

Study finds prenatal cocaine exposure not severely damaging to growth, learning

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Children exposed to cocaine in the womb face serious consequences from the drug, but fortunately not in certain critical physical and cognitive areas as previously believed, according to a new comprehensive review of research on the subject from scientists at the University of Maryland School of Medicine. When a pregnant woman uses cocaine, it can interrupt the flow of nutrients and oxygen to the baby, putting such children at risk for premature birth, low birth weight and many other problems. The new review of multiple major studies conducted on cocaine-exposed, school-aged children found this negative impact significantly affected children in subtle areas such as sustained attention and self-regulated behavior. The research, however, showed surprisingly little impairment directly from cocaine in key areas such as growth, IQ, academic achievement and language functioning.

Many of the [children](#) did have low IQ and poor academic and language achievement. The research suggested, though, that these apparent impairments were often caused by the troublesome home environment that goes along with cocaine use, rather than directly from the cocaine itself.

The developmental areas that the cocaine exposure seemed to directly impact — sustained attention and self-regulated behavior — could become significantly problematic as children grow into adults. The review is published this month in the journal *Pediatrics*. It is the first review of cocaine-exposed school-age children six and older; a previous review looked at younger children.

When rates of cocaine use began to grow in America in the 1980s, there was concern that children who had been exposed to the drug or its derivative, crack cocaine, in utero were doomed for a lifetime of poor health, sub-par performance in school, behavior problems and eventually for substance abuse themselves. The new review indicates otherwise, and could change the way medicine and social science approach outreach to and study of cocaine-exposed children, according to senior author Maureen M. Black, Ph.D., professor of pediatrics at the University of Maryland School of Medicine.

"Cocaine can disrupt fetal growth and development, but this review tells us that just because a child has been exposed to cocaine, it is not a foregone conclusion that they're going to be in trouble," says Dr. Black. "No one is saying cocaine use is good. We need prevention programs so women don't use cocaine in the first place. Children experience serious negative effects from drug exposure in the womb. It looks, though, as if cocaine doesn't work alone. Women who use cocaine are often from poor and dysfunctional families, where children do not receive the care and enrichment they need. In addition, women who use cocaine while pregnant often smoke cigarettes and drink alcohol as well, exposing their unborn children to legal substances with extremely negative consequences."

Dr. Black and her colleagues reviewed 32 major studies of school-age children, ages six through their teenage years, conducted between 1980 and 2008. All of the studies compared children who had been exposed to cocaine to those who had not. Dr. Black and postdoctoral fellows John P. Ackerman, Ph.D., and Tracy Riggins, Ph.D., aggregated the data and organized them into charts comparing the healthy children to those who had been exposed to cocaine.

The areas where children showed significant negative impact from cocaine —sustained attention and in self-regulating behavior — could

lead to serious problems for children in adolescence or adulthood. "They might have difficulty with impulse control and they might be risk-takers," says Dr. Black. "They might be more likely to be involved with drugs themselves." Innovative techniques, including neuroimaging, have suggested that cocaine exposure impacts specific brain structures and functions. The cocaine-exposed children seem to have differences in both white and gray matter, for example.

The results suggest that the prevention efforts should continue to target reducing drug use among women, especially during pregnancy, but such outreach should continue after the child's birth. Education and support to help caregivers improve the child's environment might be very beneficial to children exposed to cocaine, Dr. Black says. The research will continue to examine the specific areas of the brain that may be vulnerable to cocaine exposure in the hopes of linking neural differences with behavioral outcomes.

A review is an efficient way to examine the larger picture of a public health issue, going beyond just one study, says Dr. Black. A review is particularly useful in a field of research that has not existed for very long, such as the study of cocaine-exposed children. "If you have findings from a single study, you cannot be sure of their significance until the study is replicated," Dr. Black says. "The benefit of a review is that it takes what's in the literature as a whole, puts it together and tries to make sense of it."

"Dr. Black's review has uncovered an entirely new way of thinking about these most vulnerable victims of substance abuse, the children exposed to drugs before birth," says E. Albert Reece, M.D., Ph.D., M.B.A., the John Z. and Akiko K. Bowers Distinguished Professor and dean of the School of Medicine, and vice president for medical affairs of the University of Maryland. "I am hopeful her work will lead to new interventions to prevent prenatal [cocaine exposure](#) at the start, and to

ensure the success of these children for the benefit of their own health and public health as a whole."

Provided by University of Maryland Medical Center

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