



*Libyan International Medical University*



Pharm D

A review article

# Use of paracetamol during pregnancy and child neurological development

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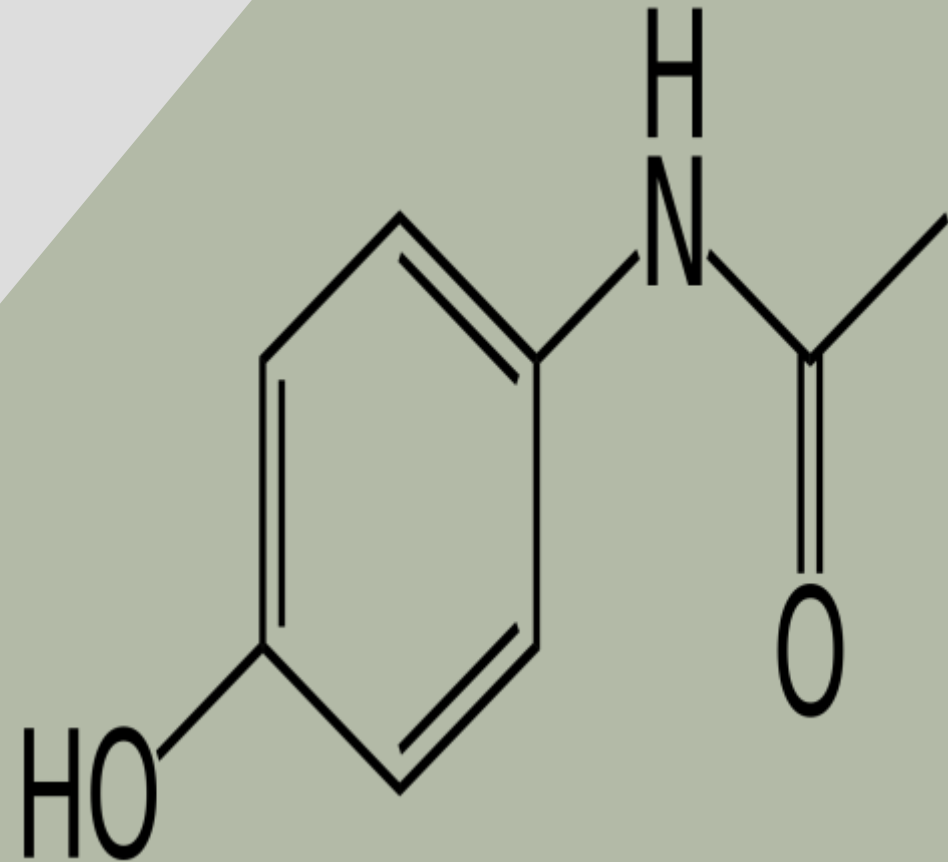
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de Fays, L., Van Malderen, K., De Smet, K., Sawchik, J., Verlinden, V., Hamdani, J., Dogné, J. M., & Dan, B. (2015). Use of paracetamol during pregnancy and child neurological development. *Developmental medicine and child neurology*, 57(8), 718–724. <https://doi.org/10.1111/dmcn.12745>

# 1

## Introduction

Ruodina khaled





# Introduction

Paracetamol (acetaminophen), a common pain reliever, is still the primary treatment for pregnancy-related pain and fever.

Recent studies suggest a possible link between uterine exposure to paracetamol and ADHD/HKD or developmental issues in children.

However, these effects are weak to moderate, and the studies' design limits inference.

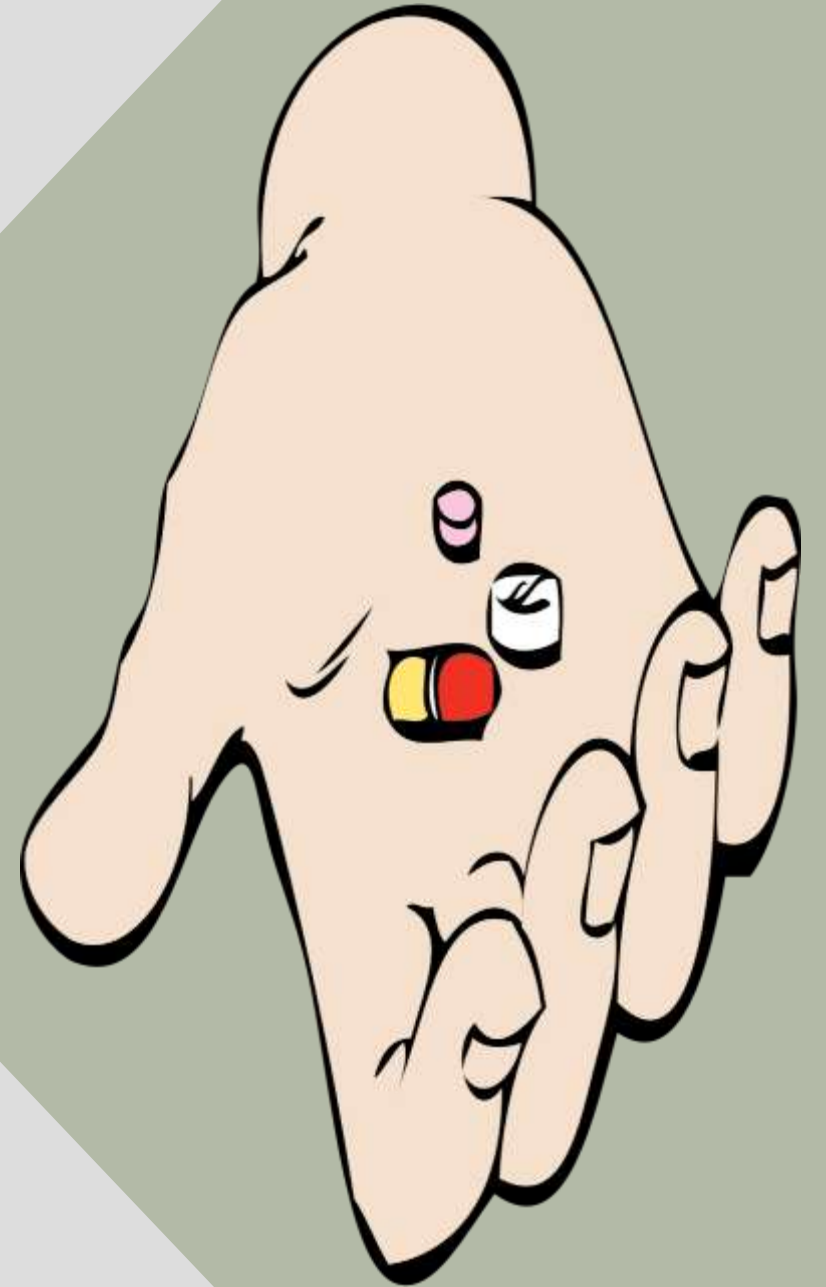
Animal data suggests that paracetamol exposure during early development may alter cognition and behavior, possibly due to interference with brain-derived neurotrophic factors or neurotransmitter systems.

Further cohort studies are needed to confirm or disprove this association.

(Adam et al , 2011)

# 2 Aim

Ruodina Khaled



# Aim

## **This research paper aims to show us**

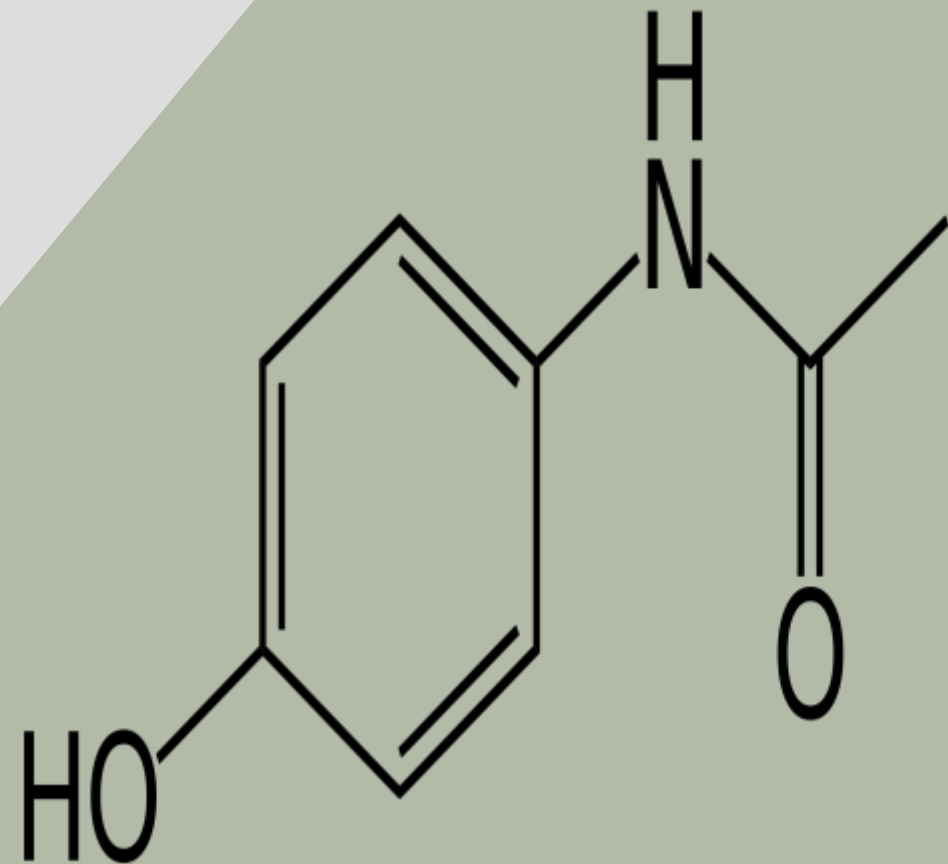
- Animal data suggest that therapeutic doses of paracetamol may alter cognition and behavior.
- Epidemiological studies suggest a weak to moderate association between antenatal exposure to paracetamol and neurodevelopment , attention deficit or hyperactivity disorder.
- Given the current knowledge, paracetamol is still to be considered safe in pregnancy and should remain the first line for the treatment of pain and fever.



# 3

## METHOD

GHADEER



# Method

Clinical trials often exclude pregnant women, resulting in a lack of evidence-based information for this patient group during the authorization of medications.

Paracetamol (acetaminophen) is a widely used analgesic and antipyretic.

It is also an active substance in a series of readily available over-the-counter medicines.

Taken during pregnancy, paracetamol is generally considered safe and effective when used at the recommended dosage. Paracetamol remains the first line for the treatment of pain and fever in pregnancy.

Recently published epidemiological studies suggested a possible association between paracetamol exposure in utero and attention-deficit-hyperactivity disorder/hyperkinetic disorder or adverse development issues in children.

# Method

The effects observed are in the weak to moderate range, and limitations in the studies' design prevent inference on a causal association with ADHD/HKD or child neurological development.

In parallel, recent animal data showed that cognition and behaviour may be altered following exposure to therapeutic doses of paracetamol during early development.

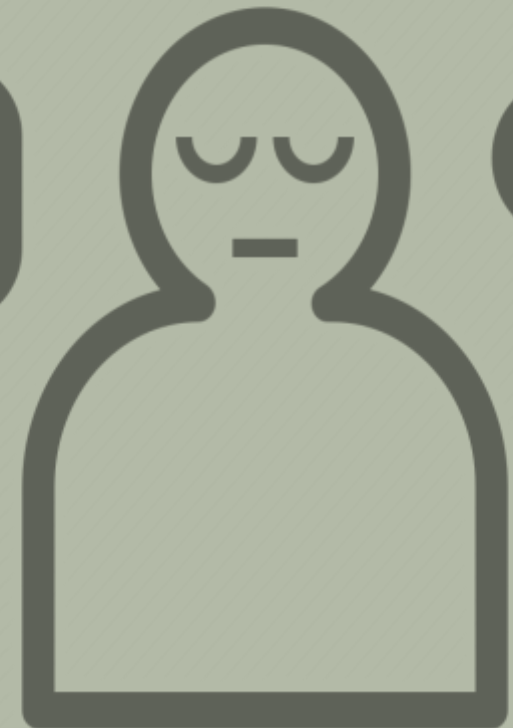
These effects may be mediated by interference of paracetamol with brain-derived neurotrophic factor, neurotransmitter systems (including serotonergic, dopaminergic, adrenergic).



# 4

## RESULTS

FATMA BADER



# Result

. The study is based on the Danish National Birth Cohort, half of all mothers reported paracetamol use during pregnancy (56%), were used to identify, among the cohort of 64 322 children aged 5 years or more, those who received a hospital diagnosis of HKD or who were using ADHD medications.

. Data were available for a subgroup of 871 child of European descent. Paracetamol was used by 49.8% of the study mothers (anti-inflammatory drugs 1.3%, aspirin 5.3%, antacids 17.4%, and antibiotics 23.5%).



# Result

SDQs showed moderately higher values for children who were exposed to paracetamol during pregnancy, was associated with significantly higher scores for the following items:

- ADHD- diagnosed (risk ratio 1.13; CI 1.01–1.27) 95%
- HKD diagnosed (risk ratio 1.37; CI 1.19–1.59) 95%

# 5

## Discussion

MOHAMMED AKHRIS



# Discussion

## 1. Strengths of the Study:

Large sample size and prospective design minimize recall bias.

Inclusion of various covariates in regression models enhances robustness of findings.

Database-recorded ADHD diagnoses and medication predictions likely reflect ADHD prevalence accurately.



## 2. Findings Regarding Paracetamol and ADHD:

- Maternal paracetamol use during pregnancy associated with increased ADHD symptoms in children at 7 years old, but significance diminishes at the multivariable level.
- No associations found with other commonly used drugs in pregnancy.

## 3. Limitations and Considerations:

- Weak and marginally significant effect observed, suggesting caution in inferring clinical relevance.
- Lack of data on dosage and trimester use of paracetamol during pregnancy.
- Potential sources of bias such as low follow-up rates and absence of parental ADHD status information.

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- Potential sources of bias such as low follow-up rates and absence of parental ADHD status information.

#### 4. Animal Studies on Paracetamol's Effects:

- Animal studies suggest potential effects of paracetamol on cognition and behaviour.
- Causal inference limited by study design and observed associations.
- Paracetamol remains the first-line treatment for pain and fever in pregnancy based on current knowledge.

(Lupattelli A, Spigset O, Twigg MJ, et al, 2014)

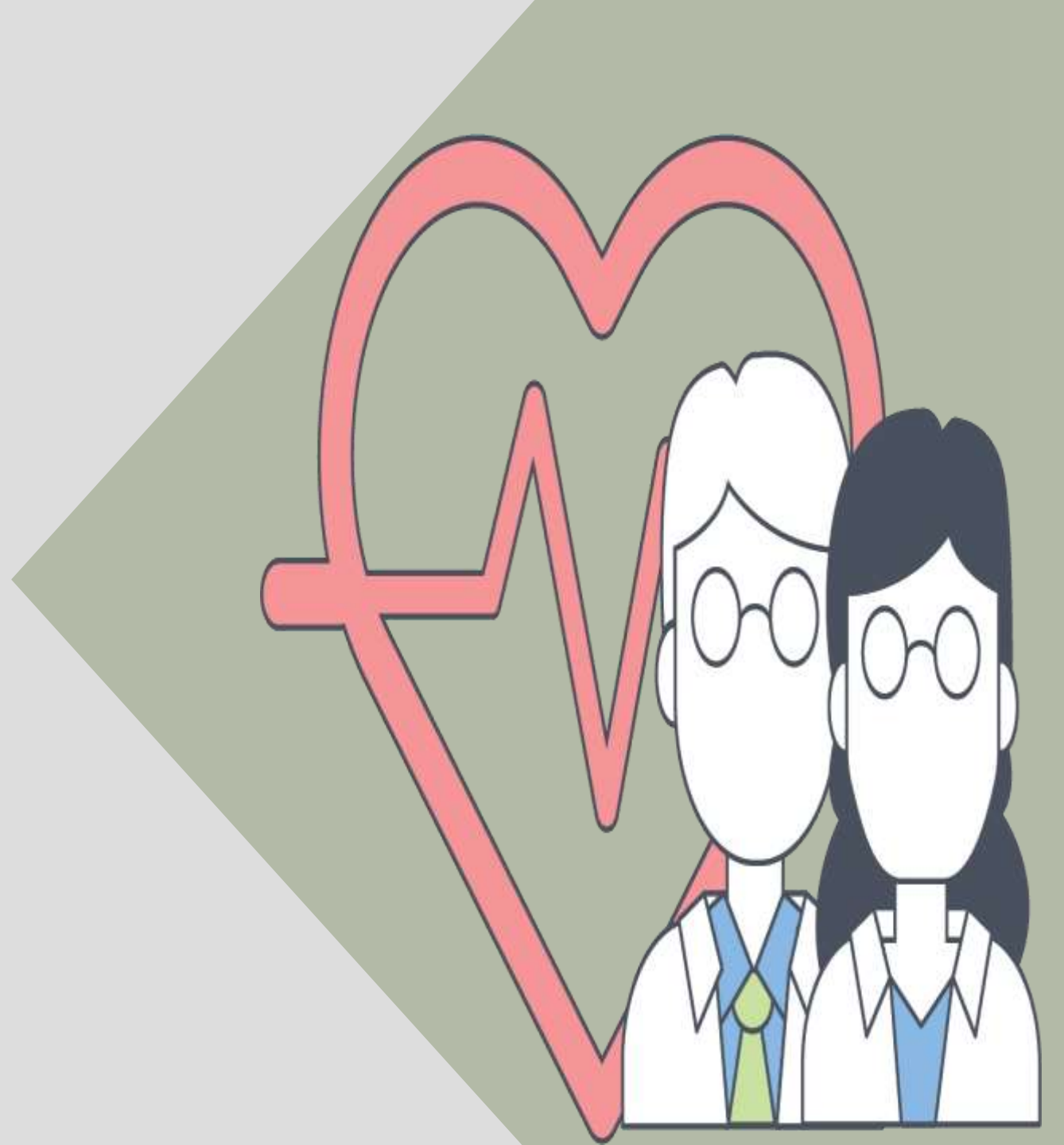




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CONCLUSION

OMAR



# Conclusion

The available non-clinical data suggest that therapeutic doses of paracetamol may affect neuronal development, but further studies are needed to confirm the mechanisms and clinical relevance of these effects. Current epidemiological data do not establish a causal relationship between paracetamol exposure in utero and ADHD or neurodevelopmental issues. Additional well-designed longitudinal cohort studies are necessary to investigate this association, considering potential confounders and collecting detailed data during pregnancy. Paracetamol is still considered safe in pregnancy for pain and fever, with recommendations to use it only when clinically needed, at the lowest effective dose, and for the shortest duration possible. Care should be taken to avoid unnecessary concerns that may lead pregnant women to switch to less favorable analgesic/antipyretic drugs.

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