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Psychosocial and behavioral factors related to the post-partum placements of infants born to cocaine-using women☆

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Abstract

Objective—One objective was to determine if cocaine-using women who did not maintain infant custody (NMC) would report more psychological distress, domestic violence, negative coping skills, lower social support and more childhood trauma than cocaine-using women who maintained custody (MC) of their infant. A second objective was to evaluate the relative contribution of psychosocial factors to infant placement.

Methods—Psychosocial profiles of MC women (n = 144) were compared with NMC (n = 66) cocaine-using women. Subjects were low income, urban, African-American women who delivered an infant at a county teaching hospital. The Brief Symptom Inventory (BSI), an assessment of coping strategies (COPE), Multidimensional Scale of Perceived Social Support (MSPSS), Conflict Tactics Scale (CTS) and Childhood Trauma Questionnaire (CTQ) were administered. The associations of infant placement status to demographic factors, drug use and psychosocial measures were evaluated.

Results—The NMC group reported greater overall psychological distress, psychoticism, somatization, anxiety and hostility than the MC group. The NMC group had more childhood neglect and physical abuse and used more negative coping strategies than the MC group. Lack of prenatal care [OR = .83, CI (.75–.91), $p < .0001$], heavier prenatal cocaine use [OR = 2.55, CI (1.13–4.34), $p < .007$], greater psychological distress [OR = 2.21, CI (1.13–4.34), $p < .02$] and a childhood history of emotional neglect [OR = 1.10, CI (1.02–1.19), $p < .02$] were associated with increased likelihood of loss of infant custody after control for other substance use and demographic variables.

Conclusions—NMC women have more negative psychological and behavioral functioning post-partum than MC women. Less prenatal care and greater cocaine use, psychological distress and maternal childhood emotional neglect are associated with the post-partum placement of infants born to cocaine-using women.

Practice implications—Results of this study indicate that poor, urban women who use cocaine prenatally display several measurable differences on psychosocial and behavioral risk factors based on child placement status. Among these risk factors heavier cocaine use, lack of prenatal care, more severe psychological symptoms and early childhood experiences of emotional neglect increase the likelihood of loss of infant custody. Routine, objective assessments of psychosocial and behavioral characteristics of women who use cocaine during pregnancy can aid Child Protective Service workers

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and clinicians by providing baseline data from which to tailor interventions and set improvement criteria for mother-child reunification.

Keywords

Psychological distress; Childhood trauma; Coping; Violence; Infant placement

Introduction

The use of cocaine and other substances of abuse during pregnancy is considered a substantial postnatal risk factor for infant neglect and abuse (Hans, 2002; Mayes, 1995; Singer, Arendt, & Minnes, 1993). Evidence of maternal substance use, especially of illegal drugs such as heroin and cocaine, often results in the removal of the infant from maternal custody within the first 18 months of life (Byrd, Neistadt, Howard, Brownstein-Evans, & Weitzman, 1999; Nair et al., 1997). Removal of infant custody due to maternal use of cocaine is one of the leading causes of infant placement, with rates of placement over 60% in some urban areas (Neuspiel, Zingman, Templeton, DiStabile, & Drucker, 1993). Studies have shown that removal of an infant from maternal custody occurs more frequently among cocaine-using women if there has been a prior report of child abuse and neglect, poor prenatal care, a positive toxicology screen at the time of delivery, or if the individual is African-American (Nair et al., 1997; Neuspiel et al., 1993). Loss of infant custody has also been associated with other socio-environmental issues including early maternal physical abuse, older age, lack of health insurance and homelessness, but not with recent crack cocaine use (Lam, Wechsberg, & Zule, 2004).

While there is a strong relationship between maternal cocaine use and removal of infant custody, a significant number of children remain in the care of their biologic mothers. The purpose of this study was to compare the psychosocial and behavioral profiles of cocaine-using women by infant custody status post-partum and to assess the relative contribution of these characteristics to the likelihood of child placement outside of maternal custody.

Evidence of the increased risk of infant maltreatment among women who use substances during pregnancy comes directly from studies that document abuse and neglect and indirectly from studies that report impairment in key areas of parental functioning among substance abusers. Direct evidence of heightened risk from epidemiologic survey studies found that half of all parents who self-reported abuse and/or neglect of their children also reported having a lifetime substance abuse disorder and that a threefold increase in child maltreatment was associated with substance abuse (Chaffin, Kelleher, & Hollenberg, 1996; Kelleher, Chaffin, Hollenberg, & Fischer, 1994). Protective service record reviews also indicate a strong link between maternal use of substances and child maltreatment, with 43–79% of affected children having at least one parent with a substance use disorder (Besinger, Garland, Litrownik, & Landsverk, 1999; Famularo, Kinscherff, & Fenton, 1992; Murphy et al., 1991). Prospective studies of cocaine-using mothers indicate high rates (43.5%) of caregiving disruption (Byrd et al., 1999; Nair et al., 1997; Singer et al., 2004) and of child maltreatment (9.3–23%) by 2 years (Leventhal et al., 1997; Wasserman & Leventhal, 1993).

Specific areas of maternal history and psychological functioning are recognized as posing threats to effective parenting and have been found to be more prevalent among cocaine-using women. These areas include maternal psychopathology and maladaptive coping strategies, poor social support, domestic violence, and history of early childhood trauma (Hans, 2002; Singer et al., 1993). Among these risks, maternal psychopathology, including depression, interpersonal sensitivity, and paranoid ideation (Singer et al., 1995, 2002; Woods, Eyler, Behnke, & Conlon, 1993; Zuckerman, Amaro, Bauchner, & Cabral, 1989) have been associated with prenatal cocaine use. Depressive symptoms among cocaine-using mothers are of

particular concern since these symptoms have been shown to relate negatively to several domains of infant development including lower IQ (Singer et al., 1997, 1999; To et al., 2004), poor language development (La Paro, Justice, Skibbe, & Pianta, 2004), behavioral and social problems (Luoma et al., 2001), and poor nutritional intake (Rahman, Iqbal, Bunn, Lovel, & Harrington, 2004). Alternatively, loss of infant custody, occurring at high rates among cocaine-using mothers, can elicit maternal feelings of grief, anger and depression and can inhibit recovery from addiction (Kovalesky & Flagler, 1997).

Positive coping strategies that aid in the ability to surmount negative emotional states such as anxiety or depression are important factors to assess among cocaine-using women. Negative or maladaptive coping styles, including emotion focused coping, are associated with elevated rates of drug use and relapse (Finney & Moos, 1992) and are likely to interfere with the ability to parent effectively through their contribution to poor self-regulation, psychopathology, and antisocial behavior (Hien & Miele, 2003). Similarly, parental lack of social support has been related to neglect and maltreatment of children (Bishop & Leadbeater, 1999). Social isolation itself can also be construed to be a manifestation of other character problems among parents who are neglectful (Seagull, 1987). In addition, poor social support is associated with the initiation of substance use and maintenance and relapse (el-Bassel et al., 1996), making it an important psychological characteristic for assessment in cocaine-using women.

Partner violence, which occurs more frequently among women who use illegal substances (Eiden, 1999), also places children at risk of negative cognitive, psychological, physical and behavioral outcomes. Children exposed to domestic violence are at greater risk of experiencing a host of additional adverse childhood events, including neglect and abuse, parental separation or divorce, and/or witnessing a drug using, mentally ill, suicidal, or criminal household member (Anda et al., 2002). Maternal self-reports of her own childhood abuse and neglect have also been related to high rates of substance use in these women (Min, Farkas, Minnes, & Singer, 2007). Early abuse and neglect among women is associated with risk of neglectful or abusive parenting (Locke & Newcomb, 2003).

Despite research on harmful effects of substance abuse on parenting and factors associated with cocaine use by pregnant women, relatively little is known about how maternal behavioral and psychosocial characteristics differ between women who use cocaine prenatally and lose infant custody compared to similar cocaine-using women who maintain infant custody. Therefore, the purpose of the present study was to describe the characteristics of cocaine-using women who maintained child custody at the infant's birth compared to those who lose infant custody. In addition, to strengthen the methodology compared to previous studies, standardized assessments of psychological symptoms and behaviors that have been shown previously to be related to substance use and negative child outcomes were used. The relative contribution of maternal psychosocial characteristics, beyond prenatal cocaine use, to child placement was also investigated.

We hypothesized that cocaine-using women who lost custody of their infants at birth would report higher levels of psychological distress symptoms, and have more violent partner relationships, negative coping skills, lower social support and higher prevalence of childhood trauma than similar women who did not lose custody of their infants. We further hypothesized that higher levels of cocaine use prenatally and severity of psychological distress symptoms would increase the likelihood of child placement.

Methods

Participants

Two hundred and eighteen cocaine-using mothers and their prenatally exposed infants were recruited from a large urban county teaching hospital maternity ward between September 1994 and June 1996 as part of a prospective longitudinal study investigating the developmental effects of prenatal cocaine exposure (Singer et al., 2004). Post-partum women who were considered at risk of cocaine use due to lack of prenatal care, behavior suggesting intoxication, history of prior involvement with Child Protective Services (CPS) or who self-admitted substance use were screened by hospital staff for cocaine use through a urine analysis. At risk women were approached by a research nurse practitioner for participation in the study while on the maternity ward. Women with a severe medical illness including positive HIV status, a chronic psychiatric disorder, mental retardation, non-English speaking or who had a child with documented fetal alcohol syndrome or other serious birth defects were excluded from participation. Upon initial screening and agreement to participate in the study, women signed a consent form approved by Metrohealth Medical Center's Institutional Review Board and were assured that a writ of confidentiality existed that prevented the release of any research data concerning their substance abuse histories (Writ # DA-04-03). A hospital social work referral and a mandatory CPS referral was made for all women who either self-reported cocaine use or whose hospital-initiated urine drug screen was positive for cocaine at the time of the infant's birth. The decision to remove an infant from maternal custody was made by CPS and was based solely on hospital data and not positive meconium collected for the study. The CPS placement decisions provide the basis for the grouping variable (maternal care [MC], non-maternal care [NMC]) used in this study. CPS was not privy to research information regarding the severity of maternal cocaine use.

Cocaine positive dyads were identified by a positive response on any of the following measures: infant meconium analyses, maternal urine, maternal self-report of cocaine use to hospital or research staff. Final placement in the cocaine use group occurred after all biologic assays were analyzed and self-report data were reviewed. Cocaine-using women were further subdivided into heavier and lighter cocaine users. Heavier users of cocaine were operationally defined as those who, from either self-reported cocaine use, or from their infant's concentrations of cocaine metabolites in meconium, were above the 70th percentile for the cocaine-using sample. Lighter users of cocaine were at the 70th percentile or below for all measures.

Eleven of the cocaine-using women refused further participation in the study by not coming to the lab for their initial assessment, even after giving consent to participate. Because of the death of their children two other women did not participate in the study, resulting in a sample of 205 (63 women with infants placed outside of maternal care [NMC] at birth or shortly thereafter and 142 women who maintained maternal custody [MC]). Of those children who were not released to maternal custody, 37 went to adoptive/foster (non-kin) care and 26 were released into maternal biologic relative care (kin-care).

Procedure

Maternal medical and demographic data were extracted from hospital records at the time of delivery. With the exception of the Childhood Trauma Questionnaire (CTQ), which was collected at 4 years post-partum, all other data was collected at an average of 7 weeks post-partum. All biologic mothers were seen at the Case Western Reserve University, Project Newborn, child development laboratory. Maternal substance use, socioeconomic (Hollingshead, 1958), educational, psychological, and environmental data were collected by a research assistant. An adaptation of the Maternal Post-Partum Interview (Singer et al., 2004) was used to quantify maternal drug use. For each drug (tobacco, alcohol, marijuana, cocaine),

frequency and amount were recorded to compute a severity score for the month prior to pregnancy and each trimester and then averaged over the pregnancy.

The Peabody Picture Vocabulary Scale-Revised (PPVT-R) (Dunn, 1981), the Block Design and Picture Completion subscales of the Wechsler Adult Intelligence Test-Revised (WAIS-R) (Wechsler, 1989) and the Brief Symptom Inventory (BSI) (Derogatis, 1992) were used to assess maternal vocabulary, non-verbal intelligence, and psychological distress, respectively.

The BSI, a self-report questionnaire, yields nine subscales including somatization, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism and a scale measuring global severity (GSI). All subscales of the BSI were dichotomized as clinically relevant (*t* score > 63) versus endorsement below the clinical level (*t* score ≤ 63) except for GSI in which the mean score was also reported. Cronbach's alpha ranged from .79 to .87 for the subscales and was .96 for the GSI. Eight women (five MC and three NMC) either did not receive the BSI or did not complete a sufficient number of items to score the data.

The COPE (Carver, Scheier, & Weintraub, 1989) was used to assess various coping strategies including denial, behavioral disengagement and mental disengagement. Cronbach's alpha for COPE subscales ranged from .33 for one scale (mental disengagement) to .88. Eight subscales had Cronbach's alpha scores over .70. Two MC women and three NMC women did not have complete COPE data.

To assess levels of perceived social support from friends, family, and a significant other, the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Powell, Farley, Werkman, & Berkoff, 1990) was administered. Cronbach's alpha for all subscales of the MSPSS were above .9. Six women did not did not have complete MSPSS data (three MC; three NMC).

Conflict occurring in the context of a relationship was reported by the study subject in relation to herself, her current partner if applicable, or any other person (partner and other) during her lifetime, using the Conflict Tactics Scale (CTS) (Straus, 1980). Cronbach's alpha levels were above .86 for all subscales. One hundred and ninety-two women received the CTS. Of those, 170 (123 MC; 47NMC) had current partners, and 22 were asked only the lifetime incidence questions. Thirteen women had missing or incomplete CTS data. In order to make mutually exclusive levels of conflict, a minor modification of the scoring system was used. Data were categorized as the absence of conflict, mild to moderate conflict or severe conflict based on the endorsement of specific questions. A mild violence code required endorsement of the items threw something at partner, pushed, grabbed or shoved, or slapped a partner but not any item in the severe category. Endorsement of kick, bit or hit with a fist, hit with something, beat up, threatened with a knife, or used a knife or gun were coded as severe violence, even if endorsement of mild violence was also endorsed. Endorsement of no items in either the mild or severe category were required for a coding of no violence.

The Childhood Trauma Questionnaire (Bernstein & Fink, 1998) was used to assess childhood emotional, physical and sexual abuse and emotional and physical neglect. The CTQ was administered to a subsample of the group (n = 100 MC; 63 NMC) at 4 years post-partum. Mean scores for each category and the percentage of mild, moderate and severe abuse were recalled from childhood. Cronbach's alpha levels were all above .83 except for the physical neglect scale (.61).

Those women with a CTQ were compared to those without a CTQ to evaluate if the groups differed in any systematic way on demographic and psychosocial variables. Women without a CTQ had higher average PPVT-R scores (77.1 vs. 71.9, t = 2.65, p = .009) and were more

likely to have a child with a lower average gestational age (36.7 vs. 38.4, $t = –3.70$, $p = .0004$). The groups did not differ on any other variables.

Women were given a stipend of $35 for participation in the study, transportation to the lab, and lunch at the time of assessment.

Statistical analysis

Data that were positively skewed (self-report drug use, COPE, and GSI from the BSI) were normalized using a $\log(X + 1)$ transformation prior to analyses. Means and standard deviations are reported by the variables' original distribution.

Non-maternal custody (NMC) versus maternal custody (MC) groups were compared on demographic variables, prenatal substance use and psychological assessments summary scores. Chi-square analyses were used to test categorical variables and *t* tests were used to analyze continuous variables. To analyze the BSI dichotomized data (above or below the borderline/clinical cutoff point), a generalized estimation equation (GEE) model was constructed using an exchangeable correlation structure. This model performs a simultaneous test of maternal custody across all the BSI dichotomized subscales. In the event of a significant multivariate maternal custody effect, the Bonferroni multiple comparison technique was then used to adjust the overall Type I error rate when performing individual comparisons for each subscale. A significance level of .05 (two-tailed) was used for all analyses.

To evaluate significant maternal characteristics that are associated with maternal custody status after prenatal drug use, logistic regression models were developed (SAS version 8.2; SAS Institute Inc., Cary, NC). Variables considered for evaluation in the modeling included severity of cocaine use, severity of alcohol, marijuana, and tobacco use during pregnancy; demographic variables, maternal verbal and performance IQs, and psychosocial distress variables including BSI GSI scores, MSPSS total, and COPE subscale scores (except alcohol and drug use coping as they are redundant with actual drug use). Because of reduced sample size, the CTQ (subscale totals) was considered in a separate model to determine if trauma independently increased the odds of infant placement after considering demographic and drug exposure variables. Only those variables that were significantly different by child placement status ($p < .10$) were entered into the logistic regression model.

Demographic factors were entered into the logistic regression model first, followed by measures of maternal cognitive performance, prenatal drug use (level of cocaine, alcohol, marijuana and tobacco use), GSI, MSPSS (total), COPE (subscale mean scores) and finally CTQ (subscale mean scores).

Results

Demographic and drug use variables

Table 1 shows group differences in maternal characteristics. Cocaine-using women who maintained infant custody were seen on average 3 weeks earlier for follow-up than women who did not maintain infant custody. NMC women had greater parity and fewer prenatal care visits than MC women. Other demographic characteristics were not different by group. Table 2 shows group differences in prenatal drug use patterns between the two groups. Women who did not maintain child custody at birth used significantly more cocaine on average throughout their pregnancy than women who maintained infant custody. The amounts of tobacco, marijuana, and alcohol used during pregnancy were not different.

Psychosocial assessment

Mean GSI scores of the BSI were significantly different by group, with the NMC group reporting more psychological distress than the MC group (1.00 ± .8 vs. .7 ± .6; $p < .01$). Table 3 shows the percentage in each group above the borderline clinical range for each subscale of the BSI. The multivariate test on the BSI subscales yielded a significant custody effect ($\chi^2 = 23.60$, $df = 9$, $p = .0005$). There was a higher percentage of clinically elevated psychoticism, somatization, anxiety and hostility scores among the NMC compared to the MC group.

Two negative COPE subscale scores were greater for the NMC group compared to the MC group: denial (8.9 ± 3 vs. 7.8 ± 3; $p < .02$) and greater use of alcohol and drugs (10.1 ± 4 vs. 7.9 ± 4; $p < .0004$). NMC women also used less planning, considered an adaptive coping mechanism, than MC women (10.8 ± 3 vs. 11.8 ± 3; $p < .03$). All other coping mechanism subscale scores were not different. There were no differences in the level of perceived social support from friends, family or significant others between the two groups.

The NMC group reported experiencing more physical abuse (8.6 ± 5 vs. 10.3 ± 4; $p < .04$), physical neglect (8.3 ± 4 vs. 9.9 ± 4; $p < .03$) and emotional neglect (11.6 ± 5 vs. 14.6 ± 6; $p < .003$) as children than the MC group. Table 4 shows the types of maltreatment experienced by the women in each group. There were significant group differences in physical abuse and emotional and physical neglect with higher percentages of moderate to extreme abuse in the NMC group compared to the MC group.

The percentages of reported respondent and partner violence are reported in Table 5. While there were no significant group differences, high rates of moderate violence (23% MC vs. 29% NMC) and severe violence (48% MC vs. 43% NMC) were found for the maternal respondent as well as current partners.

A model predicting the likelihood of infant placement is presented in Table 6. Three variables significantly predicted infant placement: fewer prenatal visits [OR = .83, CI (.75–.91), $p < .0001$], heavier use of cocaine [OR = 2.55, CI (1.29–5.03), $p < .007$] and higher psychological distress [OR = 2.21, CI (1.13–4.34), $p < .02$]. Heavier cocaine use increased the likelihood of infant custody loss 2.5 times over lighter use of cocaine. Similarly, the presence of clinically elevated psychological distress increased the likelihood of loss of infant custody 2.2 times over low psychological distress. More prenatal care visits decreased this risk, with each additional prenatal care visit related to a 17% decrease in lost infant custody. In the subanalyses, which included those women who received the CTQ, emotional neglect was associated with increased likelihood of child placement [OR = 1.10, CI (1.02–1.19), $p < .02$] while other previously significant predictors remained unchanged.

Discussion

Findings of this study indicate that three maternal characteristics were associated with loss of infant custody after control for other drug use, cognitive factors and demographic variables. These variables were few prenatal care visits, heavier cocaine use and clinically elevated psychological distress. Women who did not maintain infant custody used significantly more cocaine during pregnancy than women who maintained custody, although the level and rates of use of other substances including tobacco, marijuana, and alcohol were not different. Women who lost maternal custody were also more likely to have clinically elevated psychological distress symptoms than women who maintained maternal custody. A subanalysis of the data also revealed an independent association of childhood maternal emotional neglect with non-maternal care status. The association of childhood emotional neglect with increased likelihood of infant placement is an especially significant finding for clinicians that work with substance abusing mothers. These data underscore the need for psychological assessment and

intervention for the effects of early trauma on cocaine-using women, especially those with young children.

There were also some notable bivariate differences between care giving groups on a variety of psychological and behavior measures. While these differences were not maintained in the logistic models, they provide an interesting description of the women in this sample. Greater use of maladaptive coping styles (denial and use of drugs and alcohol) and less use of positive coping (planning) were also reported by women in the non-maternal care group compared to the maternal care group. Surprisingly, reports of perceived social supports were not different by group. Women whose children were removed from custody were more likely to report greater physical abuse and/neglect and emotional abuse in childhood. Self-reported use of violence in a relationship, and victimization reported by both groups of cocaine-using women were remarkably high and occurred at similar rates.

The findings of the mulitivariate analysis are consistent with those of (Neuspiel et al., 1993) who found that cocaine-using women who did not receive prenatal care had a greater risk of loss of infant custody. Another study by Lam and colleagues (Lam et al., 2004) found an association between cocaine-using mothers who lost custody mothers and early physical abuse, older age, lack of health insurance and homelessness, but not psychological distress or cocaine use. The authors concluded that socio-environmental and contextual issues were more strongly associated with loss of infant custody than recent crack cocaine use. However, it is difficult to draw a direct comparison of their data to the present study because they did not control for multiple demographic factors, maternal cognitive level, amount of cocaine use, other drugs of abuse and multiple psychosocial factors such as social support, coping and psychological distress.

Care should be taken in interpreting the BSI results as the data presented do not suggest a causal relationship. For example, increased rates of clinically elevated psychological symptoms, particularly hostility or psychoticism among women who lost maternal custody may have influenced CPS's decision to place the infant outside of maternal care. Alternatively, these symptoms could have been exacerbated by removal of infant custody. When examining the BSI subscales it is also important to take note of psychological symptoms that were not different between the maternal care and non-maternal care groups. It is surprising that depression was not elevated for the non-maternal care group compared to the maternal care group as was found by Lam and colleagues (Lam et al., 2004). Our data suggest that higher than expected rates of depression in both groups are related to factors other than maternal care status.

Greater endorsement of drug use as a coping strategy in the non-maternal care group is consistent with behavioral data indicating higher average cocaine units per week and a higher percentage of heavier cocaine use in the non-maternal care group. The negative coping strategy, denial, may have been predominant prior to loss of infant custody and/or been exacerbated with news of loss of infant custody. The lack of differences in perceived social support is somewhat surprising, but may be related to overall low levels of support experienced by both groups of women.

Several theoretical models suggest that maternal abuse and neglect of children are behaviors learned from early childhood experience (Newcomb & Locke, 2001). While the results of this study do not directly support that hypothesis, women who were deemed to be at significantly high risk for the inability to care for their infants, were more likely to report having been physically abused and/neglected and emotionally abused themselves. The relationships between early maternal experience of abuse and neglect, heavier cocaine use, poorer birth outcomes (Singer et al., 2002), maternal psychological distress, and perceived risk for abuse and neglect by CPS should be explored in future research.

Heavier cocaine use, but not the use of other drugs, increased the likelihood of loss of infant custody. These findings, as well as those found by other researcher (Chasnoff, Landress, & Varrett, 1990; Kerker, Horwitz, & Leventhal, 2004) indicate that there may be a bias toward reporting prenatal cocaine exposure, but not other illicit prenatal drug use, to Child Protective Services.

Limitations and strengths

There are three weaknesses of the study that limit the interpretation of the data. One weakness of the study is that the infant placement decisions used to provide subject grouping in this study reflect those of a specific, urban, human service agency, from 1994 to 1996. While CPS practices can vary somewhat from city to city, and change slightly from one time period to another, cocaine use during pregnancy continues to be a major contributing factor related to the loss of infant custody. The rate of clinically relevant mental health symptoms among women who do not maintain maternal care would be expected to remain stable and will continue to require treatment intervention.

Second, a potential bias exists as not all women delivering infants at the recruiting hospital were screened for substance use, only those posing specific identifiable risks. Therefore, the results cannot be generalized to other non-screened substance using women. Lastly, a third set of methodological weaknesses includes a reduced number of women receiving the CTQ, reliance on past memory and differential timing of initial data collection. Childhood trauma, domestic conflict, and substance use data were collected retrospectively and thus are subject to errors related to inaccurate memory. Women who lost infant custody were seen on average 3 weeks after women who maintained custody raising the possibility of systematic changes in symptoms due to the increased time since childbirth.

Despite the noted limitations, this study has several strengths. The study provides informative psychosocial data from a large sample of women who used cocaine during pregnancy using standardized self-report measures covering several domains. After controlling of multiple confounding factors, lack of prenatal care, heavier cocaine use, psychological distress and early childhood neglect were associated with the loss of infant custody. Knowledge of these associations can be used by clinicians to improve treatment for cocaine-using women. For example, the data indicate that clinicians who provided drug treatment and mental health services should collect a detailed assessment of psychological distress, amount of cocaine use, history of childhood emotional neglect and address these issues in treatment prior to delivery if possible. In addition, clinicians should be especially attentive to the issues of early history of maternal emotional neglect and level of psychological distress when formulating drug treatment plans. Routine assessment and targeted interventions for cocaine-using pregnant and post-partum women can reduce suffering and hold promise for improved mother-infant relationships.

Conclusions

Women known to have used cocaine during their pregnancy and who have had their child removed from their custody should be considered at risk for high levels of cocaine use, psychological distress and a history of emotional neglect. In addition, they are more likely to have received suboptimal levels of prenatal care. Thorough assessment of these risks for both mother and infant, and referral for appropriate health, mental health and substance abuse treatment are necessary.

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Table 1

Maternal characteristics at birth by custody status

Maternal characteristics	**Maternal custody (*n* = 142)**		**Non-maternal custody (*n* = 63)**		***p*-value**
	Mean	***SD***	**Mean**	***SD***	
Assessment (weeks post-partum)	5.35	6.7	8.87	12.9	.04
Years of education	11.70	1.6	11.29	1.7	.09
Age (years)	29.18	4.9	30.40	5.2	.13
Parity	3.24	1.7	4.17	2.1	.002
Number of prenatal visits	6.09	4.8	3.20	3.4	<.0001
WAIS-R Block Design[a]	7.04	2.0	6.44	2.4	.07
WAIS-R Picture Completion[a]	6.57	2.1	6.61	2.4	.92
PPVT-R Standard Score[b]	74.38	14.3	71.40	13.5	.18

Maternal characteristics	**Maternal custody (*n* = 142) (%)**	**Non-maternal custody (*n* = 63) (%)**	***p*-value**
Race (African-American)	80.3	81.0	.91
No prenatal care	13.4	30.2	.004
Maternal employment	6.3	3.2	.37
Married	8.5	4.8	.35
Low socioeconomic status	98.0	98.4	.81

[a]WAIS-R—Wechsler Adult Intelligence Scale-Revised, Picture Completion and Block Design subscales.

[b]PPVT-R—Peabody Picture Vocabulary Test-Revised.

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Table 2

Maternal drug use characteristics by custody status

Maternal drug use	**Maternal custody (*n* = 142)**		**Non-maternal custody (*n* = 63)**		***p*-value**
	Mean	***SD***	**Mean**	***SD***	
Avg. cigarette/day	10.7	9.1	13.8	13.8	.49
Avg. drinks/week[a]	9.0	16.4	10.9	21.3	.82
Avg. joints/week[a]	1.4	3.4	1.2	3.9	.13
Avg. cocaine units/week[a]	16.2	25.8	41.2	68.6	.001

Maternal drug use	**Maternal custody (*n* = 142) (%)**	**Non-maternal custody (*n* = 63) (%)**	***p*-value**
Tobacco use	88.7	88.9	.98
Alcohol use	88.7	79.4	.08
Marijuana use	50.7	47.6	.68
Heavy cocaine use	44.4	69.8	.001

[a]Number of drinks, joints, units per day × number of days/week.

Table 3

Unadjusted BSI scores above borderline/clinical cut-off (>90th percentile)

BSI subscales	Maternal custody (*n* = 137) (%)	Non-maternal custody (*n* = 60) (%)	*p*-value
Global Severity Index	31.4	45.0	.07
Paranoid Ideation	51.8	55.0	.68
Psychoticism	47.5	66.7	.01
Somatization	9.5	35.0	<.0001
Obsessive Compulsive	26.3	36.7	.14
Interpersonal Sensitivity	33.6	45.0	.13
Depression	32.9	41.7	.23
Anxiety	21.2	38.3	.01
Hostility	24.8	43.3	.009
Phobic Anxiety	25.6	33.3	.26

Table 4

Report of maternal childhood trauma by custody status*

Childhood trauma questionnaire	Maternal custody (*n* = 100) (%)	Non-maternal custody (*n* = 42) (%)	*p*-value
Emotional abuse			
None or minimal (0–8)	50.0	38.1	.61
Low to moderate (9–12)	25.0	35.7	
Moderate to severe (13–15)	10.0	14.3	
Severe to extreme (≥16)	15.0	11.9	
Physical abuse			
None or minimal (0–7)	53.0	40.5	.04
Low to moderate (8–9)	21.0	14.3	
Moderate to severe (10–12)	10.0	14.3	
Severe to extreme (≥13)	16.0	31.0	
Sexual abuse			
None or minimal (0–5)	60.0	52.4	.25
Low to moderate (6–7)	6.0	2.4	
Moderate to severe (8–12)	12.0	14.3	
Severe to extreme (≥13)	22.0	31.0	
Emotional neglect			
None or minimal (0–9)	39.0	26.2	.003
Low to moderate (10–14)	37.0	16.7	
Moderate to severe (15–17)	7.0	23.8	
Severe to extreme (≥18)	17.0	33.3	
Physical neglect			
None or minimal (0–7)	53.0	33.3	.02
Low to moderate (8–9)	18.0	21.4	
Moderate to severe (10–12)	12.0	11.9	
Severe to extreme (>13)	17.0	33.3	

* Mantel-Haenszel Chi-square used.

Table 5

Report of partner violence by custody status

Severity of violence	Maternal custody (*n* = 136) (%)	Non-maternal custody (*n* = 56) (%)	*p*-value
Maternal			
None to mild	28.6	29.2	.61
Moderate	23.0	29.2	
Severe	48.4	42.7	
Current partner			
None to mild	39.8	27.7	.33
Moderate	26.0	36.2	
Severe	34.2	36.2	
Any partner			
None to mild	32.2	20.0	.26
Moderate	14.1	22.0	
Severe	53.7	58.0	
Other person			
None to mild	39.5	34.7	.26
Moderate	12.6	4.1	
Severe	47.9	61.2	
Lifetime occurrence of rape	30.4	44.9	.08

Table 6

Predictors of likelihood of maternal loss of custody

Loss of custody	Odds ratio	95% CI	*p*-value
Whole group (*n* = 205)			
Number of prenatal visits	.83	.75–.91	.0001
Heavy use of cocaine	2.55	1.29–5.03	.007
Psychological distress	2.21	1.13–4.34	.02
Subanalyses (*n* = 142)			
Number of prenatal visits	.84	.75–.94	.003
Heavy use of cocaine	2.76	1.20–6.43	.02
Psychological distress	2.30	1.01–5.28	.05
Emotional neglect	1.10	1.02–1.19	.02