The Triple B Pregnancy Cohort Study:
Alcohol use during pregnancy and developmental outcomes in infants at 12-months of age

Current project team

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*Triple B Consortium: Past NDARC and NDRI staff, students, Associate Investigators
Prevalence of alcohol use in pregnancy

• NHMRC Guidelines: “For women who are pregnant or planning a pregnancy, not drinking is the safest option” (NHMRC, 2009)

• Around half of all pregnant women report some alcohol in pregnancy:
  • 2013 National Drug Strategy Household Survey (NDSHS):
    • 47% of pregnant women drank alcohol whilst pregnant
  • Longitudinal Study of Australian Children (LSAC; Hutchinson et al., 2013):
    • 37% of mothers of infants age 0-1 years drank whilst pregnancy

Effects of PAE on infant development

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<thead>
<tr>
<th>Developmental domain</th>
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<th>Heavy exposure harmful</th>
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Aims

• Assess the impact of low-level prenatal alcohol exposure (PAE) on infant development, taking into account timing and frequency of exposure.

• To examine the impact of low-level PAE on infant development after increasing levels of adjustment for potential maternal, infant and paternal factors.

The Triple B Study of Pregnancy

Hutchinson et al, Int J Epi, under revision
Method and sample

- Recruited from antenatal clinics at public hospitals in NSW and WA
- Total sample at 12-months: 1,359
- Retention rate: 82.4%

Alcohol assessment

- **Alcohol use:** Trimester 1 (0-6wks and 7-12wks); Trimester 2 (T2); Trimester 3 (T3)
- Typical frequency and quantity
- **The composite method of prenatal alcohol classification** (O’Leary et. al., 2009)
- Maternal consumption categorised separately for each timepoint
- “Low”: ≤7 standard drinks per week, up to 2 standard drinks per occasion
The Bayley Scales of Infant Development III

- BSID domains: Cognition, language, motor, social-emotional development
- Babies tested ~1st birthday (mean=12.23 months; SD=.84)
- Adjusted for child’s age and prematurity
- Scaled scores were used for cognition and socio-emotional development: mean of 100, SD of 15
- Language and motor subscales: mean of 10, SD of 3

Potential confounders

**Maternal**
- Age
- Education
- SEIFA
- Country of birth
- Single parent household
- ATSI
- Parity
- Native language
- IQ (TOPF)
- Pregnancy planned
- Pregnancy smoking
- Pregnancy IDU
- Depression, Anxiety, Stress
- BMI
- Spousal abuse

**Infant offspring**
- Sex
- Prematurity
- Birthweight
- Head circumference
- 5 min APGAR

**Partner**
- Age
- Education
- ATSI
- Country of birth
- Native language
- IQ (TOPF)
- BMI
- Alcohol use
- Smoking
- IDU
- Depression, Anxiety, Stress
- Spousal abuse
Alcohol use patterns through pregnancy

<table>
<thead>
<tr>
<th></th>
<th>T1 (0-6 weeks)</th>
<th>T1 (7-12 weeks)</th>
<th>T2</th>
<th>T3</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Abstinent (n=537)</td>
<td>Low (n=308)</td>
<td>Abstinent (n=980)</td>
<td>Low (n=241)</td>
</tr>
<tr>
<td><strong>Frequency of alcohol use (per week)</strong></td>
<td>0.0 (1.1-0.8)</td>
<td>0.0 (0.6-0.3.5)</td>
<td>0.0 (0.7-0.3.5)</td>
<td>0.0 (0.9-0.1.7)</td>
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<tr>
<td><strong>Standard drinks (per week)</strong></td>
<td>0.0 (1.7-0.7)</td>
<td>0.0 (0.8-0.7.0)</td>
<td>0.0 (0.9-0.5.3)</td>
<td>0.0 (1.2-0.5.3)</td>
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Maternal characteristics

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<td><strong>SES category (%; SE)</strong></td>
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<tr>
<td>Low</td>
<td>6.1 (0.8) n=56</td>
</tr>
<tr>
<td>Med</td>
<td>34.1 (1.6) n=316</td>
</tr>
<tr>
<td>High</td>
<td>59.8 (1.6) n=554</td>
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<tr>
<td><strong>Maternal age – mean (SD)</strong></td>
<td>32.2 (5.1) n=925</td>
</tr>
<tr>
<td><strong>Years of education – mean (SD)</strong></td>
<td>16.3 (2.3) n=589</td>
</tr>
<tr>
<td><strong>Native language English – (%; SE)</strong></td>
<td>71.6 (1.8) n=425</td>
</tr>
<tr>
<td><strong>Estimated IQ – mean (SD)</strong></td>
<td>99.1 (13.4) n=60</td>
</tr>
<tr>
<td><strong>Living With Partner – (%; SE)</strong></td>
<td>91.7 (9) n=847</td>
</tr>
<tr>
<td><strong>Pre Pregnancy drinking (Freq per week; %; SE)</strong></td>
<td>1.7 (1.7) n=664</td>
</tr>
<tr>
<td><strong>Pre Pregnancy drinking (SD per week; %; SE)</strong></td>
<td>3.9 (6.5) n=922</td>
</tr>
<tr>
<td><strong>Tobacco use in pregnancy – (%; SE)</strong></td>
<td>14.4 (1.1) n=133</td>
</tr>
<tr>
<td><strong>Illicit substance use - (%; SE)</strong></td>
<td>3.2 (.5) n=30</td>
</tr>
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Cognition

McCormack et al, BJOG, under review

Receptive language
Expressive language

Fine motor
Gross motor

Hutchinson et al, JAMA Pediatrics, under review

Socio-emotional

Hutchinson et al, JAMA Pediatrics, under review
Discussion

Implications:
• Low level alcohol exposure is inconsistently related to infant ability?
• Confounding – may explain the positive effects identified
• There may still be a small detrimental effect of low exposure, obscured by associated confounders
• May alleviate anxiety among women who have consumed alcohol in pregnancy at low levels

Implications

For women who are pregnant or planning a pregnancy, the safest option is not to drink alcohol