
PRENATAL SUBSTANCE EXPOSURE
AND REPORTING OF CHILD MALTREATMENT
BY RACE AND ETHNICITY IN CALIFORNIA

Children's
Data Network

EMILY PUTNAM-HORNSTEIN, PHD
JOHN PRINDLE, PHD
JOHN M. LEVENTHAL, MD

PRENATAL SUBSTANCE EXPOSURE AND REPORTING OF CHILD MALTREATMENT BY RACE AND ETHNICITY IN CALIFORNIA

Emily Putnam-Hornstein, PHD

John Prindle, PHD

John M. Leventhal, MD

JOURNAL CITATION

Putnam-Hornstein E, Prindle JJ, Leventhal JM. Prenatal Substance Exposure and Reporting of Child Maltreatment by Race and Ethnicity. *Pediatrics*. 2016;138(3): e20161273

FUNDING

This analysis was funded through grants to the Children's Data Network from the Conrad N. Hilton Foundation and First 5 LA.

ACKNOWLEDGEMENTS

We wish to acknowledge collaborating colleagues at the USC Children's Data Network and the UC Berkeley California Child Welfare Indicators Project: Barbara Needell, Jacquelyn McCroskey, and Daniel Webster offered critical feedback on the manuscript; Joseph Magruder supported the preparation of the data; and Eric Lindberg provided editorial assistance. For the creation of this version, Regan Foust adapted the current version for a lay audience from the academic manuscript, Jonathan Hoonhout managed the project and report production and Rose Bridges and Matt Roe developed and designed the pages that follow.

Although the findings reported and conclusions drawn from these data are solely those of the authors and should not be considered to reflect those of any agency of the California government, this analysis would not be possible without the partnership of the California Department of Social Services and the county child welfare departments, reflecting their ongoing commitment to data-driven program and policy development.

Finally, we wish to thank Armando Jimenez and Pegah Faed from First 5 LA - as well as Jeannine Balfour and the Conrad N Hilton Foundation - for their investments in generating new knowledge through administrative data.

PROJECT OVERVIEW

The Children's Data Network (CDN) is a university, agency, and community collaborative focused on the integration and application of data to inform programs and policies for children and their families. The CDN receives essential infrastructure funding from First 5 LA and the Conrad N. Hilton Foundation, additional project support from the Robert Wood Johnson Foundation, the Laura and John Arnold Foundation, and the California Department of Social Services, and operates in partnership with the California Child Welfare Indicators Project at UC Berkeley.



CHILDREN'S DATA NETWORK

PRENATAL SUBSTANCE EXPOSURE AND REPORTING OF CHILD MALTREATMENT BY RACE AND ETHNICITY IN CALIFORNIA

SUMMARY

BACKGROUND AND PURPOSE

In the United States, black infants are reported to child protective services (CPS) at significantly higher rates than other infants. Little is known, however, about the role of prenatal substance exposure on decisions to report. The current study explored whether or not clinicians were more likely to report black and Hispanic substance-exposed infants versus white infants.

DATA AND ANALYSES

By linking birth, hospital discharge, and CPS records for all black, Hispanic, and white infants born in 2006 in California, we examined racial differences in maltreatment reports among infants with diagnosed substance exposure. Diagnostic codes from hospital records were used to document substance exposure. CPS records provided information on maltreatment reports made during the first 28 days of life (i.e., the neonatal period). The prevalence of infant exposure was calculated by race/ethnicity, substance type, and sociodemographic covariates. Racial differences in maltreatment reporting among substance-exposed infants were estimated using multivariable regression models.

FINDINGS*

Overall, 1.6% of infants born in this cohort had diagnosed substance exposure (7,428 of 474,071). Exposure varied significantly between racial/ethnic groups ($p < .001$), with the highest prevalence observed among black infants (4.1%) and the lowest among Hispanic infants (1.0%). Among white and Hispanic infants, the most frequently observed substances were amphetamine and cannabis; for black infants, cannabis was the most common, followed by cocaine. After adjusting for sociodemographic and pregnancy factors, we found that substance exposed black and Hispanic infants were reported to CPS at significantly lower or statistically comparable rates to substance exposed white infants.

IMPLICATIONS

Although we were unable to address potential racial/ethnic bias in screening for substances at birth, there was no evidence that racial disparities in infant CPS reports arise from variable responses to prenatal substance exposure. Black and Hispanic newborns with prenatal substance exposure were no more likely than white infants to be reported for maltreatment. Findings held across specific substance types and suggest racial/ethnic reporting disparities are minimized in the presence of prenatal substance exposure.

*Descriptive data for Los Angeles County are presented as Appendix A.



BACKGROUND

In the United States, rates of substantiated maltreatment for black infants are double that of white and Hispanic infants (40 per 1,000 vs. 18 per 1,000, respectively),^{1,2} and in some states, racial and ethnic disparities are even greater.³ Uneven levels of poverty and other risk factors for maltreatment,^{4,5} variability in surveillance,^{6,7} and inconsistencies in decisions to report possible maltreatment^{8,9} are all potential sources of racial and ethnic disparities.

An additional factor, prenatal substance exposure, may also be an important contributor to the involvement of CPS at or shortly after birth and a source of racial disparities.¹⁰⁻¹² But reliable data establishing in-utero substance exposure is limited, which makes it challenging to document the relationship between prenatal exposure and CPS reporting.^{13,14}

THE CHILD ABUSE PREVENTION AND TREATMENT ACT¹⁵ REQUIRES ALL STATES HAVE POLICIES AND PROCEDURES TO NOTIFY CPS WHEN AN INFANT IS BORN WITH PRENATAL SUBSTANCE EXPOSURE. IN CALIFORNIA, HOWEVER, THERE ARE NO LAWS MANDATING THAT PRENATAL SUBSTANCE EXPOSURE BE REPORTED TO CPS.^{16,17}

Specifically, statute only requires a report of a substance-exposed infant when “other factors are present that indicate risk to a child” and makes explicit that “a positive toxicology screen at the time of delivery of an infant is not in and of itself a sufficient basis for reporting child abuse or neglect.”¹⁰ It is unknown whether race/ethnicity biases medical decisions to report prenatal substance exposure to CPS.

PURPOSE

This study examined the association between prenatal substance use and neonatal reporting of exposed infants to CPS. Using linked administrative records from California to determine the diagnosis of prenatal exposure, we assessed the extent to which the discretion afforded to clinicians results in racial/ethnic disparities in the reporting of substance-exposed infants to CPS.

DATA

SOURCES

This analysis is based on a linked file of records originating from three administrative data sources from California: (1) vital birth records falling under the authority of the Department of Public Health, (2) maternal and infant hospital discharge records managed by the Office of Statewide Health Planning and Development, and (3) child protection records from the Department of Social Services. Birth records provided sociodemographic and pregnancy covariates. Prenatal substance exposure was determined from diagnostic codes in hospital records. Reporting to CPS was obtained from the state’s child protection records.



LINKAGE

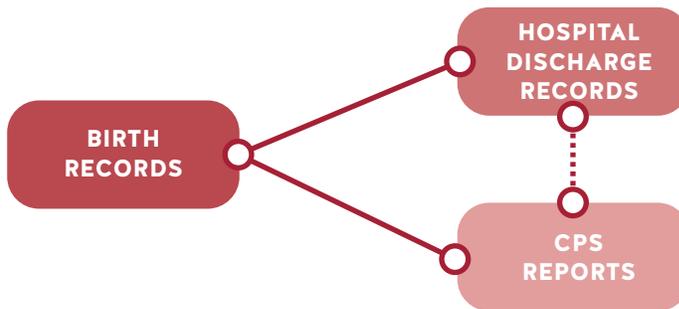
Birth and hospital discharge records reflected information concerning statewide births from calendar year 2006; CPS records used in the present analysis spanned the 28-day period following birth.



Hospital discharge records were probabilistically linked to birth records as part of an ongoing state surveillance project.¹⁸



In a separate set of probabilistic linkages, CPS records for children born in 2006 and reported as alleged victims of maltreatment during infancy were linked to birth records.



The final dataset was constructed by using state-generated numbers assigned to each birth record to integrate information across the two linked files.



DEPENDENT VARIABLE

The dependent variable was defined as a report of maltreatment made to CPS during the 28-day neonatal window starting at birth. All reports were included, regardless of whether the report was screened in for investigation or substantiated as abuse or neglect. The inclusion of all reports was based on our interest in factors contributing to clinical decisions to report an infant with documented substance exposure, rather than the CPS response.

INDEPENDENT VARIABLES

The likelihood of a neonatal report to CPS was disaggregated based on two variables: maternal race/ethnicity (as coded in the birth record) and diagnoses of substance exposure (as coded in the hospital discharge records). These analyses were restricted to the three largest racial/ethnic groups in California (black, Hispanic, white). Diagnoses of in-utero substance exposure were based on International Classification of Diseases, 9th Revision, Clinical Modification codes from hospital discharge records.^{19,20}

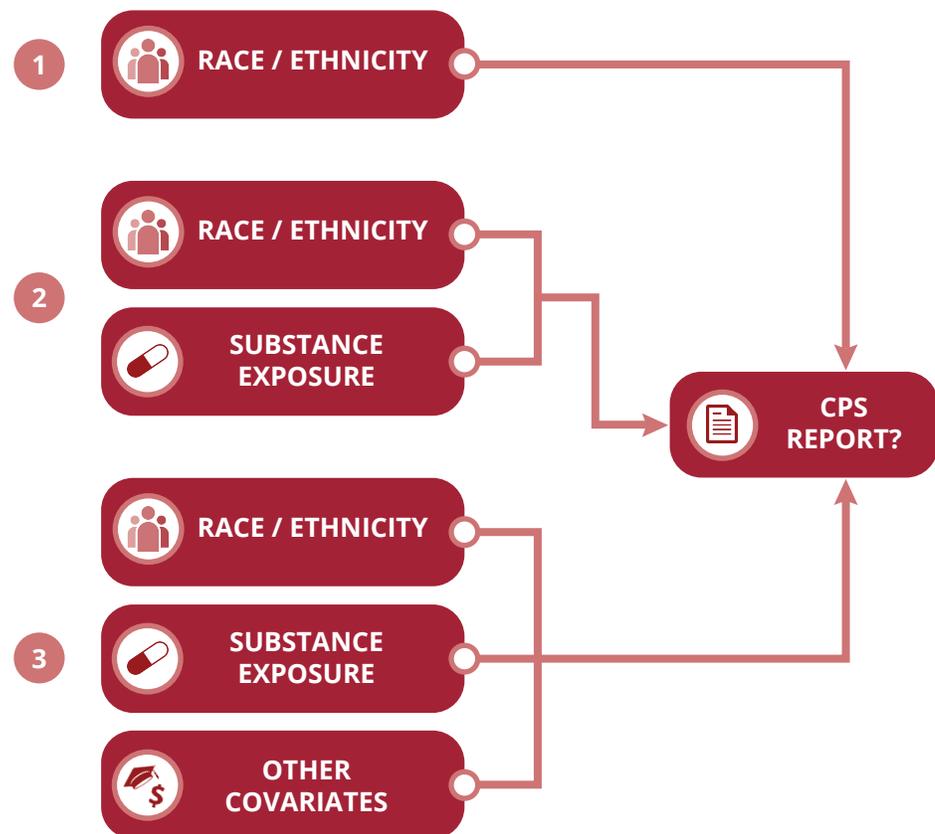
COVARIATES

To isolate the relationship between maternal race/ethnicity, medically diagnosed substance exposure, and the likelihood an infant was reported to CPS, we controlled for several sociodemographic and pregnancy covariates recorded at birth. Covariates were derived from birth records and included maternal age (≤ 19 years, 20–24 years, 25–29 years, ≥ 30 years), insurance type (private insurance, public insurance), the trimester prenatal care was initiated (first, second, third, no care or missing), paternity establishment (established, missing), birth order (first birth, later birth), and infant birth weight (≥ 2500 g, < 2500 g).



ANALYSIS

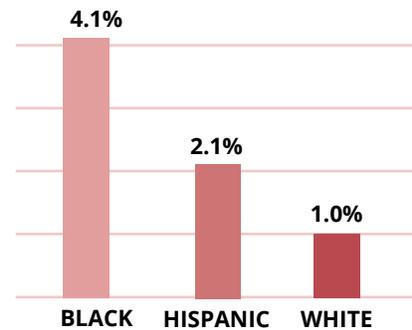
First, the covariate distributions of the children born with and without diagnosed substance exposure for the overall cohort and within race/ethnicity were compared. Then, analyses were restricted to only those births in which substance exposure was diagnosed and the relationship between race/ethnicity and specific substance exposure types was assessed. To examine racial differences in CPS reporting among newborns exposed to substances, relative risk (RR) and corresponding 95% confidence intervals (CI) were calculated. First, the RR of reporting to CPS when substance exposure had been diagnosed at birth (Model 1) was estimated. Then, the individual and combined effects of substance exposure and race/ethnicity (Model 2) were examined. Finally, the adjusted RR of a CPS report after adjusting for covariates and a co-occurring second substance (Model 3) was calculated.



FINDINGS

DIAGNOSED SUBSTANCE EXPOSURE BY RACE/ETHNICITY

7,428 (1.6%) INFANTS WERE DIAGNOSED WITH PRENATAL SUBSTANCE EXPOSURE. DIAGNOSED SUBSTANCE EXPOSURE WAS HIGHEST AMONG BLACK, FOLLOWED BY HISPANIC AND WHITE INFANTS.

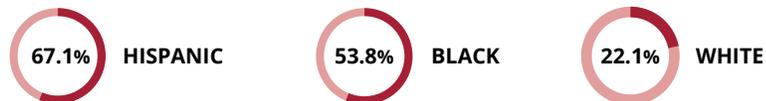


Substance-exposed infants were more likely to be born to younger mothers and covered by public insurance. Among infants with diagnosed exposure, paternity was less likely to be established (40.6% vs. 9.5%) and prenatal care was more likely to have started after the first trimester or not at all (44.6% vs. 14.5%). Substance exposure was also more common among mothers with previous births and infants born at low birth weight.

SUBSTANCE EXPOSURE COMPARED TO NON SUBSTANCE EXPOSURE BY RACE/ETHNICITY

Among white and Hispanic infants, maternal age tended to be younger in the substance-exposed group relative to those without exposure; the opposite trend was observed for black births. All other covariates, however, were unidirectional in relation to substance exposure. Findings also indicated that black infants had a greater concentration of socioeconomic and health vulnerabilities, regardless of substance exposure. Yet differences across race/ethnicity were notably diminished among substance-exposed infants.

For example, although the share of births covered by public insurance varied substantially by race/ethnicity among infants without substance exposure,

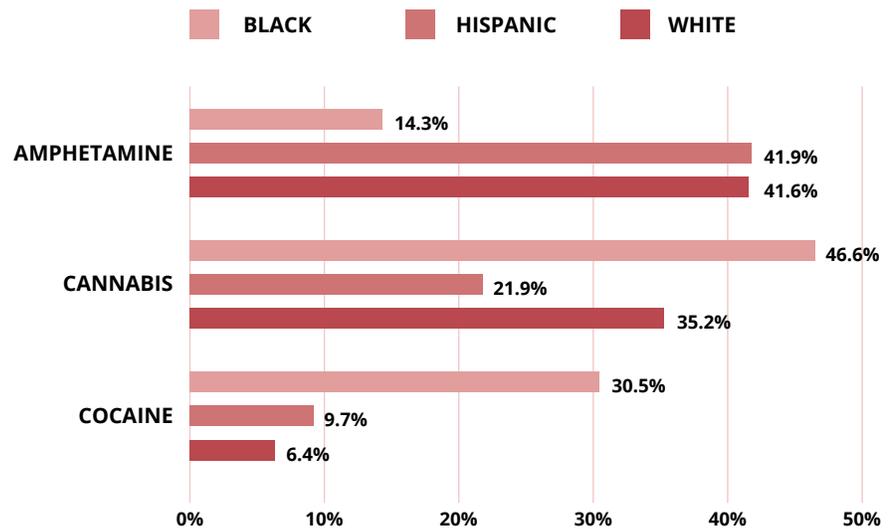


there were minimal differences in the substance-exposed subpopulation.



DIAGNOSED SUBSTANCE EXPOSURE BY SUBSTANCE TYPE AND RACE/ETHNICITY

Among births in which substance exposure was diagnosed, we identified significant variations between racial/ethnic groups for all substance types with the exception of alcohol ($p = .409$). Amphetamine was the most commonly diagnosed substance among white and Hispanic mothers, followed by cannabis. Black mothers of substance-exposed infants were most likely to have diagnoses for cannabis, followed by cocaine.



LIKELIHOOD OF NEONATAL REPORTS TO CPS

The overall percentage of substance-exposed infants with a neonatal report to CPS was 53.4%, where reporting ranged from only 36.1% of infants diagnosed with alcohol exposure to 72.1% of infants with cocaine exposure. Among all infants neonatally reported to CPS, we found that 40.6% had been diagnosed with substance exposure at birth. A sequence of models predicting CPS involvement were built using substance exposure status, race/ethnicity, and maternal characteristics at birth as predictors. Models only accounting for race/ethnicity found significant differences between these race/ethnicity types. For infants with diagnosed exposure, previously observed differences in CPS reporting by race/ethnicity were no longer statistically significant after adjusting for covariates. Across specific substance types, black and Hispanic newborns with in utero exposure had a statistically lower or equivalent likelihood of being reported to CPS compared to white newborns with the same substance exposure.



DISCUSSION

Using linked records from three administrative sources, we provide a population-level analysis of diagnosed substance exposure at birth and the corresponding likelihood of reporting to CPS by race/ethnicity. Although the data did not allow for an assessment of variable patterns of prenatal substance screening or substance use self-disclosure by race/ethnicity, key findings emerged for infants who were diagnosed as substance-exposed.

FIRST

Diagnosed substance exposure significantly increased an infant's risk of being reported to CPS during the neonatal period. Even after adjusting for other factors, infants diagnosed as exposed to substances had a risk of being reported to CPS 10 times that of infants without any exposure.

SECOND

Despite the relative difference in reporting rates for substance-exposed versus non-exposed infants, however, only half of all infants with a substance exposure diagnosis were reported to CPS (53.4%). For those infants who were not reported, it is unknown what supports or service referrals may have been made. From the perspective of the CPS system, 40.6% of all infants reported during the neonatal period had been diagnosed as substance exposed, underscoring just how many child protection-involved newborns likely require health and developmental supports to offset in utero adversities.

THIRD

There were notable differences in the nature of diagnosed substances by race/ethnicity, a relevant factor given that the likelihood a report was made to CPS varied substantially by substance type. The finding that amphetamine exposure was the most commonly diagnosed substance among Hispanic and white infants, but much less frequently observed for black infants, aligns with broader population differences in amphetamine use.²¹⁻²³

FOURTH

We found no evidence that black or Hispanic infants with diagnosed prenatal substance exposure were more likely to be reported to CPS than white infants after adjusting for other covariates. Among newborns with diagnosed exposure, black and Hispanic infants had a statistically lower or equivalent risk of being reported to CPS compared to white infants. Although these data do not indicate that clinicians were more likely to report substance-exposed black or Hispanic infants to CPS, the findings do not address whether there is bias in screening for substances. The findings simply suggest that once substances have been diagnosed, race/ethnicity does not seem to drive the decision to report maltreatment.

IMPLICATIONS

Prenatal substance exposure poses serious health risks for infants because of both the direct in utero impact on the developing fetus and the potential that ongoing parental substance abuse may place a newborn at risk of harm.³² Identifying exposed infants at birth allows medical providers to connect families to services that may offset health adversities and risks posed by ongoing substance abuse. In states such as California, there is no mandate for



reporting substance-exposed infants to CPS. Medical providers, therefore, may choose to make a formal maltreatment report to CPS, or instead refer a family to community services. Factors that contribute to clinical decisions to report to CPS when substance exposure has been diagnosed are not well understood, and previous research has indicated racially-biased responses.⁹ Results from the present analysis indicate that in cases where substance exposure was diagnosed, clinicians were no more likely to report minority infants to CPS than white infants.

REFERENCES

- ¹U.S. Department of Health & Human Services. Child maltreatment 2014. <http://www.acf.hhs.gov/sites/default/files/cb/cm2014.pdf>. Published January 25, 2016. Accessed February 3, 2016.
- ²Wildeman C, Emanuel N, Leventhal JM, Putnam-Hornstein E, Waldfogel J, Lee H. The prevalence of confirmed maltreatment among US children, 2004 to 2011. *JAMA Pediatr*. 2014;168(8):706-713.
- ³Webster D, Armijo M, Lee S, et al. California Child Welfare Indicators Project reports. http://cssr.berkeley.edu/ucb_childwelfare. Accessed December 11, 2015.
- ⁴Drake B, Jolley JM, Lanier P, Fluke J, Barth RP, Jonson-Reid M. Racial bias in child protection? a comparison of competing explanations using national data. *Pediatrics*. 2011;127(3):471-478.
- ⁵Putnam-Hornstein E, Needell B, King B, Johnson-Motoyama M. Racial and ethnic disparities: A population-based examination of risk factors for involvement with child protective services. *Child Abuse Negl*. 2014;37(1):33-46.
- ⁶Lane WG, Rubin DM, Monteith R, Christian CW. Racial differences in the evaluation of pediatric fractures for physical abuse. *JAMA*. 2002;288(13):1603-1609.
- ⁷Wood JN, Hall M, Schilling S, Keren R, Mitra N, Rubin DM. Disparities in the evaluation and diagnosis of abuse among infants with traumatic brain injury. *Pediatrics*. 2010;126(3):408-414.
- ⁸Flaherty EG, Sege RD, Griffith J, et al. From suspicion of physical child abuse to reporting: primary care clinician decision-making. *Pediatrics*. 2008;122(3):611-619.
- ⁹Chasnoff IJ, Landress HJ, Barrett ME. The prevalence of illicit-drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida. *New Engl J Med*. 1990;322(17):1202-1206.
- ¹⁰Barth RP. Research outcomes of prenatal substance exposure and the need to review policies and procedures regarding child abuse reporting. *Child Welfare*. 2001;80(2):275-296.
- ¹¹Young NK, Gardner S, Otero C, Dennis K, Chang R, Earle K, Amatetti S. Substance-exposed infants: state responses to the problem. HHS Pub. NO. (SMA) 09-4369. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2009.
- ¹²Roberts SCM, Nuru-Jeter A. Universal alcohol/drug screening in prenatal care: a strategy for reducing racial disparities? questioning the assumptions. *Matern Child Health J*. 2011;15(8):1127-1134.
- ¹³Lambert BL, Bauer CR. Developmental and behavioral consequences of prenatal cocaine exposure: a review. *J Perinatol*. 2012;32(11):819-828.
- ¹⁴Berger LM, Waldfogel J. Prenatal cocaine exposure: long-run effects and policy implications. *Soc Serv Rev*. 2000;74(1): 28-54.



¹⁵Child Abuse Prevention and Treatment Act, P.L. 93-247, as amended by the CAPTA Reauthorization Act, P.L. 111-320 (2010).

¹⁶Child Welfare Information Gateway. Parental drug use as child abuse. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau; 2012.

¹⁷Child Abuse and Neglect Reporting Act, Cal. Penal Code § 11165.13 (2001).

¹⁸Herrchen B, Gould JB, Nesbitt TS. Vital statistics linked birth/infant death and hospital discharge record linkage for epidemiological studies. *Comput Biomed Res.* 1997;30(4):290-305.

¹⁹World Health Organization. Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, 9th revision, clinical modification. Geneva, Switzerland: World Health Organization; 1977.

²⁰Putnam-Hornstein E, Prindle J, Leventhal, JM. Prenatal substance exposure and reporting of child maltreatment by race and ethnicity. *Pediatrics.* 2016; In press.

²¹Brecht ML. Los Angeles County drug trends update. Presented at the National Institute on Drug Abuse Community Epidemiology Work Group, Los Angeles, CA; 2011.

²²Brecht ML, O'Brien A, von Mayrhauser C, Anglin MD. Methamphetamine use behaviors and gender differences. *Addict Behav.* 2004;29(1):89-106.

²³Herbeck DM, Brecht ML, Pham AZ. Racial/ethnic differences in health status and morbidity among adults who use methamphetamine. *Psychol Health Med.* 2013;18(3):262-274.

²⁴O'Leary CM, Jacoby PJ, Bartu A, D'Antoine H, Bower C. Maternal alcohol use and sudden infant death syndrome and infant mortality excluding SIDS. *Pediatrics.* 2013;131(3):e770-e778.

