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Alcohol use during pregnancy

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Abstract

Alcohol use during pregnancy is prevalent in Western populations. However, evidence on the effects of alcohol use during pregnancy for neonatal and child health is conflicting and advice regarding the safety of low levels of gestational alcohol consumption varies between countries. We provide a brief overview of current evidence on the effects of gestational alcohol use, its limitations and existing guidelines on alcohol use in pregnancy.

Introduction

Alcohol use during pregnancy is prevalent in Western Populations, particularly in the UK and Ireland with recent reports suggesting that up to ~ 80% of women consume some level of alcohol during pregnancy. Unlike other deleterious behaviours such as smoking and illicit drug use, alcohol use during pregnancy is common across most social groups, irrespective of age and educational status. Moreover, although overall levels of consumption may be low, it remains an important public health concern and behavioural target during antenatal care, since the fetal effects of low levels of alcohol use during pregnancy are unclear. In this article we provide i) a brief overview of the current evidence on the effects of alcohol use during pregnancy; ii) some of the methodological challenges in studying the effects of alcohol use during pregnancy and; iii) a summary of existing guidelines on alcohol use during pregnancy.

Evidence on the effects of alcohol use during pregnancy

Evidence of the association between alcohol use during pregnancy with birth outcomes and postnatal health and cognitive outcomes through childhood and adolescence has been accruing for many decades with numerous systematic reviews conducted on these topics. Although results have been

largely mixed, two of the most consistent findings across several decades of research have included i) the detrimental effect of heavy levels of alcohol use during pregnancy on outcomes, but ii) the more variable findings on the effects of low to moderate alcohol consumption during pregnancy. For example, studies of heavy alcohol exposure, typically defined as more than seven drinks per week or an average of one drink per day during pregnancy have illustrated substantial effects on growth and cognitive outcomes from birth throughout childhood. However, in relation to light to moderate drinking, usually classified as less than seven drinks per week during pregnancy, numerous studies have indicated no effect of low levels of consumption for birthweight or small for gestational age (SGA), while others have found a beneficial or harmful effect. In addition, associations of in utero exposure to small amounts of alcohol with more subjective long term cognitive and behavioural outcomes have been difficult to measure resulting in a large amount of uncertainty on long term child health and wellbeing. At a policy level, such variation in findings particularly at the lower to moderate level of consumption have had important implications and international consensus on whether a safe level of alcohol consumption exists for pregnant women has not been reached.

Methodological limitations

Conventional epidemiological studies such as cohort studies and case control studies have been the standard approach to studying the effects of alcohol use during pregnancy. Cohort studies involve women being recruited during pregnancy with their alcohol measured usually concurrently through interviews or questionnaires and infant and child outcomes measured at follow-up. Case-control studies include both cases with the outcome in question, for example mothers who delivered an SGA infant and those who did not, followed by retrospectively obtaining information on alcohol history in pregnancy from the mother. Problems with both of these designs include, but are not limited to, reporting bias, recall bias and confounding. These vary according to study design and study quality and explain a large proportion of the variation in findings, particularly at lower levels of alcohol consumption.

First, in retrospective designs women may not recall their alcohol consumption accurately when interviewed or surveyed many months after pregnancy. In both designs, women may under-report their consumption due to social desirability and fear of stigma, which could bias results in a number of different ways. For example, if a woman consumed alcohol but did not report it, she would be classified as a non-drinker resulting in higher risk in the “non-drinker” group and lower relative risk in the exposed groups when drinkers are compared to a “non-drinker” group contaminated with unidentified heavy drinkers. Second, light and moderate drinkers are often more advantaged in regards to their general health status, education and income levels compared to heavy drinkers. These protective factors are associated with better infant and child health outcomes. Consequently, a beneficial effect of light alcohol consumption during pregnancy and the outcome in question may well be observed due to the presence of these additional, confounding factors. Most studies adjust for these additional protective factors in order to control for the portion of the exposure outcome association that is driven by factors other than drinking which is the exposure under study. However, even when socio-economic characteristics and other influencing factors such as smoking are adjusted for, confounding can still persist. In particular, adequate adjustment relies on the assumption that these measures adequately capture what they are intended to and also rely on accurate reporting by women as with alcohol use itself. Finally, guidelines for clinicians and those involved in the care of women rely on the synthesis of evidence from these studies into one combined estimate of the effects of drinking during pregnancy on outcomes; however, given the poor quality of the evidence at the individual study level, the subsequent quality of the combined evidence is also compromised making certainty regarding the effects of alcohol use during pregnancy low.

Current international guidelines

However, the most recent National Institute of Health and Care Excellence (NICE) 2008 guidelines in the UK have provided a slightly different interpretation of the evidence noting that although abstinence is advised, one to two units up to twice per week are not shown to be harmful to the unborn baby. In January 2016, the UK government revised its alcohol guidelines to incorporate the

most up-to-date evidence on alcohol use both across the population including pregnant women. Of note, they cited “unresolved confounding” as a substantial reason for observed protective associations between lower levels of alcohol use and any health outcome in research. Furthermore, it stated that there is no scientific basis for setting a limit below which alcohol consumption will not harm the fetus as outlined in the NICE 2008 clinical guidance and that harmonising the pregnancy guidelines across the UK, and making them consistent with those of other jurisdictions, would be helpful in delivering a clear and scientifically credible message.

Conclusion

To date the effects of low to moderate levels of alcohol consumption during pregnancy remain largely unknown based on the totality of evidence available for a range of outcomes across the life course.

Over the last decade, guidelines in a number of countries have moved from deriving information on safe lower levels of alcohol consumption during pregnancy from large scale systematic reviews of several decades of evidence to guidelines advising complete abstinence during pregnancy based on a “precautionary principle” due to lack of robust evidence on the safety of any level of alcohol consumption in pregnancy. However, what remains certain and unchanging over time are the substantial limitations inherent in the current evidence base on the effects of alcohol during pregnancy, as recently highlighted in the most up-to-date UK guidelines on alcohol use. Consequently, until new evidence emerges which largely eliminates the challenges encountered in current study designs, the “precautionary principle” of advising abstinence from alcohol use to women planning pregnancy or already pregnant may result in the most benefit for women and their offspring. Importantly, the current guidelines aim to be precautionary on two levels; 1) by protecting women and their offspring planning pregnancy or already pregnant from any yet unknown potential risks and 2) by preventing harm by not causing unnecessary worry and anxiety in women inadvertently exposed to small amounts of alcohol in early pregnancy, since the overall risks, although not yet well quantified, are likely to be low.

Further reading

1. O'Keeffe LM, Kearney PM, McCarthy FP, Khashan AS, Greene RA, North RA, et al. Prevalence and predictors of alcohol use during pregnancy: findings from international multicentre cohort studies. *BMJ open*. 2015;5(7):e006323.
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