Coffee and pregnancy

A moderate reduction in caffeine intake in the second half of pregnancy has no effect on birth weight or length of gestation

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Some like their coffee black, and some like it white, but whether it is wise to drink coffee in pregnancy is not a black and white issue. Many observational studies have suggested that it is unwise to drink coffee (or indeed any drink containing caffeine) during pregnancy. Some papers report that consumption of more than modest amounts of caffeine during pregnancy may increase the likelihood of infertility, birth defects, miscarriage, stillbirth, premature birth, fetal growth restriction, and cot death. Each such paper has spawned a flurry of further papers reporting a failure to find any such association. One recent review article cited more than 200 papers.[1] The problem is that women who drink more coffee than most nearly always differ from other pregnant women in other ways too. They are more likely to smoke, for one thing, which makes it difficult to decide what is causing what.[2]

In this week's *BMJ*, we finally have an interventional study by Bech and colleagues[3] showing that babies born to mothers who drink moderate amounts of coffee do not weigh less than those whose mothers' drink decaffeinated coffee in the second half of pregnancy (as 12 observational studies had previously suggested[2]).

Caffeine crosses the placenta easily, and the speed with which it is then metabolised declines during pregnancy. Exposure to artificial boluses of caffeine can certainly damage the fetal rat, but only when the amount is 10 times higher than any human would ever ingest, even if they drank nothing but the most potent caffeinated beverage in a dose high enough to render them ill.[1] A widely quoted paper in the *Lancet* in 1988 suggested that "women who consumed more than the equivalent of one cup of coffee per day were half as likely to become pregnant per cycle as women who drank less."[4] However, the nine studies that have since looked into this unexpected finding found little evidence to support this conclusion once other influences such as maternal age, smoking, and parity were taken into account.[2]

Early miscarriage is certainly more common in women who drink substantial amounts of coffee in early pregnancy.[5] However, we do not know whether continuing high consumption puts the fetus at risk, or whether sustained consumption is simply a marker for a pregnancy that is already doomed, because an increased aversion to coffee is, along with nausea and vomiting, a consistent early feature of a healthy pregnancy.[6]

The report of a dose dependent relation between intake of caffeine before pregnancy and the risk of miscarriage suggests that a very high intake of caffeine prenatally may be unwise, but the adjusted odds ratio when the 186 women taking less than 75 mg a day were compared with the 230 taking more than 900 mg a day was only just significant (1.72; 95% confidence interval 1.00 and 2.96).[7]

Caffeine consumption does not make preterm birth more likely,[2 8] and the only report of a link between consumption in late pregnancy and cot death could not be replicated.[2] However, a paper in the *BMJ* in 2003 did report an excess of fetal death in the second half of pregnancy in Danish women who said at booking that they drank eight or more cups of coffee a day. So too did a subsequent study of women who said they drank four or more cups a day that used data from a national data set.[9] A recent study in Uruguay, which did not fully adjust for smoking status, had similar findings.[10]

Estimating fetal exposure is more difficult than is thought because cup size and the way the drink is prepared vary more than is realised. The caffeine content of different brands of tea and coffee also varies, and these drinks are not the only important dietary sources of caffeine (table).[11 12] In addition, the speed with which caffeine is cleared by the liver varies greatly. Clearance occurs more rapidly in smokers and is affected by a range of genetic polymorphisms affecting cytochrome P450 1A2.[11]

The US Food and Drug Administration has been advising women to avoid or limit their intake of caffeine in pregnancy since 1980, and the UK Food Standards Agency issued slightly more nuanced advice in 1984, which it updated in October 2001. The randomised controlled trial by Bech and colleagues[3] should lead to revision of this advice, at least with regard to birth weight. But we now need a similar, larger trial to show whether observational studies are right in suggesting that a high intake of caffeine increases the risk of stillbirth.

Common drinks and foods and their typical caffeine content

Drink or food	Caffeine content
Cola and other "energy" drinks	12-60 mg/300 ml can
Bottled iced tea	15-25 mg/300 ml bottle
Brewed tea (non-herbal)*	20-50 mg/cup†
Mate (South American tea)	30-60 mg/cup
Decaffeinated coffee	4-8 mg/cup
Instant coffee	40-140 mg/cup
Brewed coffee	60-200 mg/cup
Chocolate	5-35 mg/50 g bar

*Twenty per cent more than this for tea brewed for more than 3 minutes.
†Taken to be a 300 ml (~10 fl oz) cup.

References are on bmj.com