



# Prenatal exposure to fluoride associated with neurobehavioral problems in children

## Description

A recent study published in JAMA Network Open suggests that prenatal exposure to fluoride, commonly found in drinking water, may pose risks to children's neurobehavioral development. Fluoride is added to U.S. water systems to prevent tooth decay, but research indicates that higher levels of exposure during pregnancy could lead to neurobehavioral issues in children.

The study analyzed 229 mother-child pairs from Los Angeles, focusing on Hispanic women of low socioeconomic status. Urine samples were collected from the mothers during pregnancy, and children's neurobehavioral outcomes were assessed at age three using the Preschool Child Behavior Checklist.

The findings revealed that higher maternal urinary fluoride levels were associated with an increased likelihood of children exhibiting neurobehavioral problems, especially internalizing symptoms like anxiety and emotional reactivity. These results align with similar studies in Mexico and Canada, emphasizing the need for further research on the potential risks of fluoride exposure during pregnancy.

Lead researcher Ashley Malin highlighted the importance of these findings and called for more comprehensive studies to address this concerning issue. The study, titled "Maternal Urinary Fluoride and Child Neurobehavior at Age 36 Months," underscores the need for greater awareness of fluoride intake during pregnancy to safeguard children's neurodevelopment.

## Vocabulary List:

1. **Prenatal** /pri'nei.təl/ (adjective): Relating to the period before birth.
2. **Neurobehavioral** /,njʊə.roʊ.bi'heɪ.vjər.əl/ (adjective): Relating to the interaction between neurological and behavioral processes.
3. **Socioeconomic** /,soʊ.si.əʊ'i:.kə.nə:.mɪk/ (adjective): Relating to or concerned with the interaction of social and economic factors.
4. **Exhibit** /ɪg'zɪb.ɪt/ (verb): To show or demonstrate something.
5. **Emotional** /ɪ'moʊ.ʃən.əl/ (adjective): Relating to a person's feelings or emotions.
6. **Safeguard** /'seɪf.gɑrd/ (verb): To protect something or someone from harm or damage.

## Comprehension Questions



### Multiple Choice

1. What does the recent study published in JAMA Network Open suggest about prenatal exposure to fluoride?  
Option: a) It has no impact on children's neurobehavioral development  
Option: b) It may pose risks to children's neurobehavioral development  
Option: c) It improves children's neurobehavioral development  
Option: d) It helps prevent tooth decay in children
  
2. How many mother-child pairs were analyzed in the study from Los Angeles?  
Option: a) 150  
Option: b) 200  
Option: c) 229  
Option: d) 300
  
3. Which group of women was the study primarily focused on?  
Option: a) Caucasian women  
Option: b) Asian women  
Option: c) Hispanic women of low socioeconomic status  
Option: d) African American women
  
4. What age were the children assessed at in the study?  
Option: a) 1 year  
Option: b) 2 years  
Option: c) 3 years  
Option: d) 4 years
  
5. Which symptoms were more likely to be exhibited by children with higher maternal urinary fluoride levels?  
Option: a) Physical symptoms  
Option: b) Cognitive symptoms  
Option: c) Externalizing symptoms  
Option: d) Internalizing symptoms like anxiety and emotional reactivity
  
6. What did lead researcher Ashley Malin call for in response to the study findings?  
Option: a) Halting fluoride exposure in water systems  
Option: b) Ignoring the results of the study  
Option: c) More comprehensive studies on the issue  
Option: d) Promoting higher fluoride intake in pregnant women



## Answer

**Multiple Choice:** 1. b) It may pose risks to children's neurobehavioral development 2. c) 229 3. c) Hispanic women of low socioeconomic status 4. c) 3 years 5. d) Internalizing symptoms like anxiety and emotional reactivity 6. c) More comprehensive studies on the issue

## Vocabulary quizzes

### Multiple Choice ( Select the Correct answer for each question. )

1. What quality is essential for achieving your goals?

- Option: A. Persistence
- Option: B. Creativity
- Option: C. Indecisiveness
- Option: D. Laziness

2. What term refers to moving forward or advancing?

- Option: A. Regression
- Option: B. Stagnation
- Option: C. Progression
- Option: D. Regression

3. What does it mean to protect from harm or danger?

- Option: A. Expose
- Option: B. Shield
- Option: C. Ignore
- Option: D. Prevent

4. Which word means to accept or support willingly?

- Option: A. Reject
- Option: B. Tolerate
- Option: C. Embrace
- Option: D. Disapprove

5. What is the power to have an effect on someone or something?

- Option: A. Control
- Option: B. Influence
- Option: C. Oppose
- Option: D. Discourage



6. What word describes someone who is widely recognized and praised?

- Option: A. Anxious
- Option: B. Anonymous
- Option: C. Celebrated
- Option: D. Reluctant

7. What term describes challenges or difficulties one faces?

- Option: A. Successes
- Option: B. Triumphs
- Option: C. Deeds
- Option: D. Struggles

8. Which term means to stop something from happening?

- Option: A. Encouraging
- Option: B. Allowing
- Option: C. Preventing
- Option: D. Facilitating

9. Who is a person or entity against whom one is competing?

- Option: A. Collaborator
- Option: B. Competitor
- Option: C. Partner
- Option: D. Associate

10. What does it mean when something requires immediate action or attention?

- Option: A. Delayed
- Option: B. Antiquated
- Option: C. Neglected
- Option: D. Urgent

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. \_\_\_\_\_ disorders affect the behavior emotions and cognitive function of an individual.

12. \_\_\_\_\_ care focuses on the health and well-being of elderly individuals.

13. It is important to be true to yourself and remain \_\_\_\_\_ in all your actions.

14. The \_\_\_\_\_ period is crucial for the development of the unborn child.

15. Doctors use a patient's reported \_\_\_\_\_ to help diagnose medical conditions.



16. A \_\_\_\_\_ is a device that can adjust or control the level of a signal.
17. Artists often \_\_\_\_\_ their work in galleries to share it with the public.
18. Negotiations between the two parties reached a \_\_\_\_\_ with no agreement in sight.
19. What is your \_\_\_\_\_ to the success of the project?
20. It is important to \_\_\_\_\_ tasks based on their urgency and importance.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. The scoring system was to ensure fairness among all participants.
22. Building self-confidence is important to overcome personal .
23. The new technology was considered due to its innovative features.
24. Her success was a true to her hard work and dedication.
25. The study focused on the factors influencing educational achievement.
26. She her fears and doubts to achieve her dreams.
27. The antique shop prided itself on selling only merchandise.
28. Each individual has their own set of talents and abilities.
29. He was known for his speeches that touched the hearts of many.
30. The audio engineer adjusted the sound levels using the .

## Answer

**Multiple Choice:** 1. A. Persistence 2. C. Progression 3. B. Shield 4. C. Embrace 5. B. Influence 6. C. Celebrated 7. D. Struggles 8. C. Preventing 9. B. Competitor 10. D. Urgent

**Gap-Fill:** 11. Neurobehavioral 12. Geriatric 13. authentic 14. prenatal 15. symptoms 16. modulator 17. exhibit 18. deadlock 19. contribution 20. prioritize

**Matching sentence:** 1. equalized 2. insecurities 3. groundbreaking 4. testament 5. socioeconomic 6. overcame 7. authentic 8. unique 9. emotional 10. modulator



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## CATEGORY

1. Health - LEVEL3

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