Licit and Illicit Drug Use during Pregnancy: Maternal, Neonatal and Early Childhood Consequences

The Issue

The physical and mental health of a woman during pregnancy can have a pronounced impact on the well-being of her infant. The influence of drugs on the central nervous system can reduce an expectant mother's intellectual abilities, impair her decision making and undermine her care for herself and her infant.

The harms of substance use extend beyond physical issues to the environmental and social risk factors a woman can encounter while procuring drugs (e.g., sharing unclean needles, theft or prostitution to get money for drugs). Care for an infant can be further complicated as women using drugs are more likely to be under stress and in poor health, lack the support of a partner, have lower education and employment levels, and be victims of physical and sexual abuse.[1,2,3] Moreover, up to 60% of women using substances also experience mental illness, such as depression, anxiety or post-traumatic stress disorder, which can be worsened by the emotional changes associated with pregnancy.[4,5]

The dangers of substance use are concerning, as 13% of pregnant Canadian women surveyed reported past-month cigarette smoking, 11% reported past-month alcohol consumption and 5% reported using drugs while pregnant.[6] Women might be hesitant to seek treatment because an intense stigma exists against substance abuse, especially while pregnant.[7,8,9,10,11] Thus, substance use during pregnancy is a complex issue requiring multi-faceted programming and policy responses.

Key Findings

Women often progress to addiction more quickly than men[12,13,14,15,16,17] and experience dangerous health consequences associated with alcohol and drug use such as circulatory disorders, cirrhosis of the liver, hypertension, cancer and death.[18,19,20] The use of drugs during pregnancy can lead to medical complications such as early pregnancy loss, a detached placenta, fetal growth restrictions, blood clots, heightened blood pressure, intrauterine death, preterm labour and hemorrhaging following labour. The harms associated with specific substances are summarized in Table 1.[21]

Table 1. Maternal and infant health risks as a function of the substance consumed during pregnancy

	Opioids	Cocaine	Amphetamines	Cannabis	Tobacco	Alcohol
Miscarriage	X	X		X	X	
Placental disruptions		X			X	
Preterm birth	X	X	X	X	X	
Intrauterine growth restriction		X		X	X	X
Low birth weight	X	X	X	X	X	X

	Opioids	Cocaine	Amphetamines	Cannabis	Tobacco	Alcohol
Fetal death		X	X	X	X	
Respiratory disorders/failure	X				X	
Decreased fertility				X		
Present in breast milk	X		X			
Fetal Alcohol Spectrum Disorders						X
Neonatal Abstinence Syndrome	X				X	X

Note: This table is not an exhaustive summary of the maternal and infant health risks associated with each drug, but rather is representative of those risks addressed in the full report.

It is difficult to identify the unique effects of each substance because multiple drugs are often used at the same time. Adverse outcomes can also be caused by other factors correlated with substance use, such as poor nutrition or stress.[22] People also typically under-report their use of drugs[6] making it difficult to determine cause and effect. These limitations make it challenging to study the issue.

Neonatal Abstinence Syndrome (NAS)

When drugs enter the blood stream during pregnancy, a fetus can become dependent on them. Neonatal Abstinence Syndrome (NAS) occurs when the umbilical cord is cut, drug transmission abruptly stops and the infant experiences withdrawal symptoms. NAS can result from maternal use of anti-depressants, sedative-hypnotics, alcohol or tobacco during gestation; however, the most pronounced effects are observed in relation to opioids.[23,24,25] In Canada, three of every 1,000 babies born in 2009–2010 had NAS.[26]

NAS can cause minor irritability and feeding difficulties, but can also have an impact on the central nervous system, autonomic nervous system, respiratory system and gastrointestinal system that can be severe enough to lead to death. NAS can be treated by administering medications and then slowly weaning the baby off the drug once he or she has been stabilized.[27,28] Swaddling, position changing, skin care, non-nutritive sucking and low-stimulation environments can help calm an infant with NAS. The Neonatal Abstinence Work Group established Clinical Practice Guidelines for Ontario in 2012 that address screening, assessment and medical treatment of NAS.[29] The British Columbia Ministry of Children and Family Development has also produced a resource for the daily care of infants exposed to drugs or alcohol while in the womb.[30]

Fetal Alcohol Spectrum Disorders (FASD)

Fetal alcohol spectrum disorders (FASD) consist of a range of consequences that can occur in individuals exposed to alcohol in the womb.[31] FASD can cover various degrees of physical effects, as well as cognitive, behavioural and emotional shortfalls that include learning and impulse control difficulties. These outcomes have been observed into the adulthood of affected individuals. Of every 1,000 live births in Canada in 2003, FASD was observed in approximately nine infants.[32] A subcommittee of the Public Health Agency of Canada's National Advisory Committee on FASD established guidelines in 2005 on FASD screening, diagnostic criteria and treatment.[33]

Overarching Effects of Drug Use on Children

The combination of drug use and mental health concerns in a parent can result in a child growing up in an unstable and potentially unsafe environment. Children born to mothers with substance abuse issues often exhibit developmental, cognitive and attention difficulties, as well as behavioural issues. In some cases, the injurious effects of substance use during pregnancy have been surmounted by providing supportive home environments and attentive parenting.[34]

Treatment

Pregnancy can be a time of reflection during which a woman might be motivated to address her substance use. The most successful treatments are those that acknowledge neurobiological addiction, as well as the underlying trauma or psychosocial issues driving a woman to cope through substance use.[35] Methadone and buprenorphine, substances that bind to the same receptors as opioids, are administered in medication-assisted treatment to eliminate the craving for drugs and reduce the negative effects of withdrawal.[36] These treatments reduce illegal drug use, promote improvements in maternal nutrition and allow for a woman to make positive changes that can stabilize her life situation before a baby's birth. Medication-assisted treatment can be used during pregnancy, but neither drug is completely devoid of risk to the fetus.[1] After birth, it can be safe to breastfeed while undergoing medication-assisted treatment, though the decision to do so requires consultation with medical professionals and careful consideration of each individual's situation.

Comprehensive services that provide counselling, resources for parenting, housing, employment and transportation, combined with medication-assisted treatment, have reduced the incidences of perinatal morbidity and mortality.[37,38,39] However, some women do not receive treatment for their substance use because of limitations beyond their control, such as access to treatment, time away from children, long waits for admission and a lack of treatment promotion from physicians.[40,41] The intense stigmatization of people who use drugs, especially women who use while pregnant, can also cause pregnant women to shy away from seeking treatment.[7,8,9,10,11] To reach women who need treatment, the Society of Obstetricians and Gynecologists of Canada[42] and the National Advisory Committee on FASD[33] promote screening for substance use during pregnancy and increased dialogue on the issue among practitioners, pregnant women and their partners.

Call to Action

Licit and Illicit Drug Use during Pregnancy highlights findings on fetal and infant outcomes and concludes by pointing out that much can be done to address this important maternal and child health issue. Healthcare providers require accurate information about the risks of substance use during pregnancy and concrete approaches for reducing the harms associated with this behaviour. It is essential that current research developments in addiction and substance use reach practitioners and that these developments are framed with specific regard to the Canadian experience. Treatment providers should share this information with women of a childbearing age and their partners in an unbiased and compassionate manner to educate them about prevention. Family and community supports should be engaged in treatment, so that interventions are multifaceted and collaborations between professionals address the biopsychosocial complexities of substance use. Treatment can also be enhanced by clinicians' and researchers' continued commitment to a greater understanding of the effects of medication-assisted treatment for NAS in infants.

[1]In Canada, buprenorphine combined with naloxone is available for treatment of opioid dependence. However, this formulation is contraindicated in pregnancy because of naloxone. Buprenorphine alone can be obtained through Health Canada's Special Access Program, but logistical issues can render it impractical to obtain.

To improve access to this information and the appropriate services, the stigma associated with substance use in general—and in particular, substance use during pregnancy and while parenting—must be addressed by all members of society. Framing addiction in the neurological context can reduce the media's propensity to sensationalize the plight of infants born with substance dependency and help increase understanding among the general public.

Finally, though not directly addressed in this report, factors related to substance use during pregnancy such as ethnicity, income, geography and other demographic circumstances should be explored by researchers to inform the development and provision of effective, tailored services to women and their children. The unique experiences of youth should be acknowledged as well, especially as drug use can affect the neurological pathways responsible for judgment and decision-making, which remain malleable until mid-20 years of age.

Researchers and healthcare professionals must remain abreast of biological and social research about caring for pregnant women using substances and collaborate to ensure that this research is used to improve outcomes for the mother and child, their families and communities.

Additional Resources

- Licit and Illicit Drug Use during Pregnancy: Maternal, Neonatal and Early Childhood Consequences
- Clearing the Smoke on Cannabis: Maternal Cannabis Use during Pregnancy
- Canada's Low-Risk Alcohol Drinking Guidelines

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