%)**
Substance use	**21 (6.6%)**
Personality issues or aggression	**4 (1.3%)**
Parenting issues or CSS issues	**7 (2.2%)**
Advice with management plan	**13 (4.1%)**
Social issues	**24 (7.5%)**

** "known" = patient self-report of diagnosis*

Table 4. Diagnoses

Total Sample n = 318	number (%)
No diagnosis	**110 (34.6%)**
Depressive disorder	**81 (25.5%)**
Anxiety disorder	**48 (15.1%)**
Personality disorder	
Borderline	**32 (10.1%)**
Antisocial	**3 (0.9%)**
Narcissistic	**1 (0.3%)**
Other	**0 (0%)**
Personality traits	
Borderline	**62 (19.5%)**
Antisocial	**8 (2.5%)**
Dependent	**2 (0.6%)**
Other	**23 (7.2%)**
Substance use disorder	
Alcohol use disorder	**4 (1.3%)**
Cannabis use disorder	**27 (8.5%)**
Amphetamine use disorder	**8 (2.5%)**
Opiate use disorder	**5 (1.6%)**
Benzodiazepine use disorder	**1 (0.3%)**
Other	
Schizophrenia	**4 (1.3%)**
Bipolar disorder	**3 (0.9%)**
Obsessive compulsive disorder	**7 (2.2%)**
Eating disorder	**5 (1.6%)**
Acute stress disorder	**3 (0.9%)**
Post-traumatic stress disorder	**3 (0.9%)**
Intellectual disability	**7 (2.2%)**

Table 5. Sample characteristics by group

	Borderline Personality Disorder n = 32	Borderline Personality Traits n = 62	Borderline Personality Pathology n = 94	No Borderline Personality Pathology n = 224
Mean Age (SD)	**26.8 (6.3)**	**26.2 (6.6)**	**26.4 (6.5)**	**27.9 (6.1)**
Age Range - years	**16-39**	**13-40**	**13-40**	**14-43**
Unplanned pregnancy - number (%)	**28 (87.5%)**	**45 (72.6%)**	**73 (77.7%)**	**120 (53.6%)**
Unpartnered - number (%)	**6 (18.8%)**	**16 (25.8%)**	**22 (23.4%)**	**36 (16.1%)**
Substance use in pregnancy - number (%)				
ANY	**9 (28.1%)**	**20 (32.3%)**	**29 (30.9%)**	**14 (6.3%)**
Alcohol	**2 (6.3%)**	**7 (11.3%)**	**9 (9.6%)**	**5 (2.2%)**
Cannabis	**8 (25.0%)**	**12 (19.4%)**	**20 (21.3%)**	**8 (3.6%)**
Amphetamines	**2 (6.3%)**	**3 (4.8%)**	**5 (5.3%)**	**2 (0.9%)**
Opiates	**1 (3.1%)**	**3 (4.8%)**	**4 (4.3%)**	**0 (0.0%)**
CSS involvement - number (%)				
As child	**12 (37.5%)**	**12 (19.4%)**	**24 (25.5%)**	**13 (5.8%)**
In previous pregnancy	**13 (40.6%)**	**17 (27.4%)**	**30 (31.9%)**	**13 (5.8%)**
Notification made this pregnancy	**16 (50.0%)**	**24 (38.7%)**	**40 (42.6%)**	**13 (5.8%)**

Table 6. Hierarchical binary logistic regression

Variable	Model 1				Model 2			
	B(SE)	Wald	Odds Ratio	95% CI	B(SE)	Wald	Odds Ratio	95% CI
Constant	-3.59(1.35)	7.03	0.03 *		-4.46(1.46)	9.26	0.01 **	
Age	-0.03(0.04)	0.53	0.97	0.90-1.05	-0.03(0.04)	0.61	0.97	0.89-1.05
Unplanned	1.08(0.67)	2.61	2.96	0.79-11.03	0.89(0.68)	1.71	2.44	0.64-9.31
Unpartnered	1.22(0.57)	4.58	3.40 *	1.11-10.44	1.09(0.59)	3.43	2.97	0.94-9.41
CSS as child	2.54(0.62)	16.95	12.63 ***	3.78-42.23	2.36(0.63)	13.93	10.56 ***	3.06-36.42
CSS previous pregnancy	2.44(0.59)	17.29	11.43 ***	3.63-36.02	2.45(0.62)	15.65	11.64 ***	3.45-39.25
Substance use disorder	3.48(0.64)	30.03	32.45 ***	9.35-112.68	3.40(0.67)	26.10	30.02 ***	8.14-110.71
Anxiety disorder	-1.61(0.98)	2.71	0.20	0.03-1.36	-0.57(1.13)	0.26	0.57	0.06-5.13
Depressive disorder	-1.83(0.83)	4.90	0.16 *	0.03-0.81	-1.43(0.91)	2.46	0.24	0.04-1.43
Other DSM-5	0.63(0.70)	0.82	1.88	0.48-7.42	1.81(0.89)	4.18	6.11 *	1.08-34.65
Borderline personality path.					1.71(0.66)	6.63	5.50 **	1.50-20.17
Model Chi squared (DF)	165.08 (9) ***				172.58 (10) ***			
Block Chi squared (DF)					7.50 (1) *			
Hosmer & Lemeshow (DF)	2.94 (8), p=0.938				3.66 (8), p=0.887			
Nagelkerke R^2	0.682				0.705			
Cox & Snell R^2	0.405				0.419			
-2 Log likelihood	121.48				113.98			

** p<0.05; ** p<0.005; *** p<0.0005*

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