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RISK FACTORS FOR DISRUPTION IN PRIMARY CAREGIVING AMONG INFANTS OF SUBSTANCE ABUSING WOMEN

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Abstract

Objective—To identify perinatal factors that are predictive of disruption in primary caregiving among infants of substance abusing women.

Method—A randomized longitudinal cohort study. One hundred and fifty two mother/infant dyads were assessed for evidence of disruption of primary caregiving or neglect during the first 18 months of life, defined by mother's inability to provide care. Data analyzed included neonatal characteristics, urine toxicology at delivery, maternal history of drug use, maternal depression, social support, and social and health history.

Results—Sixty-six infants (43.4%) had disruption in their primary care during the first 18 months of their life. 86 infants (56.6%) remained in the care of their mothers. Women who were younger, were heroin users, had two or more children, had other children in foster care, and reported depressive symptoms were least likely to provide ongoing primary care for their infant.

Conclusions—Although all infants born to substance abusing women are at a high risk for disruption in the continuity of their primary caregiving, maternal demographic and psychosocial factors present at delivery can predict which infants are likely to experience an early disruption in their primary caregiving. Identifying these families can enable health care providers to monitor them more closely and, when appropriate, encourage support from the extended family. © 1997 Elsevier Science Ltd

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Keywords

Maternal substance abuse; Child care; Child neglect; Foster care

INTRODUCTION

Infants of substance abusing women are at increased risk of receiving substitute care due to neglect/abuse or their mother's inability to care for them. Identifying infants at greatest risk for disruption in parenting may allow prevention of deleterious effects on infant development and more effective utilization of limited resources available for the care of high risk families.

A stable and nurturing environment is crucial in the development of a healthy and emotionally secure infant (Wachs & Gruen, 1982). Studies of emotional development indicate that emotional attachment is the cornerstone in a child's ability to establish interpersonal relationships later in life (Ainsworth, 1978; Erikson, 1963; Havighurst, 1972; Yarrow, 1964). Frequent changes in caregivers or nonnurturant, inconsistent care place the infant at jeopardy for attachment and developmental problems and is often considered a form of neglect (Zuravin, 1992). Infants may be particularly vulnerable to disruptions in care between 6 months and 24 months of age when they are in the process of establishing stable attachment relationships (Rutter, 1987; Yarrow, 1964).

A high prevalence of parental substance abuse has been reported in studies of children referred to child protective services for foster care placement because of neglect/abuse. Substance abusing mothers are more likely than nonsubstance abusing mothers to have been referred previously to child protective service agencies, to be rated by court investigators as presenting a high risk to their children, to reject court-ordered services, and to have their children permanently removed (Bays, 1990, 1992; Behling, 1979; Black & Mayer, 1980; Deren, 1986; Famularo, Kinscherff, & Fenton, 1992; Gabel & Shindledecker, 1993; Kelleher, Chaffin, Hollenberg, & Fischer, 1994; Murphy, Jellinek, Quinn, Smith, Poitrast, & Goshko, 1991). In addition to substance abuse, families of children removed from parental custody due to abuse/neglect often experience high levels of violence and stress (Famularo et al., 1992).

Drug screening programs across the United States have indicated a high prevalence of illicit drug use in women of reproductive age. Alcohol, cocaine, and heroin are the most frequent substances of abuse. NIDA estimates that 15% of women of childbearing age (15 to 44 years) are current substance abusers (National Institutes on Drug Abuse, 1995). The National Pregnancy and Health Survey by NIDA, reports that of women delivering live births in 1992, an estimated 5.5% used an illicit drug and 18.8% used alcohol sometime during pregnancy (National Institutes on Drug Abuse, 1996). Significant differences in rates of drug abuse for race/ethnic groups were observed in relation to sociodemographic variables. In constrast in a study of substance abuse prevalence in Pinellas County, Florida, there was little difference in the rate of positive toxicology screens in public (16.3%) versus private clinics (13.1%), or African American (14.2%) versus White women (15.4%), (Chasnoff, Landress, & Barrett, 1990). However, women who were low income or African American were more likely to be reported to child protective services.

Risk factors associated with maternal drug abuse are multiple, and include poverty, family dysfunction, family violence (including incest, rape, prostitution, and abuse), and maternal mental illness (Amaro, Fried, Cabral, & Zuckerman, 1990; Chasnoff, 1988; Davis, 1990; Finnegan, 1982; Ladwig & Anderson, 1989; Regan, Ehrlich, & Finnegan, 1987). The need

for acquisition of drugs often leads to a lifestyle that allows little time for parenting. Studies of parenting attitudes of addicted mothers have indicated that they are more likely to feel inadequate as mothers, more likely to use a threatening disciplinarian approach, and tend to reinforce disruptive methods of attention seeking (Amaro et al., 1990; Bauman & Daugherty, 1983; Burns & Burns, 1990; Chasnoff, 1988; Colten, 1980; Finnegan, 1982; Ladwig & Anderson, 1989; Regan et al., 1987; Stein, Newcomb, & Bentler, 1993; van Baar, 1990). Many drug abusing women have experienced high rates of childhood trauma themselves, which in turn leads to ineffective and ambivalent parenting and higher rates of neglect and abuse (Davis, 1990). The general well-being of drug abusing women is often poor with high rates of serious psychiatric disorders, including major depressive disorders, alcoholism, antisocial personality, feelings of worthlessness, poor self esteem, social isolation, and a history of significant losses such as out-of-home placement of their children (Colten, 1980; Davis, 1990; Regan, et al., 1987; Weissman, Slobetz, Prusoff, Mezritz, & Howard, 1976). Women with inadequate emotionally healthy sources of support are at risk for subsequent emotional problems that are likely to interfere with effective parenting, they are also less able to use social support to buffer stress (Belsky, 1984; Black, Schuler, & Nair, 1993).

Although many drug abusing women are able to continue caring for their children (Kearney, Murphy, & Rosenbaum, 1994), a family history of drug abuse is frequent in children placed in foster care. We hypothesized that maternal demographic and psychosocial factors, measured at birth and characteristics of the neonate, would be predictive of subsequent disruption in care of infants of substance abusing women. As Sameroff and colleagues have shown, the accumulation of risk factors may overwhelm women's ability to cope with caring for their children and contribute to negative outcomes for their children (Sameroff, Seifer, Baldwin, & Baldwin, 1993: Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). Specifically, we hypothesized that children of women with no high school education and limited social support who have began abusing drugs early, and are depressed, may be more likely to experience disruption of primary care in the first 18 months of life.

METHODS

Subjects

Subjects for this study were a subsample of 152 mother/infant dyads, selected from a larger on-going randomized longitudinal cohort study, (n = 265) involving an intervention program for substance abusing women and their infants. Mother/infant dyads were recruited from the obstetric and newborn nursery unit of the University of Maryland Medical Center in Baltimore, Maryland. Women were eligible for recruitment if they reported cocaine and/or heroin use during pregnancy, or if either the mother or infant had a positive urine toxicology screen for these drugs. Women were approached postpartum if eligible and recruited for the study after signing an informed consent form approved by the Institutional Review Board of the University. Over a 3 and 1/2 year period 411 women were identified as eligible and approached for participation in the study. Two hundred and ninety-six (72%) agreed to participate, 54 (13%) refused while in the hospital, and 61 (15%) said they wanted to think about it but did not call back. resulting in a 28% refusal.

Of the mothers who agreed to participate in the study 31 (10%) did not keep the 2 week appointment for the following reasons: nine infants were placed in foster care, one died allegedly of SIDS, four could not be found, 15 were noncompliant, and two withdrew. Initial data were therefore collected on 265 of the 296 participants when the infants were 2 weeks of age. Evaluation visits for the study were scheduled at 2 weeks, 6, 12, 18, and 24 months. Mothers received transportation and compensation for evaluation visits.

Randomization to either the intervention or standard care group was done following baseline evaluation at the visit conducted at 2 weeks of age. The intervention group received weekly home intervention in year one and attended a parent support center program in year two. The comparison group was visited monthly. The intervention was a developmentally-oriented comprehensive enrichment program with both parent and infant components, and followed the general model used by the Infant Health and Development program (Infant Health and Development Program, 1990). The program was based on transaction theory using an enabling-empowerment model (Dunst, Trivette, & Deal, 1988).

Data from all infants who were 18 months or older as of November 1995, were reviewed for evidence of disruption of primary caregiving during the first 18 months of life. Disruption of primary caregiving was defined as the infant receiving substitute care because of the mother's inability to care for her infant due to neglect/abuse, incarceration, continued drug abuse, or homelessness. For this study only data obtained during the postpartum stay in the hospital and at the 2 week visit were analyzed to assess factors predictive of high risk for early disruption in primary caregiving in this group of substance abusing women

Measures

At the 2 week visit maternal psychosocial status was assessed by a number of self report questionnaires. Research assistants read the questionnaires to the women to ensure comprehension and to equate for any differences in reading ability.

Psychological status—The Brief Symptom Index (BSI), a 53 item psychological self report symptom scale was used to assess psychological status of the women (Derogatis & Melisaratos, 1983). Each symptom is rated on a 5-point scale from 0 (not at all) to 4 (extremely). The BSI has nine primary symptom dimensions: (1) somatization; (2) obsessive compulsive; (3) interpersonal sensitivity; (4) depression; (5) anxiety; (6) hostility; (7) phobic anxiety; (8) paranoid ideation; and (9) psychotocism, which provide a profile of the individual's psychological status. The authors of the scale report that alpha coefficients of internal consistency for all nine dimensions ranged from .71 to .85. Test-retest reliability coefficients for the nine dimensions ranged from .68–.91.

Social support—A modified version of the Interview Schedule for Social Interaction (ISSI) was used to assess social support (Henderson, Duncan-Jones, Byrne, & Scott, 1980). This scale assesses the number of people the respondent feels are available for support/attachment; and the perceived adequacy of these support/attachment figures. The scales pertaining to employment were not used as most of the women were unemployed. Psychometric properties of the availability and adequacy indices indicate good internal consistency and retest coefficients ranged from .67 to .76.

Life events—The Life Experience Survey (LES) a 47 item measurement, was used to measure the events experienced by the mother during the past year (Sarason, Johnson, & Siegel, 1978). The assessment allows the subject to rate whether or not each event has occurred, if it was positive or negative and the perceived impact of the events on their lives. The impact of each item is rated on a 4-point scale from (1) no impact to (4) great impact. The items were chosen to represent changes frequently experienced by individuals in the general population. Research indicates that the test-retest correlations for the positive change score were .19 and .53 ($p < .001$). The reliability coefficients for the negative change score were .56 and .88 ($p < .001$). The coefficients or the total change score were .63 and .64 ($p < .001$). The relations between life change scores and social desirability measures were nonsignificant.

Maternal depression—The Center for Epidemiologic Depression Scale (CES-D) was used to assess maternal depression (Radloff, 1977). The CES-D is a 20-item self report depression symptom scale developed to assess depressive symptomatology in the general population. Subjects rate symptoms during the week preceding the interview. A total score ranges form 0 to 60, with higher scores indicating more depressive symptomatology. Scores of 16 or greater are considered "cases" of depression. Psychometric properties of the scale indicate high internal consistency coefficients for the whole score for different age groups tested (.79–.84). and slightly lower, though still acceptable, coefficients for the four subscales: depressed affect, happy, somatic and retardation, and interpersonal (.58–.72).

Drug use—Drug use was measured using a focused interview, maternal and neonatal urine toxicology screen, and the Addiction Severity Index (ASI). The ASI is a measure created to evaluate treatment outcome for alcoholics and drug addicts (McLellan et al., 1992). The measure covers five composite areas thought to be affected by substance abuse treatment: medical problems, employment problems, alcohol and drug use problems, legal problems, and family/social problems.

Neonatal outcome—The neonatal medical records were reviewed for measurements, gestational age, apgar scores, length of stay, and any neonatal problems.

Data analysis—A two-stage analysis process was used to compare the two groups. Bivariate analyses were conducted to examine differences in maternal factors and neonatal outcome. Maternal factors assessed were: demographic variables, history of drug use, psychological status, depressive symptoms, life events, social supports, and intervention status. Infant factors included: birth measurements, gestational age, neonatal problems, urine toxicology screens, and length of hospital stay. To assess the statistical significance of associations between various predictors and disruption of care, Pearson's chi-square tests were used for the categorical variables and analyses of variance (ANOVA) were used for the continuous variables. To estimate the effect of multiple predictors on the probability of disruption in primary care, we fit logistic regression models. Due to the small sample size and the large number of variables, we could not construct regression models containing all of the variables found to be significant in the bivariate analyses. We included variables in the regression model which were predictive of disruption in care in the bivariate analysis and were of theoretical interest. All variables were put into the model simultaneously.

RESULTS

Of 152 infants 18 months of age or more, 66 (43.4%) met the criteria for disruption in primary care giving, (Disruptive Care or DC group), 86 (56.6%) infants remained in the care of their mothers (nonDisruptive Care or nonDC group). This paper discusses neonatal and 2 week post-partum data from the 152 mother-infant dyads.

Maternal data

The participants in this project were primarily single, African American, low income, inner-city, polydrug abusers. All women had a history of heroin and/or cocaine use during pregnancy, about one-fifth of the women were HIV positive, and a sixth reported experiencing serious violence in their life. Most began smoking cigarettes, using alcohol and marijuana in their early teens. Demographic data (Table 1) indicate that women in the DC group were younger at their first pregnancy ($p = .04$) and at entrance into the study ($p = .02$), had a trend towards fewer years of school ($p = .10$) and marginally higher history of incarceration compared to the nonDC group. Placement of other children in substitute care ($p = .01$) was significantly higher in the DC group. When groups were compared by study

status of the mother, there were fewer intervention mothers in the DC group than the control, though the difference was not statistically significant. The intervention group did not vary from the control group in any of the maternal or infant variables at onset of the study. Though more women in the DC group were in methadone treatment compared to the nonDC group, this difference was not statistically significant. There were no significant differences between the DC and nonDC group in other demographic data.

Women in the DC group began using cocaine at an earlier age ($p = .01$), were more likely to report using heroin during pregnancy ($p = .003$), and among those who used--the use was more frequent ($p = .02$) (Table 2). Though there was no difference in percent of women who tested positive for cocaine in their urine toxicology screen, significantly more women in the DC group were positive for heroin ($p = .013$). More women in the DC group smoked cigarettes during pregnancy compared to the nonDC group ($p = .02$). There was no difference in reported alcohol use during pregnancy, except that those who drank in the DC group reported drinking less often than the nonDC group ($p = .01$) (Table 2).

On the Brief Symptom Index (BSI) (Table 3) the DC group had significantly higher scores than the nonDC group in all nine subscales. Results from the Center for Epidemiologic Depression Scale (CES-D) indicated that scores were higher among women in the DC group ($p = .003$) and significantly more women in the DC group had scores of 16 or more, which is indicative of depression ($p = .03$). Though there were more women in the DC group who had scores above 28, which indicates severe depression, this difference was not statistically significant (Table 4). The Life Experience Survey (LES) (Table 5), used to measure the events experienced by the mother during the past year, indicated a significantly greater number of negative events in the DC group compared to the nonDC group ($p = .02$). When scores on the Interview schedule for Social Intervention were considered, the nonDC group of women reported more people available for social support ($p = .01$) and also perceived the support as more adequate compared to the DC group ($p = .004$) (Table 6).

Logistic regression was used to assess the joint predictive power of maternal age, intervention, heroin toxicology results at birth, other children, other children in foster care, and depressive symptoms (CES-D score) (Table 7). Since women had been randomized into an intervention or control group, we controlled for their study status in data analysis. By including study group in our logistic regression model we were able to see if the variables in the model were associated with disruption of care controlling for intervention. Age, positive heroin toxicology, two or more children, other children in foster care, and CES-D score were significantly predictive of disruption in care, controlling for all variables in the model. The strongest predictor was maternal age. It was estimated that those under 30 years of age had four times the odds of having a disruption of care than those over 30 years of age, controlling for the other variables. There was no significant associations between the variables in logistic regression analysis and the group to which the subjects were randomized. By including the group status in the logistic regression model we were able to see if the variables in the model were still associated with disruption of care controlling for intervention. Models including other psychological measures were also fit, but none of these measures were significantly predictive of disruption in care after controlling for depressive symptoms.

Infant data—Neonatal data are presented in Table 8. There was no significant difference in mean birth weight, head circumference, length, Apgar scores, and size for gestation. The DC group had significantly more preterm infants ($p = .02$), and a trend towards more low birth weight ($p = .06$), and length of stay over 4 days ($p = .06$). Data indicated that when neonatal problems were compared, the infants in the DC group had a greater number of problems, for example, Neonatal Abstinence Syndrome ($p = .07$), other problems ($p = .04$).

DISCUSSION

All the women in the study were at very high risk for disruption in care of their infant, based on their histories of drug abuse, poverty, limited education, and other social problems. However, as predicted, those women with multiple demographic and psychosocial risks identified perinatally were least able to provide ongoing care for their children. Compared to the women who retained primary care for their infants, the women in the disruptive care group were younger at the time of the study (and when they had their first child), more likely to have children placed in substitute care, more likely to have a positive urine toxicology screen for heroin at delivery, and more likely to report depressive symptoms. Each of these factors has been associated with negative consequences for children, and in combination they could have disastrous consequences for children. Women who entered the study at a younger age may lack the maturity of older women and be more likely to depend on extended family members to provide support and care for their children.

Prior placement of children in foster care represents a failure experienced by the mother in providing care for her children. Women with other children in foster care may also come under closer scrutiny by social service agencies and be more likely to have subsequent children removed.

Drug abuse is a chronic, remitting disease and a positive urine screen for heroin at delivery serves as a marker for high frequency or chronicity of use during pregnancy. These women may be more involved in a drug lifestyle than less frequent users and therefore less able to provide ongoing care to their infants.

Women who are depressed often have difficulty with parenting (Downey & Coyne, 1990; Gelfand & Teti, 1990). Many feel very inadequate in their role as parents, and therefore may find it difficult to cope with the responsibilities of child care. Because depressive symptoms were measured 2 weeks after delivery, some of the women in this study may have been experiencing post-partum depression (Gotlib, Whiffen, Mount, Milne, & Cordy, 1989). However, those women with multiple symptoms of depression were most at risk for disruptions in care. Maternal depression has been associated with many of the factors differentiating women in the DC and nonDC groups, including younger maternal age, responsibility for multiple children, negative life events, and low levels of support (Gotlib et al., 1989). Maternal depression is of concern, not only because women may be less able to cope with their parenting responsibilities, but because children of depressed mothers are more likely to experience emotional and developmental problems (Downey & Coyne, 1990; Gelfand & Teti, 1990). Thus, it is not surprising that maternal depression differentiated women who were able to provide ongoing care during infancy and early toddlerhood versus those who could not.

The bivariate findings also suggest that demographic and psychosocial characteristics present at delivery can be used to identify those women who will be unable to provide consistent care to their infants. Women in the disruptive care group reported more psychological problems, experienced a greater number of negative life events during the past year, perceived their social support system as inadequate, and were more likely to have a history of incarceration. Thus, the DC group of women had greater stressors in their life and were coping less adequately with their addiction than the nonDC group. Maternal stress and lack of social support can interfere with parenting, even when drug abuse is not present (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Crockenberg, 1981; Stevens, 1988). Drug abusing women who are under high levels of stress may be even less able to take advantage of available resources.

The DC group had more challenging infants (low birth weight, preterm, neonatal problems, and greater length of hospital stay following delivery). These infants may therefore be seen as difficult to care for and less rewarding for the mother. A vulnerable infant may overwhelm the mothers capacity to cope, particularly when she is a drug abuser and experiencing numerous other social problems. Without feelings of parenting success, young mothers with a history of drug abuse may turn toward a deviant lifestyle that includes a disruption in their infants care.

These findings illustrate the deleterious effects of multiple stressors on caregiving. Although they are consistent with findings from Sameroff and colleagues in demonstrating how risk factors combine, they also highlight the importance of specific risk factors (Sameroff et al., 1993; Sameroff et al., 1987). That is, not only was caregiving likely to be disrupted when there were multiple risk factors, but the likelihood of a disruption in care was highest when mothers were young, there were other children in foster care, heroin use was frequent, and mothers reported depressive symptoms.

Limitations

There are several limitations that should be considered in interpreting these findings. First, our definition of disruption included voluntary placement with a relative. Thus, our rates of disruption may be higher than reports that rely on referrals to CPS. Second, we examined disruptions in care, not quality of care. Although disruptions in care can undermine children's sense of security, there is no assurance that the care provided by alternative caregivers differed from the care provided by the mothers. Third, due to sample size limitations, we grouped all disruptions in care during the first 18 months of life into one category. However, there were many patterns of care experienced by the children in this sample. Some moved among multiple households, some had only one disruption, some had frequent contact with their mother, some had little contact, some left their mother's care early in life, and some remained with their mother until toddlerhood.

Implications

Pregnancy and delivery bring women into closer contact with health care providers and may provide a window of opportunity to work with women identified as being at high risk for DC. Implementation of a careful screening process in the prenatal period may be feasible and cost effective. Although the home-based intervention in this study did not prevent disruption in care during the first 18 months, the direction of effect was in the expected direction. Other home-based interventions have been effective in reducing abuse and neglect among young mothers of infants and toddlers and in promoting positive parenting behaviors among drug-abusing women (Black, Nair, Kight, Wachtel, Roby, & Schuler, 1994; Olds, 1992; Olds & Kitzman, 1990). Thus, home intervention in the neonatal period is a promising strategy to consider to promote parenting and to prevent disruption of care among drug abusing women. Intervention programs should be comprehensive, theoretically based on adaptive models of parenting, focus on maternal needs, and provide psychosocial support and parenting skills to women and their families, not just referral to drug treatment (Black et al., 1994; Olds, 1992; Olds & Kitzman, 1990). In addition, interventions must involve the family, as defined by the mother, because the support provided by the family is often crucial for the well-being of both mothers and children and should be well coordinated with other service systems to ensure access to medical care and social services (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Crockenberg, 1981; Stevens, 1988).

The infancy and toddler period are critical times for young children. Not only are they establishing stable attachments and learning about their world, but they have frequent contact with pediatric health care providers as they receive their recommended

immunizations. Providers should consider these early contacts as opportunities to identify families at risk for disruptive care, and should monitor them more closely and provide support to both the mothers and the extended family, who are usually the substitute care providers for these children.

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Table 1

Demographic Background of Families With and Without Disruption in Caregiving

	Disruption in Caregiving (*n* = 66) Mean *(SD)* or %	No Disruption in Caregiving (*n* = 86) Mean *(SD)* or %	*p**
Mother			
Ethnicity (African American) %	95.4	95.3	
Age/Years at 1st Pregnancy	17.8 (3.2)	19.2 (4.9)	.04
Age/Years This Pregnancy	25.6 (4.0)	27.5 (5.7)	.02
Education No. Years	10.7 (1.6)	11.1 (1.7)	.10
Completed High School (%)	36.4	39.5	
Number of Children	3.2 (1.2)	2.8 (1.6)	
Marital Status (Single %)	98.5	91.9	
Pre and Perinatal Data Method of Delivery %			
Vaginal	88.0	83.7	
C. Section	12.0	16.3	
HIV = %	19.6	18.6	
STD in Pregnancy %	17.2	22.4	
Social History %			
Incarceration	31.4	22.1	
History of Violence	13.2	14.5	
Father in Home	15.1	18.6	
Other Children/Foster Care	24.4	9.1	.01
Intervention %	42	51	
Methadone Treatment %	29	19	

* Unless otherwise noted, *P* values are >.10.

STD: Sexually transmitted diseases; C. Section: Cesarian section; HIV +: Human Immunodeficiency virus positive.

Table 2

Maternal History of Drug Use

	Disruption in Caregiving (*n* = 66) Mean *(SD)* or %	No Disruption in Caregiving (*n* = 86) Mean *(SD)* or %	*p**
Age in Years at First Use			
Smoking	15.1 (3.5)	15.2 (3.2)	
Alcohol	15.5 (3.9)	16.7 (3.0)	
Heroin	20.0 (3.5)	20.9 (4.3)	
Cocaine	21.0 (4.0)	23.2 (5.1)	.01
Marijuana	15.8 (2.6)	16.7 (4.0)	
Methadone	27.3 (3.9)	24.8 (4.2)	
Percent Reporting Substance Abuse During Pregnancy			
Heroin	72.6	48.2	.003
Cocaine	67.7	60.2	
Alcohol	53.2	59.0	
Cigarettes	90.3	74.7	.02
Marijuana	37.1	53.6	
Methadone	29.0	18.1	
Percent Frequency of Use			
Alcohol 4–6/wk	40.3	71.1	.01
Heroin over 1/wk	48.4	22.9	.02
Percent With Positive Maternal Urine Toxicology			
Urine positive (any drug)	81.4	76.6	
Opiates	55.0	33.8	.013
Cocaine	63.3	58.4	

* Unless otherwise noted, *P* values are >.10.

Table 3

Brief Symptom Index, Z-scores

	Disruption in Caregiving (*n* = 66) Mean *(SD)*	No Disruption in Caregiving (*n* = 86) Mean *(SD)*	*P**
General Severity			
Index	1.33 (2.2)	0.42 (1.4)	.002
Subscales			
Somatization	0.44 (1.4)	0.08 (1.1)	ns
Obsessive compulsive	0.56 (1.9)	−0.06 (1.2)	.02
Interpersonal sensitivity	1.46 (2.0)	0.47 (1.4)	.0005
Depression	0.74 (1.8)	0.16 (1.2)	.02
Anxiety	0.44 (1.7)	−0.08 (1.1)	.03
Hostility	1.08 (2.0)	0.38 (1.4)	.01
Phobic anxiety	0.63 (1.7)	0.08 (1.2)	.02
Paranoid ideation	2.35 (2.4)	1.17 (2.1)	.001
Psychotocism	1.49 (2.6)	0.63 (1.8)	.002

Table 4

The Center for Epidemiologic Studies Depression Scale (CES-D)

	Disruption in Caregiving	No Disruption in Caregiving	
	n* = 66 Mean *(SD)	***n* = 86 Mean *(SD)***	***P****
Total Score	21.7 (10.9)	17.0 (8.2)	.003
% at or above 16	66.7	48.8	.03
% at or above 28	22.7	13.9	ns

Table 5

Life Experience Survey at 2 weeks

	Disruption in Caregiving	No Disruption in Caregiving	
	n* = 66 Mean *(SD)	***n* = 86 Mean *(SD)***	***P****
Number of Positive Events	4.5 (2.2)	4.7 (2.7)	ns
Index of Positive Events	13.4 (8.3)	13.4 (8.6)	ns
Number of Negative Events	6.4 (3.6)	5.2 (3.3)	.02
Index of Negative Events	19.9(13.1)	15.5 (11.9)	.03

* Unless otherwise noted, *P* values are >.10.

Table 6

Interview Schedule for Social Interaction at 2 weeks

	Disruption in Caregiving	No Disruption in Caregiving	
	n* = 66 Mean *(SD)	***n* = 86 Mean *(SD)***	***P***
Availability of Attachments	5.7 (1.7)	6.2 (1.6)	.01
Adequacy of Attachments	6.2 (3.0)	7.8 (3.3)	.004
% Adequacy of Attachments	58.4	70.2	.006

Table 7

Logistic Regression Equations To Predict Disruption in Primary Care

Variable	Comparison	Odds Ratio	Confidence Interval	*P*
Maternal Age	Under 30 vs. 30 or older	4.3	(1.7, 10.2)	.0012
Other Children	One vs. none	2.3	(0.6, 8.0)	.1996
	Two or more vs. none	4.5	(1.5, 13.2)	.0071
Children in Foster Care	Any vs. none	2.7	(.86, 8.5)	.0900
Heroin Tox Result	Pos. vs. neg.	2.7	(1.2, 6.0)	.0144
Study group	Intervention vs. not	.6	(.03, 1.2)	.1509
CES-D	per 5 point increase	1.4	(1.1, 1.7)	.0049

Table 8

Neonatal Outcome of Infants With and Without Disruption in Caregiving

	Disruption in Caregiving	No Disruption in Caregiving	
	n* = 66 Mean *(SD)	***n* = 86 Mean *(SD)***	***P****
Gender (% Male)	53.0	38.4	.07
Birth Weight (gms)	2737 (478)	2817 (494)	
Head Circumference (cms)	32.5 (1.8)	33.2 (2.2)	
Length (cms)	47.6 (3.0)	48.0 (3.2)	
Gestational Age (wks)	38.0 (2.3)	38.8 (2.2)	.08
Apgar (1 minute)	7.9 (1.5)	8.0 (1.0)	
Apgar (5 minutes)	8.8 (0.5)	8.9 (0.4)	
Preterm (%) (<37 wks)	28.8	13.9	.02
Low Birth Weight (%) <2500 gms	13.8	18.6	.06
Size for Gestational Age (%)			
AGA	89.6	90.2	
SGA	10.9	8.5	
Length of Stay (Days)	5.8 (6.7)	5.0 (6.3)	
Length Hospital Stay (%)			
< = 4 days	56.1	70.9	
> 4 days	43.9	29.1	.06
Meconium Staining	28.8	20.9	
Other Neonatal Problems	25.8	12.8	.04
Neonatal Abstinence (%)	39.4	25.6	.07
Urine Tox. Screen Positive (%)	84.4	64.2	
Cocaine and opiates (%)	26.5	15.8	
Cocaine only (%)	39.1	28.4	
Opiates only (%)	14.1	10.0	

* Unless otherwise noted. *P* values are:>.10.

AGA: Appropriate for gestational age: SGA: small for gestational age: RDS: respiratory distress syndrome: tox.: toxicology.