

# Cocaine-Exposed Infants and Developmental Outcomes

## “Crack Kids” Revisited

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**I**N THIS ISSUE OF THE JOURNAL, SINGER AND COLLEAGUES<sup>1</sup> report the findings from their prospective cohort study assessing the relationship between prenatal cocaine exposure and cognitive and developmental outcomes in 218 cocaine-exposed infants and 197 unexposed infants. After controlling for prenatal exposure to other drugs, gestational age and size at birth, and a number of caregiver characteristics, the authors found that infants who had in utero cocaine exposure scored on average 6 points lower than the comparison group on the Mental Scale of the Bayley Scales of Infant Development<sup>2</sup> at 24 months of age. Rates of clinically important developmental delay on the scale were doubled in the cocaine-exposed group compared with the unexposed group (13.7% vs 7.1%, respectively).

The study by Singer et al is the only 1 of 10 peer-reviewed,<sup>3</sup> adequately controlled, large-scale, prospective longitudinal studies to show an unequivocal negative association between toddlers' developmental test scores and prenatal exposure to cocaine. Discrepancies among similar controlled longitudinal masked studies are of great scientific interest if the factors contributing to such discrepancies can be elucidated. Do children from the geographical area (ie, Cleveland) in the study by Singer et al experience more ill effects of prenatal cocaine exposure than those studied elsewhere? Since cocaine is an illegal substance, the extent of either its potency or its possible contamination by other potential toxins cannot be determined. Thus, it is impossible to know whether the drug used by women in Cleveland differs significantly from that in other studies from other cities where no such ill effects were found. Moreover, as the authors point out, their clinical selection criteria may have biased their sample toward a group of mothers who were heavy cocaine users.<sup>1</sup> Other cohorts described in the literature are apparently more heterogeneous in the amount of cocaine use. Also, the cocaine-exposed sample in the study by Singer et al includes a substantial number of premature infants who are often excluded from other study samples. Prematurity, with or without prenatal substance exposure,

is often associated with persistent developmental impairments.<sup>4</sup> Although the authors controlled for gestational age, prenatal cocaine exposure may increase the risk of delayed development at 2 years of age only in children most heavily exposed or primarily in children who have a second serious biological risk factor such as prematurity.<sup>5</sup> Although considering residual confounding in observational studies is important,<sup>6</sup> Singer and colleagues do control for a number of important covariates, but others are not measured, including potentially protective factors such as participation in home visiting and other early intervention programs.<sup>7,8</sup>

Singer and colleagues have made an important contribution to an evolving research field, raising many new issues for future investigation and replication. However, on the basis of the long and ignoble history of “crack babies,” a major concern is how these findings will be interpreted and applied by other researchers, physicians, and the public. The social and biological correlates of prenatal cocaine-polydrug exposure vary from sample to sample, so that one must avoid applying sweeping generalizations from any single sample to all cocaine-exposed children nationwide. Understanding factors that potentiate or moderate the potential impact of a toxic exposure is critical to clinical care and public policy because these factors may be amenable to programmatic interventions.<sup>9</sup>

The popular perception of the “crack kid”<sup>10,11</sup> preceded and exceeded the findings of Singer et al and undoubtedly shaped physicians' attitudes and public policies. Why do such perceptions persist? The answer provides a cautionary tale of the interface between science, clinical care, attitudes about drugs, the media, and the law.

Addiction, illegality, prenatal toxicity, and poor outcomes are linked in the public and professional mind.<sup>11</sup> In reality, scientific evidence for prenatal toxicity and teratogenicity is equivocal for some drugs and stronger for others. Inaccurate public expectations of correspondence between illegality and toxicity lead to distortions in interpreting and applying scientific findings. For example, although the study by Singer et al also finds some adverse effects related to prenatal tobacco and cocaine exposure, these results are

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not mentioned in the abstract or stressed in the discussion.<sup>1</sup> Their study and many others show that a pregnant woman's tobacco use<sup>12</sup> and heavy alcohol use<sup>13</sup> exert adverse effects on the growth, health, development, and behavior of newborns and children. Tobacco smoke is so toxic that infants of nonsmoking mothers who have environmental exposure to such smoke show measurable ill effects.<sup>14</sup> More moderate use of alcohol, marijuana, and cocaine prenatally by otherwise well-nourished healthy women has less consistent adverse effects.<sup>15,16</sup> On the other hand, illegal drug use and heavy alcohol use occur often in the context of other substantial risks to children's well-being, including parental mental health problems, homelessness, poor education, and multigenerational family dysfunction.<sup>10</sup>

However, the public perception of the impact of illegal drug exposure in utero is not so nuanced. Children with a history of prenatal cocaine exposure, so-called crack kids, have been portrayed in the media as not only inevitably and permanently damaged cognitively, but also as morally and emotionally troubled.<sup>10</sup> Some commentators have suspected that the public bias against drug-exposed infants, particularly cocaine-exposed infants, is less about misguided interpretations of sophisticated behavioral teratology research and more about deep-seated stereotypes of the predominantly poor and minority families whose children's prenatal cocaine exposure is identified.<sup>11</sup> These inaccurate stereotypes of socially disabling brain damage following in utero cocaine exposure continue to be promoted, for example, by CRACK (Children Requiring A Caring Community), a private charity that offered \$200 to drug-using women to use long-term birth control, including sterilization.<sup>17</sup>

Physicians' concern about mothers' use of illicit and legal drugs during pregnancy is always warranted.<sup>10</sup> Even if the teratogenicity of a specific substance has not been well established, a host of maternal-fetal health problems and psychosocial risks can accompany severe addictions to alcohol, cocaine, tobacco, and other drugs. Clinical monitoring of infants, social services for families to ensure a supportive, safe home environment, and addiction services for the mother (and father if possible) are appropriate standards. The problem lies in the attitude with which health care is often provided to mothers and children when the substance involved is illegal, an attitude that does not so drastically distort care for children exposed to tobacco or alcohol. The bias that women who use any amount of any illegal substance are morally unfit and intentionally abusive<sup>11</sup> subtly alters how their care is provided. As physicians, we need to identify and reduce exposures to all well-documented harmful agents during pregnancy, whether they are legal or not. As a society, we need to provide a variety of intervention services to all children with developmental risk, whether such risks are biological (through teratogen

exposure or infection or by chromosomal origin) or social (poverty, parental mental illness, or exposure to traumatic events). And as health professionals, we need to become aware of any deep-seated attitudinal biases that parallel those in the general public and the media and confuse our best clinical intentions.

The article by Singer and colleagues<sup>1</sup> makes an important contribution to the research base for understanding the relationship between prenatal cocaine exposure and developmental outcomes. However, these findings should not be used to promote stigmatization<sup>18</sup> of cocaine-exposed children by clinicians and the media with potential resurgence of uniquely punitive (and clinically harmful) legal measures directed at women who use cocaine during pregnancy.<sup>19</sup>

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