New data on the effects of alcohol during pregnancy

The effects of light drinking during pregnancy

Increasingly, responsible drinking guidelines from around the world advise mothers who are planning to conceive, or who are pregnant, to abstain from drinking alcohol. Countries giving this advice include the USA, Canada, France, Italy, New Zealand, Israel and Poland for example. In the UK, guidance has changed from one or two units once or twice a week conferring no harm, to avoiding alcohol during the first trimester (due to an increase in miscarriage) and then one or two units once or twice a week.

Paper on the effects of light drinking

A study, published in the Journal of Epidemiology and Community Health which finds that light or moderate drinking during pregnancy is not harmful, echoed by findings from Western Australia in the Journal Pediatrics' Prenatal Alcohol Exposure and Risk of Birth Defects'[1] (see page 11) have therefore generated considerable media coverage in October 2010. The UK researchers used data collected in the UK Millennium Cohort Study, a nationally representative study of 11,513 infants born in the UK between September 2000 and January 2002. Households with babies born during this time were identified through the Department of Work and Pensions' child benefit system. The first survey was conducted when the babies were nine months old. It included questions on the mothers' drinking during pregnancy, other health-related behaviours, socioeconomic circumstances and household composition.

Participants were grouped according to whether the mother reported:

- Never drinking (being teetotal)
- Not drinking in pregnancy
- Drinking a light amount during pregnancy (1 to 2 units per week or per occasion)
- Drinking moderately (not more than 3 to 6 units per week or 3 to 5 units per occasion)
- Being a heavy/binge drinker (7 or more units per week or 6 or more units per occasion).

The researchers were particularly interested in the effects of light drinking in pregnancy.

Later surveys were carried out when the children were two and five years old. At age five, trained interviewers visited the children's homes and assessed the child's cognitive development, social and emotional behaviour, socioeconomic factors and the psychosocial environment of the family. Behavioural and emotional assessments were carried out using the Strengths and Difficulties Questionnaire (SDQ), which was completed by the parents. This is a validated tool assessing five domains of behaviour (conduct problems, hyperactivity, emotional symptoms, peer problems and prosocial behaviour [altruism]). Cognitive assessments were made using age-appropriate tests from the British Ability Scales (BAS), which has subscales assessing vocabulary, picture similarity recognition and pattern construction. To identify children with problems in each of the areas assessed, the researchers used previously defined clinically relevant cut-offs on the SDQ and standardised scores for the BAS subscales.

Many potential confounders were taken into account, including the parents' lifestyle behaviours, mental health, occupation and parenting style. Only children who were white and were single births (i.e. not twins) were included so that ethnicity and multiple births could not affect results.

What were the basic results?

The researchers found that:

- 5.9% of mothers were teetotal
- 60.2% did not drink during pregnancy
- 25.9% were light drinkers during pregnancy
- 5.5% were moderate drinkers
- 2.5% were categorised as heavy/binge drinkers.

When the researchers looked at associations between drinking and other factors, they found that light drinkers were more socioeconomically advantaged compared with mothers in all other categories. The behavioural and emotional score found that light drinkers were less likely than mothers who did not drink during pregnancy to have children with a high total difficulties score on the SDQ? (6.6% of boys born to light drinkers had a high score compared to 9.6% born to non-drinkers, and 4.3% of girls born to light drinkers had a high score compared to 6.2% born to non-drinkers.

Light drinkers were also less likely to have children with a high hyperactivity score on the SDQ (10.1% of boys born to light drinkers had a high score compared

to 13.4% born to non-drinkers. For girls, the figures were 5.5% vs. 7.6%). However, when the calculations were fully adjusted for all potential confounding factors, these differences were no longer statistically significant. No other emotional or behavioural domains on the SDQ showed a statistically significant relationship with light drinking in the mother.

The cognitive assessment found that children born to light drinkers had slightly higher mean (average) cognitive test scores compared with those born to mothers who did not drink during pregnancy. Boys had higher scores in domains of naming vocabulary (a score of 58 in the light drinking group compared to 55 in the group who did not drink in pregnancy), picture similarities (56 versus 55 respectively) and pattern construction (52 versus 50).

Girls born to light drinkers had slightly higher scores for naming vocabulary (58 versus 56) and pattern construction (53 versus 52) compared to girls born to mothers who did not drink during pregnancy. When fully adjusted for confounders, differences remained statistically significant only for boys, in the domains of naming vocabulary and picture similarities.

How did the researchers interpret the results?

The researchers conclude that at age five, children born to mothers who drank 1 to 2 units per week or per occasion during pregnancy were not at increased risk of clinically relevant behavioural difficulties or cognitive deficits compared with children of mothers who did not drink during pregnancy.

A limitation of the study is that the mothers' alcohol consumption during pregnancy was assessed retrospectively when the baby was nine months old. This may introduce some recall inaccuracy. Some mothers who drank might also feel that reporting their true level of drinking might reflect badly on them. Also, most of the mothers were drinkers normally, but stopped during pregnancy; it may be difficult to say when drinking actually stopped and how this related to the time of conception.

Most of the women in this study did not drink during pregnancy. Those who did, mostly drank small amounts only. As such, only a small number of women were classified as heavy drinkers, and the study may not have reliably detected the effects of heavier drinking during pregnancy.

One of the study's strengths is that it considered a wide range of potential maternal and child confounders, including medical, lifestyle, socioeconomic, environmental and psychosocial factors. However, there is likely to be an interaction between many of the different factors that can influence a child's development, and it is hard to pick these apart and remove their effects entirely.

Ross McCormick, PhD, MSc, MBChB, Associate Dean, Faculty of Medical and Health Sciences at the University of Auckland and ISFAR member comments, "The authors make a valiant attempt looking at maternal factors, child birth weight, socioeconomic factors, parenting factors, etc. Women in the light drinker group during pregnancy were more advantaged than all other categories including the 'not in pregnancy' group. As the authors state, it is likely that social circumstances are responsible for the relatively low rates of difficulties in the group of children whose mothers were light drinkers. However, having said that, this study did not establish any correlation between light drinking during pregnancy and subsequent five-year-old child behavioural difficulty or cognitive impairment. This is consistent with much recent literature where the attempts to find an alcohol dose where intrauterine exposure to alcohol begins to produce fetal alcohol syndrome-like signs has never been particularly convincing. Given that moderate people do moderate things, what is fascinating is that it would have been thought that the 'moderate people' in this study would be likely to adhere to the commonly accepted advice that it is unwise to drink in pregnancy. The socio-economically advantaged women in this study who were light drinkers obviously did not adhere to this advice."

Erik Skovenborg, MD, specialising in family medicine and AIM Council member comments that "the association between light drinking during pregnancy and poor outcomes in the child is loaded with emotions and difficult to define precisely from observational data. A clinical trial to seek a "safe" level of drinking during pregnancy is not a possibility". He adds: "As an example of the difficulties in providing balanced guidelines for drinking in pregnancy, in Denmark the official advice has changed three times in the past 20 years: from no alcohol allowed, to up to 5 drinks/week, to no alcohol allowed."

Does the science back up the study findings?

Scientific data continue to show that high intake of alcohol during pregnancy adversely affects the fetus, and can lead to very severe developmental or other problems in the child known as Fetal Alcohol Syndrome (FAS). However, most research shows little or no effects of occasional or light drinking by the mother during pregnancy. This is considered important as according to Royal College of Obstetricians and Gynaecologists (RCOG), it is estimated that 20% of women do not realise they are pregnant during the first three weeks of gestation. The RCOG state: *There is an increasing body of evidence suggesting harm to the fetus from alcohol consumption during pregnancy. While the safest approach may be to avoid any alcohol intake during pregnancy, it remains the case that there is no evidence of harm from low levels of alcohol consumption, defined as no more than one or two units (8g) of alcohol once or twice a week.*

International Scientific Forum on Alcohol Research Conclusions

Scientific data continue to indicate that higher intake of alcohol during pregnancy adversely affects the fetus, and could lead to very severe developmental or other problems in the child. However, most recent publications show little or no effects of occasional or light drinking by the mother during pregnancy. They also demonstrate how socio-economic, education, and other lifestyle factors of the mother may have large effects on the health of the fetus and child; these must be considered when evaluating the potential effects of alcohol during pregnancy.

The present large, well-done study from the UK found no evidence of adverse effects from light drinking by the mother during pregnancy in terms of behavioral and emotional problems or cognitive dysfunction in the children at age 5 years. We conclude that while drinking during pregnancy should not be encouraged, there is little evidence to suggest that an occasional drink by the mother is associated with harm.

How common is FAS?

The RCOG paper Alcohol Consumption And The Outcomes Of Pregnancy states 'Children exposed to alcohol in utero may suffer from serious cognitive effects and behavioural problems as well as alcohol-related changes in brain structure which can be identified by modern imaging techniques. Brain mapping based on MRI analysis suggests disproportionate reduction in white matter compared with grey matter in these individuals. Children with fetal alcohol syndrome have a much smaller brain size, with specific reductions in the size of the caudate nucleus, thinning or agenesis of the corpus callosum and reduced size of the hippocampus, and cerebellum. Positron emission tomography studies show that subcortical brain regions may be especially susceptible to prenatal alcohol insult.

The estimated incidence of the full-blown fetal alcohol syndrome is 0.6/1000 live births based on detailed studies performed in Canada and the incidence of fetal alcohol spectrum disorders is suggested to be 9/1000 live births in studies from

Key Points

- *Fetal alcohol syndrome is the name given to a combination of features diagnosed in the baby after birth. It is caused by a woman drinking heavily throughout pregnancy.*
- *Alcohol can have other effects on the baby which are known as fetal alcohol spectrum disorder (FASD).*
- *When a woman drinks during pregnancy, the alcohol passes from her blood stream through the placenta and into the baby's blood stream.*
- *The safest approach in pregnancy is to choose not to drink at all.*
- *Small amounts of alcohol during pregnancy (not more than one to two units, not more than once or twice a week) have not been shown to be harmful.*
- *Regular binge drinking, around conception and in early pregnancy, is particularly harmful to a woman and her baby.*
- *Heavy drinking is often related to unprotected sexual intercourse, which may result in an unplanned pregnancy and sexually transmitted infection.*
- *It is important that you share information with your healthcare professional(s) about your drinking. Depending on your situation, your healthcare professional will then be able to offer you appropriate information and support.*

NHS choices response to the research:

This research does not affect the official UK guidance, which is that alcohol should be avoided during the first three months of pregnancy. Beyond three months, a safe level of alcohol has not been firmly established, though the guidance states there is no evidence of harm from drinking a maximum of 1-2 units once or twice a week

the USA. Abel et al[2]. suggested that these North American prevalence rates were up to 20 times higher than those seen in Europe and that African-American or Native American background and low socio-economic status predict a ten-fold increase in fetal alcohol syndrome. They also demonstrate how socio-economic, education, and other lifestyle factors of the mother may have large effects on the health of the fetus and child; these must be considered when evaluating the potential effects of alcohol during pregnancy.

Reference: Kelly YJ, Sacker A, Gray R, Kelly J, Wolke D, Head J, Quigley MA. Light drinking during pregnancy: still no increased risk for socioemotional difficulties or cognitive deficits at 5 years of age? J Epidemiol Community Health 2010; doi:10.1136/jech.2009.103002

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Sources:

1.Pediatrics 2010;126;e843-e850; originally published online Sep 27, 2010; Elizabeth Geelhoed, Elizabeth J. Elliott and Carol Bower Colleen M. O'Leary, Natasha Nassar, Jennifer J. Kurinczuk, Nicholas de Klerk, Prenatal Alcohol Exposure and Risk of Birth Defects

http://www.pediatrics.org/cgi/content/full/126/4/e843

2. Neurotoxicol Teratol 1995:17:437–43) Abel EL. An update on incidence of FAS: FAS is not an equal opportunity birth defect.

Official National Institite Clinical Excellence guidance

NICE antenatal care guidance (CG62, published June 2010) gives the current recommendations regarding alcohol in pregnancy for the UK:

- *Pregnant women and women planning a pregnancy should be advised to avoid drinking alcohol in the first three months of pregnancy because it may be associated with an increased risk of miscarriage.*
- *If women choose to drink alcohol during pregnancy they should be advised to drink no more than 1 to 2 UK units once or twice a week (1 unit being equivalent to half a pint of ordinary strength lager or beer, or one shot [25 ml] of spirits. One small [125 ml] glass of wine is equal to 1.5 UK units). Although there is uncertainty regarding a safe level of alcohol consumption in pregnancy, at this low level there is no evidence of harm to the unborn baby.*
- *Women should be informed that getting drunk or binge drinking during pregnancy (defined as more than 5 standard drinks or 7.5 UK units on a single occasion) may be harmful to the unborn baby.*

Royal College of Obstetricians and Gynaecologists

The consumption of alcohol offers no benefits in relation to the outcomes of pregnancy and alcohol is both teratogenic and fetotoxic in the human. Under reporting of alcohol consumption is thought to be widespread and the effects of alcohol consumption in the offspring may not always be recognized. It is important for GPs, obstetricians and midwives to devise ways of identifying women who may suffer from problem-drinking during or before any pregnancy, at a time when potentially beneficial interventions can be offered. On the other hand, there is considerable doubt as to whether infrequent and low levels of alcohol consumption during pregnancy convey any long-term harm