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New study shows number of West Virginia infants exposed to drugs in the womb is 10 times higher than national rate

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West Virginia University experts on infant health looked at 34,412 births in West Virginia between 2020 and 2022, analyzing how many newborns were exposed to opioids, stimulants or cannabis in the womb and how those exposures relate to adverse health conditions such as low birthweights and preterm births. Credit: WVU / Greg Ellis

Nearly one in eight infants born in West Virginia between 2020 and 2022 had in utero exposure to opioids, stimulants and/or cannabis, according to researchers at West Virginia University Health Sciences.

Amna Umer, a pediatric research associate professor in the School of Medicine, said her team's new study showed West Virginia's rates of prenatal exposure to opioids and stimulants were 10 times higher than national rates.

To estimate the effects of in utero exposure to substances, the study used data from Project WATCH, a state-mandated surveillance tool that captures maternal and infant information on about 99% of all births in the state to identify at-risk infants.

Umer's analysis of the WATCH data demonstrated that of the 34,412 live births of "singleton" babies (excluding twins, triplets or other multiples) that took place in West Virginia over the two-year span, 12.2% of newborns had in utero exposure to drugs such as oxycodone, methamphetamine or marijuana.

Umer said the most prevalent substance exposure was cannabis, with 7.9% of infants exposed to it in utero. Exposure to opioids occurred for 4.4% of the infants, and 2.1% had been exposed to stimulants while in the womb.

Slightly over 10% of the infants were exposed in utero to one of those substances, 1.7% had been exposed to two of the substances and 0.3% of infants had been exposed to all three.

The *Journal of Pediatrics* published Umer's findings in a paper coauthored with Christa Lilly, associate professor at the School of Public Health; and experts from the School of Medicine: Candice Lefeber, project coordinator in the Department of Pediatrics, Collin John,

associate professor and assistant program director for the divisions of internal medicine and pediatrics, and Janine Breyel from the West Virginia Perinatal Partnership.

"We showed substance exposure to stimulants alone was associated with preterm birth, whereas opioids alone and cannabis alone were associated with low birthweight and infants being small for their gestational age," Umer said. "Infants exposed to both opioids and cannabis had greater risk than from either exposure individually."

The study data showed a 40% increased risk of preterm birth among infants exposed to stimulants alone and a 70% increase with concurrent stimulant and cannabis exposures.

The risk of infants being small for their gestational age almost doubled with concurrent exposures to opioids and cannabis, and the mean birth weight of infants exposed to these substances fell by between 200 and 500 grams.

Use of neuroactive substances by pregnant women in the U.S., including the use of multiple different substances concurrently, increased from 5.8% in 2019 to 8.3% in 2020. Those substances can decrease placental blood flow, inhibit a fetus's neurotransmitters and contribute to malnutrition.

That means more small, preterm babies, which in turn can mean neurodevelopmental and cognitive delays in later life, in addition to cardiovascular problems.

Umer emphasized that maternal substance use isn't the only factor contributing to those adverse outcomes.

"Our results suggest a complex interplay between sociodemographic

factors and lifestyle circumstances," she said. "Substance use disorders can contribute to adverse neonatal outcomes, and so can many other factors we examined in the study, such as maternal age, race, being less educated, being insured through Medicaid which indicates a low income, not having been previously pregnant, inadequate prenatal care and, importantly, maternal smoking.

"One in five women in the study smoked during pregnancy, and 64.2% of the infants exposed to in utero substances were also exposed to maternal smoking.

"Then there are important factors that Project WATCH doesn't capture, like the mother's pre-pregnancy body mass index or whether she is a victim of physical abuse. The tool doesn't track prenatal alcohol exposure either, although our previous work shows West Virginia's rural population has a high prevalence of prenatal alcohol exposure."

Umer focuses on neonatal health in West Virginia because rural communities experience significantly higher rates of substance use disorder in both the general and pregnant populations while bearing disproportionate socioeconomic burdens such as low incomes and high unemployment.

Umer's research may not apply in places that also struggle with high rates of substance use but are more racially diverse and densely populated than West Virginia. However, Umer said her findings can be generalized to other predominantly rural and underserved populations with similar socioeconomic vulnerabilities, and consequently, similarly high rates of substance use disorder.

"Early identification and intervention reduce adverse outcomes of prenatal substance use like preterm birth and low birthweight, but stigma, shame and fear of legal ramifications deter women from seeking

any or limited prenatal care," Umer said. "During the two years of this study, more than 4,000 newborns were exposed to substances in utero. There is a critical need to address this crisis for the most vulnerable population in the state."

More information: Amna Umer et al, Substance Exposure and Adverse Neonatal Outcomes: A Population-Based Cohort Study, *The Journal of Pediatrics* (2022). DOI: 10.1016/j.jpeds.2022.11.040

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