

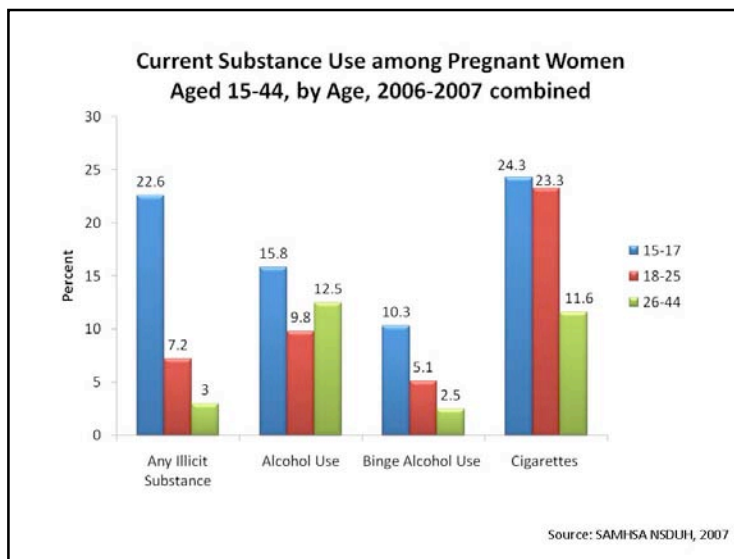
Prenatal Exposure to Drugs of Abuse—May 2009

A Research Update from the National Institute on Drug Abuse

Drug Abuse among Pregnant Women in the U.S.

Exposure to substances of abuse can affect individuals across the lifespan, starting in utero. While most pregnant women do not abuse illicit drugs, combined 2006 and 2007 data from the National Survey on Drug Use and Health found that among pregnant women ages 15 to 44, the youngest ones reported the greatest substance use. In fact, pregnant women ages 15 to 17 had a higher rate of use (22.6 percent or 20,000 women) than women of the same age who were not pregnant (13.3 percent or 832,000 women).

Prenatal drug use has been associated with potentially deleterious and even long-term effects on exposed children. However, estimating the full extent of the consequences of maternal drug abuse is difficult for many reasons. Multiple individual, family, and environmental factors—such as, nutritional status, extent of prenatal care, neglect or abuse, socioeconomic conditions, and many other variables—make it difficult to determine the direct impact of prenatal drug use on the child. Moreover, some negative outcomes in exposed children can be ameliorated by supportive home environments and quality parenting. Still, research has shown a number of drugs can have negative consequences, which are summarized below.



The Effects of Prenatal Drug Exposure

Tobacco

Smoking during pregnancy is associated with several adverse outcomes for fetuses, including increased risk for stillbirth, infant mortality, Sudden Infant Death Syndrome, preterm birth, and respiratory problems. Carbon monoxide and nicotine from tobacco smoke may interfere with fetal oxygen supply—and because nicotine readily crosses the placenta, it can reach concentrations in the fetus that are much higher than maternal levels. Nicotine concentrates in fetal blood, amniotic fluid, and breast milk, exposing both fetuses and infants to toxic effects.

The adverse effects of smoking during pregnancy can include slowed fetal growth and decreased birth weights, the latter reflecting a dose-dependent relationship—the more a woman smokes during pregnancy, the more infant birth weight is reduced. Smoking during pregnancy can also affect cognition and is associated with behavioral problems. In addition, smoking more than a pack a day during pregnancy nearly doubles the risk of the child becoming addicted to tobacco if he or she starts smoking. Even second-hand exposure to cigarette smoke can cause problems. For example, strong associations have been found between second-hand smoke and low birth weight and premature birth. Exposure during the postnatal period has been associated with a number of physical health outcomes, including Sudden Infant Death Syndrome, respiratory illnesses (asthma, respiratory infections, and bronchitis), ear infections and cavities, and increased medical visits and hospitalizations.

Alcohol

While alcohol itself is a common drug of abuse, in many cases people who abuse one drug will abuse multiple drugs, including alcohol. More information on alcohol and pregnancy can be found on the National Institute on Alcohol Abuse and Alcoholism's website at http://pubs.niaaa.nih.gov/publications/DrinkingPregnancy_HTML/pregnancy.htm

Cocaine, Marijuana, and Other Illicit Drugs

Illicit drug use during pregnancy has been associated with a variety of adverse effects, though more research is needed to draw causal connections. While some effects may be subtle, they generally range from low birth weight to behavioral and cognitive deficits developmentally. For example, impaired attention, language, and learning skills, as well as behavioral problems, have been seen in children exposed to cocaine and marijuana, all of which can affect success in school. Methamphetamine exposure has been associated with fetal growth restriction, decreased arousal, and poor quality of movement in infants. And although use of heroin (an opiate) during pregnancy has been associated with low birth weight—an important risk factor for later developmental delay—the impact of prescription opiate abuse on pregnancy outcomes is an understudied research area that NIDA would like to grow.



Promising Treatment Approaches for Pregnant Women

Medications

Research shows that some medications shown to be effective in drug-abusing populations can be safe and effective for pregnant women (and their babies) as well. For example, methadone maintenance combined with prenatal care and a comprehensive drug treatment program can improve many of the detrimental maternal and neonatal outcomes associated with untreated heroin abuse, although infants exposed to methadone during pregnancy typically require treatment for withdrawal symptoms. Another medication for opioid dependence—buprenorphine—has been shown to be as safe and effective as methadone for treating opiate addiction, and is now being studied for its safety and effectiveness in opioid-dependent pregnant women and their infants.

Behavioral Treatments

NIDA-supported research has established that the positive results of evidence-based treatments to change drug abuse and addiction behaviors in the general population now extend to pregnant women. One example is contingency management, where participants are given incentives, such as small cash amounts, privileges, or prizes, for maintaining abstinence. Motivational incentive approaches appear to increase treatment retention and prolong abstinence in pregnant women with cocaine, opiate, and nicotine dependence, compared to a standard treatment condition. In general, it is important to closely monitor women who are trying to quit drug use during pregnancy, and to adjust treatment as needed.

Comorbidity

Recent research suggests that pregnant women with mood or anxiety disorders are more likely to have a substance use disorder as well, and vice-versa. These studies call for more treatment research on co-occurring psychiatric and substance use problems in pregnant women, including an examination of mood-focused smoking cessation interventions.

Future Research

Areas of future research interest include examining how early exposure to drugs may lead to increased drug abuse vulnerability during adolescence and young adulthood—specifically, how drug exposure affects the structure, function, and connectivity of the developing brain and the moderating influence of genetics. The development of interventions for drug-exposed infants and children is also a priority.

For further information please visit NIDA on the web at www.drugabuse.gov or contact:

Public Information and Liaison Branch
Office of Science Policy and Communications
Phone 301-443-1124/Fax 301-443-7397
information@nida.nih.gov