Cohort study

Alcohol consumption in early and late pregnancy is associated with poor child reading and writing ability at 8–9 years of age

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Commentary on: O'Leary CM, Taylor C, Zubrick SR, *et al*. Prenatal alcohol exposure and educational achievement in children aged 8–9 years. *Pediatrics* 2013;132:e468–75.

Implications for practice and research

- Women should be counselled that no amount of alcohol consumption during pregnancy can be considered safe, and heavy and binge drinking specifically can negatively impact child learning and school achievement.
- Further research in other populations and addressing the limitations of this study is needed.

Context

Nearly 1 in 10 children may be exposed prenatally to some level of alcohol. Forty years of research has demonstrated a link between prenatal alcohol exposure and a range of developmental problems in children, many of which impact academic achievement. Recent research has found that heavy drinking in early and late pregnancy, as well as binge pattern drinking throughout pregnancy, is associated with deficits in specific academic skills and verbal IQ in children.[1–3] Few studies, however, have examined whether these effects result in underachievement in standardised school-based assessments based on national benchmarks that are used to identify children not meeting the minimum expected academic achievement standards.

Methods

O'Leary and colleagues utilised a randomly selected population-based birth cohort in Western Australia. Information about the amount, pattern and timing of alcohol consumption during pregnancy was collected 3 months after delivery. Alcohol consumption was linked to both prenatal and birth surveillance data, and to state-wide academic assessment scores in numeracy, reading, spelling and writing at 8–9 years of age. Pregnancy drinking was classified as 'low' (≤2 drinks/occasion and <7/week), 'moderate' (3–4 drinks/occasion and <7/week), 'binge less than weekly' (5+ drinks/occasion) and 'heavy' (>7 drinks/week including weekly or more frequent binge drinking), largely consistent with definitions in other similar studies. Data were analysed using multivariate logistic regression analysis, adjusted for other prenatal exposures and demographic factors, with findings presented as adjusted ORs.

Findings

Data were available for 4056 children mostly 8 years of age; a large sample compared to other studies with similar objectives. Compared to children whose mothers stopped drinking alcohol during pregnancy, those with heavy prenatal alcohol exposure in the first trimester were more than twice as likely to achieve below the state benchmark for reading. In addition, those exposed to occasional binge drinking late in pregnancy were more than twice as likely not to achieve the benchmark for writing. No significant effects were found for other achievement areas, or for low–moderate alcohol exposure.

Commentary

Findings from this study support previous work linking prenatal alcohol exposure to cognitive problems in children,[1–3] and demonstrate the impact on academic underachievement, including failure to meet minimum achievement standards. These findings highlight the risks associated with specific drinking patterns during pregnancy, especially first trimester heavy drinking and late pregnancy binge drinking, consistent with other studies.[1–3] Failure to find associations between prenatal alcohol exposure and numeracy ability, and a lack of significant effects from low and moderate exposure do not negate the possible presence of such effects, and likely result from sample and methodological characteristics. Small numbers of children not meeting national benchmarks, or with exposure to binge and heavy drinking, resulted in non-significant effects even for fairly large differences in achievement scores between alcohol exposure groups. In addition, pregnancy alcohol use information was collected retrospectively rather than during pregnancy; research has clearly shown the latter method to be more accurate.[4] Consequently, some women who consumed alcohol were likely to have been misclassified as non-drinkers. This may have impacted on the results, decreasing the potential of identifying existing effects between exposure and achievement outcomes. Further, the outcome of meeting or not meeting state benchmarks, while revealing with respect to expected school performance relative to peers, is a gross standard unlikely to expose the finer deficits that have been associated with prenatal alcohol exposure in other studies.

Despite its limitations, this study adds to the growing body of research documenting the harmful developmental effects in children whose mothers drink during pregnancy, and highlights both specific achievement problems and harmful alcohol consumption patterns. Additional research with other populations, and addressing the limitations noted above, is recommended to further validate the study. However, this report is yet another reminder that women should be counselled that no amount of alcohol consumption during pregnancy can be considered safe, and that heavy and binge drinking patterns at various time points during pregnancy can have significant adverse consequences for child learning and school achievement.

Competing interests None.

References

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