Risks of cannabinoid exposure on birth outcomes: A systematic review

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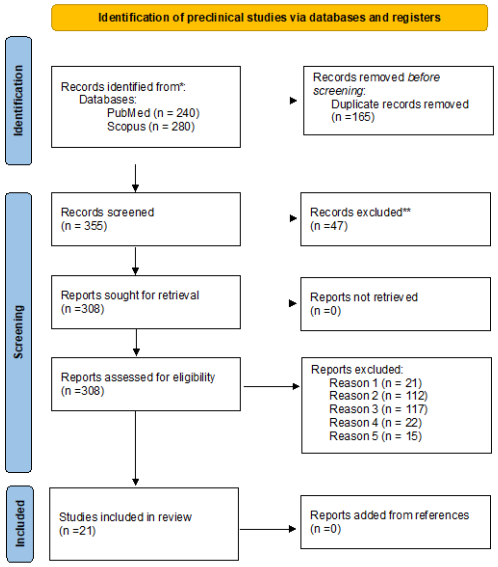
Introduction

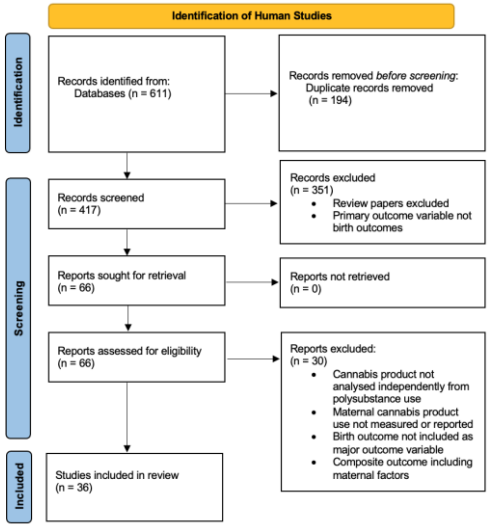
- Over the past 25 years, societal perceptions and use of cannabis products have shifted significantly.
- As of early 2024, recreational use of cannabis was legalized in 24 U.S. states.
- In 2022 alone, 3.7 million people over the age of 12 used cannabis products for the first time, representing a 42% increase from the previous year
- They are often marketed as a safe and natural solution to general discomfort, including pregnancy-related effects, such as morning sickness, insomnia, and pain.
- Cannabis use has increased substantially among pregnant persons.[5] More recently, the rate of cannabis product use by pregnant people was as high as 16.2% nationally, with some states reporting up to 26%.
- Unlike the well-known teratogens, alcohol, and tobacco, relatively little research has focused on the potential deleterious effects of cannabis product use during pregnancy. As such, there is a critical need for a clear understanding of the effects of cannabis and its constituent compounds on aspects of fetal development and birth outcomes.

Methods

- The systematic literature review was conducted per PRISMA guidelines.
- A comprehensive search of preclinical (rodent) literature was conducted in PubMed and Scopus
- The search terms were “prenatal OR perinatal OR in utero OR maternal exposure” AND “cannabis OR THC OR cannabinoids” AND “exposure.”
- A comprehensive search of human literature was performed in PubMed, CINAHL, and Scopus with the terms “cannabinoids OR cannabis OR THC OR marijuana” AND “pregnancy OR pregnant OR prenatal’ AND “infant outcome OR infant health”.

PRISMA Diagrams





Results

- In both human and rodent studies, prenatal exposure to cannabis was significantly associated with lower birth weight.
- It was not significantly associated with gestational age in rodents or humans.
- In most rodent studies, prenatal exposure to cannabis did not affect mortality or litter size.
- In human studies, there is a tendency for infants exposed to cannabis during pregnancy to have worse health at delivery.

Conclusion

- This systematic review is the first to assess the association between prenatal cannabis or THC use and birth outcomes in human **and** rodent studies.
- Prenatal cannabis use adversely affects birth outcomes (i.e., lower birth weight and poorer health at delivery in human infants) which has potentially harmful implications for later neurodevelopment and behavior.
- Unfortunately, the existing literature is scant, and the findings are mixed due to lack of rigorous methodology.
- With the increasing use of cannabis products during pregnancy, the inconsistencies observed in both animal and human studies underscore the urgent need for rigorous research.

Significance

- More rigorous, longitudinal studies are required to further elucidate the influence on infant health with objectively measurable outcomes such as urinalysis.
- This research should clarify the outcomes of cannabis use and inform policies and interventions that promote maternal, fetal, and infant health.