THE ASSOCIATION BETWEEN MODE OF BIRTH DELIVERY AND ATTENTION DEFICIT-HYPERACTIVITY DISORDER: A SYSTEMATIC REVIEW PROTOCOL OF EPIDEMIOLOGICAL EVIDENCE

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Disclosures

I have an affiliation with the following organisations that could be perceived as a direct or indirect conflict of interest in the context or content of this presentation.

- Deputy Director of the Czech CEBHC Joanna Briggs Collaboration
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OBJECTIVE

To synthetize the best available evidence regarding the epidemiological association between the mode of delivery (CS versus vaginal delivery) as exposure and ADHD as the outcome.
Caesarean section (CS)

- the most frequently performed intervention in obstetrics
- one of the most common abdominal operation at all
- rates of CS have been rising globally
- in Czech Republic – 2014 - incidence reached 26.1%
BACKGROUND

Attention-deficit/hyperactivity disorder (ADHD)

- the most common neurobehavioral disorder in children
- characterized by combination of symptoms including inattention, impulsivity and hyperactivity
- the incidence is increasing
- the worldwide prevalence of ADHD - about 7.2%
Perinatal factors that increase the risk of ADHD:

- premature birth,
- maternal hypothyroidism,
- smoking during pregnancy,
- prenatal exposure to alcohol and cigarettes.
BACKGROUND

CS may affect psychological development through changes in microbiota or stress response and birth by CS can be associated with a small increased risk of ADHD.¹

On the contrary, there is also evidence of no association between mode of delivery and the risk of developing ADHD.²

METHODS

Protocol of SR
PROTOCOL

- according to the PRISMA-P statement and the Joanna Briggs Institute (JBI) methodology for systematic reviews of etiology and risk
- enrolled with the PROSPERO prospective register of systematic reviews.
Inclusion criteria

Population

- Children
  - Subgroup comparison for different children’s conditions - *birth hypoxia, hypoxic-ischemic encephalopathy, congenital malformations* of the central nervous system.
  - Subgroup analysis for children after *preterm, in term and post term delivery.*
Inclusion criteria

Exposure

- **Caesarean section** compared to **vaginal delivery**
  - Subgroup comparison for **caesarean section**: emergency and elective caesarean section
  - Subgroup comparison for **vaginal delivery**: head fetal presentation, other fetal presentations (breech, etc.), instrumental vaginal delivery (VEX, Forceps), induced labor.
Inclusion criteria

Outcome

- Presence (or absence) of Attention Deficit-Hyperactivity Disorder (ADHD)
Study design

Analytical epidemiological study designs including:

- **prospective** and **retrospective cohort studies**, 
- **case-control studies**, 
- **analytical cross-sectional studies**.

- in all languages
- without date limitations
SEARCH STRATEGY

- **Published and unpublished studies**
- **Three-step search strategy**
  - Ovid MEDLINE(R) 1946 to current, CINAHL® Plus with Full Text 1935 to current, Embase (1974 to current), Web of Science, Nursing Ovid, Scopus, PsycINFO, Tripdatabase
STUDY SELECTION

- **two reviewers** will independently screen and select studies for possible inclusion
- **first phase** - titles and abstracts will be analysed
- **second phase** - all possible relevant full texts will be analysed
ASSESSMENT OF METHODOLOGICAL QUALITY

- two independent reviewers for methodological quality
- using standardised critical appraisal instruments developed by JBI
DATA EXTRACTION

▪ using the standardized data extraction instrument JBI SUMARI by two independent reviewers
▪ the extracted data will include specific details about the exposure of interest including:
  ➢ different exposure categories,
  ➢ populations,
  ➢ study methods,
  ➢ outcomes or dependent variables of significance to the review question and specific objectives.
DATA SYNTHESIS

- statistical meta-analysis using JBI SUMARI
- either odds ratios
- relative risk (for dichotomous data)
- 95% confidence intervals
- using the standard chi-squared and I squared tests
ASSESSING CONFIDENCE

- A 'summary of findings' table - using GRADEPro GDT software
- absolute risks for treatment and control,
- estimates of relative risk,
- a ranking of the quality of the evidence based on study limitations (risk of bias), indirectness, inconsistency, imprecision and publication bias
Thank you for your attention