

# Prenatal Drug and Alcohol Exposure: Science Refutes Media Hype and Enduring Myths

Based on the extraordinary misinformation that appears frequently in the popular press, many people believe that a pregnant individual who uses any amount of a criminalized drug or alcohol will inevitably harm or even kill the fetus. But media hype is not the same as science, and popular news reports have misrepresented the scientific facts about prenatal exposure to drugs. Research tells us that there is no scientific evidence of unique, certain, or irreparable harm for fetuses exposed to cocaine, methamphetamine, opioids, or cannabis in utero. Additionally, no criminalized substances have been found to be abortifacients.<sup>1</sup> Misinformation related to substance use is frequently used to prosecute pregnant people, and in this post-Dobbs reality, these prosecutions will likely occur on a larger scale.

## What The Experts Have to Say About Cocaine

*Cocaine use during pregnancy has not been proven to cause any specific or certain harm to a fetus.*

The “crack baby” myth falsely claimed that cocaine use during pregnancy would result in major negative health effects on the unborn child such as seizures, developmental delays, and difficulty socializing.<sup>2</sup> However, in 2007 the U.S. Sentencing Commission concluded, “research indicates that the negative effects from prenatal exposure to cocaine, in fact, are significantly less severe than previously believed.”<sup>3</sup> Additionally, in 2004, thirty leading doctors and researchers signed an open letter explaining that “throughout almost 20 years of research, none of us has identified a recognizable condition, syndrome or disorder that should be termed ‘crack baby.’”<sup>4</sup> More recent research has further supported this as a 2016 study found that “differences between substance-exposed and non-substance exposed infants disappear within months after birth. For example, differences in nervous system excitability and increased levels of physical stress in

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<sup>1</sup> Miller, Corrie B, and Tricia Wright. “Investigating Mechanisms of Stillbirth in the Setting of Prenatal Substance Use.” *Academic forensic pathology* vol. 8,4 (2018): 865-873. doi:10.1177/1925362118821471

<sup>2</sup> Slandering the Unborn.” The New York Times, The New York Times, 28 Dec. 2018, <https://www.nytimes.com/interactive/2018/12/28/opinion/crack-babies-racism.html>.

<sup>3</sup> Reinerman, C., et al (2018). Crack Attack: Politics and Media in the Crack Scare. University of California Press.

<sup>4</sup> NAT'L INSTITUTE ON DRUG ABUSE, RESEARCH REPORT, COCAINE: ABUSE AND ADDICTION 6 (May 2009), available at <http://www.drugabuse.gov/PDF/RRCocaine.pdf>.

newborns disappear after 1 month."<sup>5</sup>

There is a false notion that prenatal cocaine exposure causes severe health issues for an infant. In the 1980s and 1990s, a media frenzy surrounded the plight of so-called “crack babies” and the numerous long-term health issues these babies allegedly faced.<sup>6</sup> The resulting separations of Black families massively increased the number of children in the foster care system and perpetuated existing racial disparities among pregnant individuals and their families.<sup>7</sup> This narrative not only led to a dramatic increase in criminal cases against pregnant individuals starting in the 1980s, but has persisted, and over 30 years later, continues to inform why and how law enforcement involves itself in pregnancies and pregnancy outcomes.<sup>8</sup> It has since been concluded that “a gap existed between the official statistical evidence and the prevalence claims of the media and politicians ... misrepresented or ignored the evidence and instead provided propaganda for the drug war.”<sup>9</sup>

The stigma that pregnant people who use cocaine face also has detrimental effects on a fetus. In qualitative studies with mothers who engage in cocaine use, stigma and a fear of involvement with criminal and civil authorities and separation from their child were identified as barriers to treatment for both substance use disorder and routine prenatal care.<sup>10</sup> Researchers have concluded that “because many people see addiction as a vice rather than a disease, stigmatizing a baby as being ‘addicted’ can result in their growing up being seen and raised as manipulative and ‘bad.’”<sup>11</sup> As defined by the American Society for Addiction Medicine, addiction includes the compulsive use of a substance despite harmful consequences, and therefore, babies cannot be addicted.<sup>12</sup> Babies with prenatal exposure to cocaine also typically have healthy developmental outcomes—in a review of

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<sup>5</sup> David C. Lewis et al., PHYSICIANS, SCIENTISTS TO MEDIA: STOP USING THE TERM “CRACK BABY” (2004), available at

<https://www.pregnancyjusticeus.org/top-medical-doctors-and-scientists-urge-major-media-outlets-to-stop-perpetuating-crack-baby-myth/>

<sup>6</sup> Winerip, M. (2013, May 20). Revisiting the ‘Crack Babies’ epidemic that was not. New York Times. Retrieved December 13, 2021, from <https://www.nytimes.com/2013/05/20/booming/revisiting-the-crack-babies-epidemic-that-was-not.html>.

<sup>7</sup> Roberts, Dorothy E., “Prison, Foster Care, and the Systemic Punishment of Black Mothers” (2012). Faculty Scholarship at Penn Law. 432. [https://scholarship.law.upenn.edu/faculty\\_scholarship/432](https://scholarship.law.upenn.edu/faculty_scholarship/432)

<sup>8</sup> Crack Cocaine Sentencing Policy: Unjustified and Unreasonable.” The Sentencing Project, <https://www.prisonpolicy.org/scans/sp/1003.pdf>.

<sup>9</sup> Bridges, Khiara M. “Race, Pregnancy, and the Opioid Epidemic: White Privilege and the Criminalization of Opioid Use During Pregnancy.” Harvard Law Review, vol. 133, no. 3, 10 Jan. 2020.

<sup>10</sup> Minnes, S., Min, M. O., Singer, L. T., Edguer, M., Wu, M., & Thi, P. (2012). Cocaine use during pregnancy and health outcome after 10 years. Drug and alcohol dependence, 126(1-2), 71–79

<sup>11</sup> Paris, R., et al (2020). Secrecy Versus Disclosure: Women with Substance Use Disorders Share Experiences in Help Seeking During Pregnancy. Maternal and Child Health Journal, 24(11), 1396–1403.

<sup>12</sup> *What Is the Definition of Addiction?* American Society for Addiction Medicine, <https://www.asam.org/quality-care/definition-of-addiction>.

74 articles, “no convincing evidence of developmental or behavioral outcomes” was found among children aged 6 or younger with prenatal exposure.<sup>13</sup>

External societal factors unrelated to cocaine use have been found to have a greater impact on neonatal health than exposure to cocaine. Prenatal cocaine use by itself does not cause significant developmental issues in infants. Any noticeable developmental delays, neurological issues, and delays in growth are more accurately attributed to socioeconomic situations or environmental stressors.<sup>14</sup> These factors include poverty, maternal education levels, stress, family history, family separation, polysubstance use (tobacco and alcohol), or exposure to domestic violence, housing instability, and lack of social support.<sup>15</sup> Additionally, pregnant people who engage in substance use have been found to have a higher level of stressors than those who do not.<sup>16</sup> Chronic stress releases hormones that affect the endocrine and immune system and have a more significant effect on development than cocaine use alone.<sup>17</sup>

## What The Experts Have to Say About Methamphetamine

*Methamphetamine use during pregnancy has not been proven to cause any specific or certain harm to a fetus.*

Methamphetamine is a Schedule II medication and is legally prescribed to adults and children as young as six.<sup>18</sup> In 2005, a national expert panel reviewed published studies about the developmental effects of prenatal exposure to methamphetamine and related drugs and concluded that, “the data regarding illicit methamphetamine are insufficient to draw conclusions concerning developmental toxicity in humans.”<sup>19</sup> In that same year, over 90 leading medical doctors, scientists, psychological researchers, and treatment specialists released an open letter warning that terms such as “meth babies” lack medical and scientific validity and should not be used.<sup>20</sup> More than 15 years later, experts still stand

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<sup>13</sup> Singer, JA. No, Babies Are NOT Born Addicted to Opioids. Published online June 25, 2018. Accessed April 19, 2022. <https://policycommons.net/artifacts/1325273/no-babies-are-not-born-addicted-to-opioids/1928561/>

<sup>14</sup> Forray, A. Substance use during pregnancy. *F1000Res*. 2016;5:F1000 Faculty Rev-887. doi:[10.12688/f1000research.7645.1](https://doi.org/10.12688/f1000research.7645.1)

<sup>15</sup> *Id.*

<sup>16</sup> Cressman, A. M., et al (2014). Cocaine abuse during pregnancy. *Journal of Obstetrics and Gynecology Canada*, 36(7), 628–631.

<sup>17</sup> Forray, A., & Foster, D. (2015). Substance Use in the Perinatal Period. *Current Psychiatry Reports*, 17(11), 91.

<sup>18</sup> Kenny, Brian J. and Charles V. Preuss. “Pharmacy Prescription Requirements.” *StatPearls*, StatPearls Publishing, 23 June 2022.

<sup>19</sup> FOR THE EVALUATION OF RISKS TO HUMAN REPRODUCTION, REPORT OF THE NTP-DERHR EXPERT PANEL ON THE REPRODUCTIVE & DEVELOPMENTAL TOXICITY OF AMPHETAMINE & METHAMPHETAMINE 163, 174 (2005).

<sup>20</sup> See CESAR Weekly Fax from the Center for Substance Abuse Treatment, Vol. 14 Issue 33 (Aug. 2005);

by these statements.<sup>21</sup>

The American College of Obstetrics and Gynecology (ACOG) notes that "the effects of maternal methamphetamine use cannot be separated from other factors" and that there "is no syndrome or disorder that can specifically be identified for babies who were exposed in utero to methamphetamine."<sup>22</sup> While some have suggested that methamphetamine use during pregnancy is linked to an increased risk of birth defects in the fetus, these claims have not been supported by case-control nor prospective epidemiological studies.<sup>23</sup> In other words, studies designed specifically to investigate this connection did not produce results that support this claim. A large prospective cohort study showed that while fetuses exposed to methamphetamine were slightly more likely to be small for gestational age, there was no difference in birth weight for fetuses with and without exposure.<sup>24</sup> This cohort was followed through childhood, and a later study showed that prenatal methamphetamine exposure is not associated with behavioral effects in early childhood.<sup>25</sup> As explained by Dr. Mishka Terplan and Dr. Tricia Wright in *The Effects of Cocaine and Amphetamine Use During Pregnancy on the Newborn: Myth versus Reality*, "although much remains unknown about the effects of in utero methamphetamine exposure, no consistent teratological effects on the developing human fetus have been identified."<sup>26</sup> A 2015 study of pregnant individuals with diagnosed substance use disorders found that every patient who stopped methamphetamine use at some point during pregnancy had a normal birth outcome.<sup>27</sup> For newborns that had a positive toxicology test at birth, there was an average shortening of gestation by less than two weeks for an average gestation of 37.3 weeks as compared to 39.1 weeks for non-exposed infants, and there was no difference in NICU admissions or length of neonatal

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David C. Lewis et al., METH SCIENCE NOT STIGMA: OPEN LETTER TO THE MEDIA, (July 25, 2005).

<sup>21</sup> Your Words Matter – Language Showing Compassion and Care for Women, Infants, Families, and Communities Impacted by Substance Use Disorder." *National Institutes of Health*, U.S. Department of Health and Human Services, 25 July 2022, <https://nida.nih.gov/nidamed-medical-health-professionals/health-professions-education/words-matter-language-showing-compassion-care-women-infants-families-communities-impacted-substance-use-disorder>.

<sup>22</sup> Am. College of Obstetrics & Gynecology, Information about Methamphetamine Use in Pregnancy, Mar. 3, 2006, available at <http://www.rhrealitycheck.org/emailphotos/ACOGmethhtalkingpoints.pdf>

<sup>23</sup> Methamphetamine abuse in women of reproductive age. Committee Opinion No. 479. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2011;117:751–5.

<sup>24</sup> Nguyen, Diana et al. "Intrauterine growth of infants exposed to prenatal methamphetamine: results from the infant development, environment, and lifestyle study." *The Journal of Pediatrics* vol. 157,2 (2010): 337-9. doi:10.1016/j.jpeds.2010.04.024

<sup>25</sup> Chu, Elaine K et al. "Behavior Problems During Early Childhood in Children With Prenatal Methamphetamine Exposure." *Pediatrics* vol. 146,6 (2020): e20190270. doi:10.1542/peds.2019-0270

<sup>26</sup> Mishka Terplan & Tricia Wright, *The Effects of Cocaine and Amphetamine Use during Pregnancy on the Newborn: Myth versus Reality*

<sup>27</sup> Wright, Tricia E et al. "Methamphetamines and pregnancy outcomes." *Journal of Addiction Medicine* vol. 9,2 (2015): 111-7. doi:10.1097/ADM.000000000000101

hospital stays.<sup>28</sup> A positive toxicology test at birth can be a marker for attributes of the pregnant person other than substance use, so while the association between a positive toxicology test and shorter gestation is clear, it does not mean that there is a causal link between the two.<sup>29</sup> While this difference in gestation is not clinically insignificant, infants born after 37 weeks gestation are not considered preterm.<sup>30</sup>

In many cases, the myth of harm serves to criminalize individuals who use during pregnancy: at least four women in Oklahoma alone have been charged with murder for stillbirths or miscarriages despite the total lack of evidence that prenatal methamphetamine exposure can contribute to pregnancy loss.<sup>31</sup> No definitive link has been established between methamphetamine use and pregnancy complications such as placental abruption, preeclampsia, or postpartum hemorrhage.<sup>32</sup>

## What The Experts Have to Say About Opioids

*Opioid use during pregnancy has not been proven to cause any specific or certain harm to a fetus.*

Similar to misinformation about prenatal cocaine exposure effects, the label of “oxytot” has been used to target and shame people who use opioids during pregnancy, particularly poor, rural white women.<sup>33</sup> Approximately one-third of women of reproductive age fill an opioid prescription each year.<sup>34</sup> Despite having no basis in science or research, negative perceptions of children with prenatal exposure persist.

In utero exposure to opioids, most commonly heroin and oxycodone, is not associated with birth defects, and opioids, including fentanyl, are used by physicians globally for pain

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<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

<sup>30</sup> “Preterm Birth.” *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 1 Nov. 2021, [www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm](https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm).

<sup>31</sup> Goldberg, Michelle. “When a Miscarriage Is Manslaughter.” *The New York Times*, The New York Times, 19 Oct. 2021, [www.nytimes.com/2021/10/18/opinion/poolaw-miscarriage.html](https://www.nytimes.com/2021/10/18/opinion/poolaw-miscarriage.html).

<sup>32</sup> Perez, F. A., Blythe, S., Wouldes, T., McNamara, K., Black, K. I., and Oei, J. L. (2022) Prenatal methamphetamine—impact on the mother and child—a review. *Addiction*, 117: 250– 260. <https://doi.org/10.1111/add.15509>

<sup>33</sup> Bridges, *Race, Pregnancy, and the Opioid Epidemic: White Privilege and the Criminalization of Opioid Use During Pregnancy*, 133 *Harvard Law Review* 3 (Jan. 10, 2020).

<sup>34</sup> Key Findings: Opioid Prescription Claims among Women of Reproductive Age.” *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 16 July 2020, [www.cdc.gov/pregnancy/meds/treatingfortwo/features/opioid.html](https://www.cdc.gov/pregnancy/meds/treatingfortwo/features/opioid.html).

relief during labor.<sup>35 36</sup> Moreover, there is no scientific evidence that growth and development are compromised by exposure to opioids.<sup>37</sup> Some newborns exposed prenatally to opiates experience an abstinence (withdrawal) syndrome at birth. Withdrawal symptoms may also occur when adults with physiological opioid dependence abstain from opiate use. In pregnant women, methadone or buprenorphine treatment, the medically approved treatments for opioid addiction that are recommended during pregnancy, can effectively treat opioid use disorder and help produce normal birth outcomes.<sup>38</sup> The U.S. Department of Health and Human Services advises:

Women who are pregnant or breastfeeding can safely take methadone. Comprehensive methadone maintenance treatment should include prenatal care to reduce the risks of complications during pregnancy and at birth. Undergoing methadone maintenance treatment while pregnant does not cause birth defects.<sup>39</sup>

For those newborns who do experience withdrawal, safe and effective treatment can be immediately instituted in the hospital nursery. The majority of cases only require nonpharmacologic interventions.<sup>40</sup> The CDC advises that pregnant individuals do not abruptly stop opioid use during pregnancy, but rather pursue medical treatment.<sup>41</sup>

Criminalizing and prosecuting the use of opioids during pregnancy places both the parent and their healthcare providers at a disadvantage — when individuals cannot safely

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<sup>35</sup> Smith & Lipari, *Women of Childbearing Age and Opioids*, The CBHSQ Report, 2017, <https://www.samhsa.gov/data/report/women-childbearing-age-and-opioids>; American College of Obstetricians and Gynecologists, *Opioid Use and Opioid Use Disorder in Pregnancy, Committee Opinion No. 711*, *Obstetrics and Gynecology*, vol. 130, no. 2, 2017, e81-e94, [www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2017/08/opioid-use-and-opioid-use-disorder-in-pregnancy](http://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2017/08/opioid-use-and-opioid-use-disorder-in-pregnancy)

<sup>36</sup> Nanji & Carvalho, *Pain Management During Labour and Vaginal Birth, Best Practice & Research Clinical Obstetrics & Gynaecology*, [10.1016/j.bpobgyn.2020.03.002](https://doi.org/10.1016/j.bpobgyn.2020.03.002) (common opioids used in global obstetric practice include meperidine (pethidine), morphine, diamorphine, fentanyl, and remifentanyl); Anderson, *A review of systemic opioids commonly used for labor pain relief*, 56 *J. Midwifery & Women's Health* 3 (2011), 222-39, doi:10.1111/j.1542-2011.2011.00061.x.

<sup>37</sup> Wang, Xinrui et al. "Opioid exposure during pregnancy and the risk of congenital malformation: a meta-analysis of cohort studies." *BMC Pregnancy and Childbirth* vol. 22,1 401. 11 May. 2022, doi:10.1186/s12884-022-04733-9

<sup>38</sup> Knypinski, Julia et al. "Use of Methadone Maintenance Therapy for Opioid Use Disorder in Pregnancy." *NeoReviews* vol. 22,10 (2021): e699-e704. doi:10.1542/neo.22-10-e699

<sup>39</sup> SAMHSA, *Methadone*, U.S. Department of Health and Human Services, <https://www.samhsa.gov/medication-assisted-treatment/medications-counseling-related-conditions/methadone>

<sup>40</sup> Cook, Cathryn Elise, and Heidi Collins Fantasia. "Interventions for the Treatment of Neonatal Abstinence Syndrome." *Nursing for Women's Health* vol. 23,4 (2019): 357-365. doi:10.1016/j.nwh.2019.05.006

<sup>41</sup> About Opioid Use During Pregnancy." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 20 July 2021, [www.cdc.gov/pregnancy/opioids/basics.html](https://www.cdc.gov/pregnancy/opioids/basics.html).



or comfortably report drug use to their doctor, their infants are less likely to receive proper treatment.<sup>42</sup> Moreover, research has shown clear racial biases in every step of the process, including prenatal drug testing, infant testing, social services reporting, and forced interventions. One study saw Black parents referred to social services at 10 times the rate of white parents, despite similar rates of use.<sup>43</sup>

## What The Experts Have to Say About Cannabis

*Cannabis use during pregnancy has not been proven to cause any specific or certain harm to a fetus.*

Cannabis is the most commonly used criminalized drug during pregnancy. Without properly accounting for external factors, a 2021 study asserted that cannabis use could lead to increased cortisol, anxiety, aggression, and hyperactivity in young children.<sup>44</sup> The New York Times amplified these claims in an article warning of a more “anxious, aggressive child” for pregnant people who use cannabis.<sup>45</sup> Regarding prenatal exposure to cannabis, a leading researcher in the field, Dr. Peter Fried, has stated unequivocally:

Based on my 30 plus years of experience examining the newborn, infants, toddlers, children, adolescents and young adults born to women who used marijuana during pregnancy it is important to emphasize that to characterize an infant born to a woman who used marijuana during pregnancy as being ‘physically abused’ and/or ‘neglected’ is contrary to all scientific evidence (both mine and subsequent work by other researchers). The use of marijuana during pregnancy . . . has not been shown by any objective research to result in abuse or neglect.<sup>46</sup>

Since this 2009 statement, research has reaffirmed that cannabis use has no conclusive effect on fetal development, nor on the ability to parent. A 2020 systematic review of

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<sup>42</sup> Terplan, Mishka, and Howard Minkoff. “Neonatal Abstinence Syndrome and Ethical Approaches to the Identification of Pregnant Women Who Use Drugs.” *Obstetrics and Gynecology* vol. 129,1 (2017): 164-167. doi:10.1097/AOG.0000000000001781

<sup>43</sup> Chasnoff IJ, Landress HJ, Barrett ME. The prevalence of illicit drug or alcohol use during pregnancy and discrepancies in mandatory reporting in Pinellas County, Florida. *N Engl J Med* 1990; 322:1202–6.

<sup>44</sup> Rompala, Gregory et al. “Maternal cannabis use is associated with suppression of immune gene networks in placenta and increased anxiety phenotypes in offspring.” *Proceedings of the National Academy of Sciences of the United States of America* vol. 118,47 (2021): e2106115118. doi:10.1073/pnas.2106115118

<sup>45</sup> Moyer, Melinda Wenner. “Cannabis Use in Pregnancy May Lead to a More Anxious, Aggressive Child.” *The New York Times*, The New York Times, 19 Nov. 2021, [www.nytimes.com/2021/11/19/well/family/cannabis-pregnancy-behavior.html?partner=IFTTT](https://www.nytimes.com/2021/11/19/well/family/cannabis-pregnancy-behavior.html?partner=IFTTT).

<sup>46</sup> Affidavit of Peter Fried, Ph.D. in Support of Defendants’ Answer to Complaint for S.C. Code § 63-7-1650 at ¶ 4-5, S.C. Dep’t Soc. Servs. v. Doe (S.C. Fam. Ct. July 13, 2009) (on file with National Advocates for Pregnant Women).

existing literature suggested that prenatal exposure to cannabis alone could not cause “clinically significant” cognitive functioning impairments.<sup>47</sup> Researchers only found evidence for below-average cognitive scores in just 0.3% of offspring with prenatal exposure. There have been a few reports of mild negative effects in high-risk populations on the birth weight or birth length of newborns but, in those studies, these effects were no longer present after a few months.<sup>48</sup> This is in contrast to many other substances that are commonly used during pregnancy, including alcohol and cigarettes, where the effects on growth are much more pronounced.

Prenatal counseling for cannabis use often emphasizes potential criminal consequences and the risk of child protective services involvement. Frequently, physicians will disregard harm reduction advice and discussions of inconclusive research.<sup>49</sup> These OBGYN approaches both exacerbate and drive racial disparities in cannabis criminalization. In a 2016 study, Black patients were 10 times more likely to receive punitive counseling after disclosing cannabis use during pregnancy.<sup>50</sup>

## What The Experts Have to Say About Alcohol

Although alcohol use during pregnancy can impact later development, studies have not identified an amount that will cause certain harm. Despite the evidence of long-term harms, experts widely oppose criminalization, as punitive policies discourage pregnant individuals from disclosing use and result in worse patient outcomes.<sup>51</sup>

Fetal Alcohol Spectrum Disorder (FASD) is recognized by experts as a disorder associated with prenatal exposure to alcohol.<sup>52</sup> Much remains unknown about the specific effects, if any, that a pregnant individual’s pattern of alcohol use may have in any particular

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<sup>47</sup> Torres CA, Medina-Kirchner C, O’Malley KY and Hart CL (2020) Totality of the Evidence Suggests Prenatal Cannabis Exposure Does Not Lead to Cognitive Impairments: A Systematic and Critical Review. *Front. Psychol.* 11:816. doi: 10.3389/fpsyg.2020.00816

<sup>48</sup> Ryan SA, Ammerman SD, O’Connor ME, AAP COMMITTEE ON SUBSTANCE USE AND PREVENTION, AAP SECTION ON BREASTFEEDING. Marijuana Use During Pregnancy and Breastfeeding: Implications for Neonatal and Childhood Outcomes. *Pediatrics.* 2018;142(3):e20181889

<sup>49</sup> Woodruff, Katie, et. al. Pregnant people’s experiences discussing their cannabis use with prenatal care providers in a state with legalized cannabis, *Drug and Alcohol Dependence*, Volume 227, 2021, 108998, ISSN 0376-8716, <https://doi.org/10.1016/j.drugalcdep.2021.108998>.

<sup>50</sup> Holland CL, Nkumsah MA, Morrison P, et al. "Anything above marijuana takes priority": Obstetric providers' attitudes and counseling strategies regarding perinatal marijuana use. *Patient Education and Counseling.* 2016 Sep;99(9):1446-1451. DOI: 10.1016/j.pec.2016.06.003. PMID: 27316326; PMCID: PMC5007170.

<sup>51</sup> Roberts, Sarah C M et al. “Forty Years of State Alcohol and Pregnancy Policies in the USA: Best Practices for Public Health or Efforts to Restrict Women’s Reproductive Rights?.” *Alcohol and alcoholism (Oxford, Oxfordshire)* vol. 52,6 (2017): 715-721. doi:10.1093/alcalc/agx047

<sup>52</sup> Vorgias, Demetrios. and Bettina Bernstein. “Fetal Alcohol Syndrome.” *StatPearls*, StatPearls Publishing, 15 November 2021.



pregnancy.<sup>53</sup> While many medical experts, particularly in the United States, recommend abstaining from alcohol during pregnancy altogether as a precautionary matter,<sup>54</sup> there is no medical certainty regarding the level of alcohol consumption during a particular pregnancy that will result in negative fetal outcomes.<sup>55</sup> <sup>56</sup> It is estimated that half of pregnant individuals consume alcohol during the first weeks of gestation, and researchers have identified a dose-specific, cumulative risk of miscarriage that increases for each additional week of exposure during the first trimester.<sup>57</sup> Yet, even the exact mechanism that establishes a causal link between alcohol ingestion and manifestation of harmful fetal symptoms has not been definitively established.

As with all substance use, researchers note the difficulty, if not impossibility, of separating the effect of prenatal alcohol exposure on the fetus from other risk factors, which include, but are not limited to, maternal age, income level, educational attainment, location, nutrition, stressful life events, and psychiatric comorbidities.<sup>58</sup> One research team explains, “the overall pattern is that fetal alcohol spectrum disorders are found in a subset of mothers who are marginalized and face a variety of psychosocial stressors—each of which are independently associated with adverse neurodevelopmental outcomes in children.”<sup>59</sup> Early intervention ameliorates the secondary effects of alcohol exposure, even for infants identified as having FASD.<sup>60</sup>

## Conclusion

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<sup>53</sup> Roozen S, Peters GY, Kok G, Townend D, Nijhuis J, Koek G, Curfs L. Systematic literature review on which maternal alcohol behaviours are related to fetal alcohol spectrum disorders (FASD). *BMJ Open*. 2018 Dec 19;8(12):e022578. doi: 10.1136/bmjopen-2018-022578. PMID: 30573481; PMCID: PMC6303602.

<sup>54</sup> CDC. 2022. *Alcohol Use During Pregnancy*. [www.cdc.gov/ncbddd/fasd/alcohol-use.html](http://www.cdc.gov/ncbddd/fasd/alcohol-use.html)

<sup>55</sup> Killian C, Thomas EM. Fetal Alcohol Syndrome Warnings: Policing Women’s Behavior Distorts Science. *Journal of Applied Social Science*. 2020;14(1):5-22. doi:10.1177/1936724419898885

<sup>56</sup> Mamluk L, Edwards HB, Savović J, Leach V, Jones T, Moore THM, Ijaz S, Lewis SJ, Donovan JL, Lawlor D, Smith GD, Fraser A, Zuccolo L. Low alcohol consumption and pregnancy and childhood outcomes: time to change guidelines indicating apparently 'safe' levels of alcohol during pregnancy? A systematic review and meta-analyses. *BMJ Open*. 2017 Aug 3;7(7):e015410. doi: 10.1136/bmjopen-2016-015410. PMID: 28775124; PMCID: PMC5642770.

<sup>57</sup> Sundermann, Alexandra C et al. “Week-by-week alcohol consumption in early pregnancy and spontaneous abortion risk: a prospective cohort study.” *American journal of obstetrics and gynecology* vol. 224,1 (2021): 97.e1-97.e16. doi:10.1016/j.ajog.2020.07.012

<sup>58</sup> McQuire C, Daniel R, Hurt L, Kemp A, Paranjothy S. The causal web of foetal alcohol spectrum disorders: a review and causal diagram. *Eur Child Adolesc Psychiatry*. 2020 May;29(5):575-594. doi: 10.1007/s00787-018-1264-3. Epub 2019 Jan 16. PMID: 30648224; PMCID: PMC7250957.

<sup>59</sup> McCormack, C., & Monk, C. (2020). Considering Prenatal Alcohol Exposure in a Developmental Origins of Health and Disease Framework. *American Journal of Psychiatry*, 177(11), 1025–1028. <https://doi.org/10.1176/appi.ajp.2020.20091376>

<sup>60</sup> Wozniak, Jeffrey R et al. “Clinical presentation, diagnosis, and management of fetal alcohol spectrum disorder.” *The Lancet. Neurology* vol. 18,8 (2019): 760-770. doi:10.1016/S1474-4422(19)30150-4

The principal import of existing research is not that drug use during pregnancy is "safe," but rather that no scientific basis exists for concluding that exposure to these substances will inevitably cause harm. In other words, the fact that a baby was exposed to a certain drug in utero does not mean the baby was harmed due to that exposure. While with alcohol the evidence of a causal link between exposure and harm is more clear, there is still much that is uncertain regarding specific patterns of use. Moreover, existing research clarifies that the risks presented to a pregnancy by use of substances are not any greater than risks associated with many other conditions and activities common in the lives of all people. Substance use during pregnancy — much like any other risk factor during pregnancy — is, ultimately, best treated with a harm reduction approach: Criminalization only deters pregnant people from seeking vital care and communicating openly with healthcare providers.

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