

Sigh of relief: Acetaminophen use during pregnancy is not associated with adverse neurodevelopment in the offspring

Seneen Akbar¹, Guleena Junaid², Bashir Ahmad³

Dear Madam, Acetaminophen (paracetamol) is an over the counter medicine used to relieve pain and fever. Additionally, it can relieve postoperative pain and inflammation associated with arthritis because it inhibits the synthesis of prostaglandins. Its availability without a prescription has greatly increased its use in everyday life, especially for pregnant women as it is considered one of the safer medicines to overcome pain during pregnancy. Pregnant women in Pakistan overuse paracetamol for minor issues without consulting any doctor. 65% of women use acetaminophen during pregnancy according to a recent epidemiological study.¹

During pregnancy, drug absorption increases due to the mother's increased cardiac output and blood flow. It was theorized that this causes lipid-soluble drugs with lower ionization and lower molecular weight, like acetaminophen, to cross the placenta and enter the foetal circulatory system in large concentrations, directly affecting the foetal brain. Acetaminophen can also interfere with the body's hormones and thus can be associated with cognitive and behavioural difficulties.²

The easy accessibility of acetaminophen and its increased long-term use in pregnant women is considered to cause adverse effects such as attention deficit hyperactivity disorder (ADHD), lower IQ scores, autism spectrum disorder (ASD), and motor milestone delay.² A nature study also reported the association of high prenatal acetaminophen intake with poorer language development.³ These risks of acetaminophen increase with the increase in the duration of exposure to the drug.⁴

Although older studies found a link between the use of acetaminophen in pregnancy and neurological disorders in their offspring, a very recent study reveals that there is no such association. According to a study, a total of 185,909 children 7.49% were exposed to acetaminophen during

¹21st year MBBS Student, Northwest School of Medicine, Peshawar, Pakistan;

³Final Year MBBS Student, Northwest School of Medicine, Peshawar, Pakistan.

Correspondence: Guleena Junaid. e-mail: guleeabc123@gmail.com

ORCID ID: 0009-0004-0956-5953

Submission completed: 26-07-2024 **1st Revision received:** 03-09-2024

Acceptance: 11-01-2025

2nd Revision received: 10-01-2025

pregnancy. Crude absolute risks at 10 years of age for those not exposed vs those exposed to acetaminophen were 1.33% vs 1.53% for autism, 2.46% vs 2.87% for ADHD, and 0.70% vs 0.82% for intellectual disability.⁵ This study reveals that acetaminophen might not be the actual reason for neurodevelopmental disorders and its relationship may have been exaggerated. Additionally, another recent study also suggests that women who have inflammatory disorders, autoimmunity, and fever during pregnancy are at a higher risk of having infants with neurological disorders. So, acetaminophen might not be the cause of these disorders but the reasons for its use might be.³

Therefore, keeping in mind that acetaminophen has no obvious association with neurological disorders, it can be used where required as its alternatives, NSAIDs, can cause many other complications in pregnant women and is thus contraindicated in the third trimester of pregnancy. Acetaminophen, on the other hand, is a much safer medicine.

Disclaimer: None.

Conflict of interest: None.

Funding disclosure: None.

DOI: <https://doi.org/10.47391/JPMA.21591>

References

- Castillo Barrio B, Bravo Laguna MC, de la Calle Fernández M, Pellicer Martínez A. Consumption of paracetamol during pregnancy. *An Pediatr* 2020;93:196-7. doi: 10.1016/j.anpedi.2019.12.016.
- Kwok J, Luedecke E, Hall HA, Murray AL, Auyeung B. Analgesic drug use in pregnancy and neurodevelopment outcomes: an umbrella review. *Neurosci Biobehav Rev* 2022;136:104607. doi: 10.1016/j.neubiorev.2022.104607.
- Woodbury ML, Cintora P, Ng S, Hadley PA, Schantz SL. Examining the relationship of acetaminophen use during pregnancy with early language development in children. *Pediatr Res* 2024;95:1883-96. doi: 10.1038/s41390-023-02924-4.
- Ricci C, Albanese CM, Pablo LA, Li J, Fatima M, Barrett K, et al. In utero acetaminophen exposure and child neurodevelopmental outcomes: Systematic review and meta-analysis. *Paediatr Perinat Epidemiol* 2023;37:473-84. doi: 10.1111/ppe.12963.
- Ahlqvist VH, Sjöqvist H, Dalman C, Karlsson H, Stephansson O, Johansson S, et al. Acetaminophen Use During Pregnancy and Children's Risk of Autism, ADHD, and Intellectual Disability. *JAMA* 2024;331:1205-14. doi: 10.1001/jama.2024.3172.

Author Contribution:

SA & GJ: Concept, design, data acquisition, analysis, drafting, final approval and agreement to be accountable for all aspects of the work.

BA: Data acquisition, analysis, interpretation, revision, final approval and agreement to be accountable for all aspects of the work.