

## Study shows link between caffeine and miscarriage

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High doses of daily caffeine during pregnancy – whether from coffee, tea, caffeinated soda or hot chocolate -- cause an increased risk of miscarriage, according a new study by the Kaiser Permanente Division of Research. The study controlled, for the first time, pregnancy-related symptoms of nausea, vomiting and caffeine aversion that tended to interfere with the determination of caffeine’s true effect on miscarriage risk. The research appears in the current online issue of *American Journal of Obstetrics and Gynecology*.

While previous research showed a link between caffeine consumption and miscarriage, this is the first study to thoroughly control for morning sickness, which typically causes many women to avoid caffeine, explained De-Kun Li, MD, Ph.D., an investigator with the Kaiser Permanente Division of Research and lead investigator of the study. “This study strengthens the association between caffeine and miscarriage risk because it removes speculation that the association was due to reduced caffeine intake by healthy pregnant women,” Li said.

To address that speculation, the study, which looked at 1,063 pregnant Kaiser Permanente members in San Francisco from October 1996 through October 1998, examined the caffeine effect among women who never changed their pattern of caffeine consumption during their pregnancy. Kaiser Permanente is the nation’s largest health plan with 8.7 million members, 416 medical offices and 32 hospitals in nine states and the District of Columbia.

Women who consumed 200 mg or more of caffeine per day (two or more cups of regular coffee or five 12-ounce cans of caffeinated soda) had twice the miscarriage risk as women who consumed no caffeine, said Li. Women who consumed less than 200 mg of caffeine daily had more than 40 percent increased risk of miscarriage.

The increased risk of miscarriage appeared to be due to the caffeine itself, rather than other possible chemicals in coffee because caffeine intake from non-coffee sources such as caffeinated soda, tea and hot chocolate showed a similar increased risk of miscarriage.

“The main message for pregnant women from these findings is that they probably should consider stopping caffeine consumption during pregnancy because this research provides clearer and stronger evidence that high doses of caffeine intake during pregnancy can increase the risk of miscarriage,” said Li.

The reasons that caffeine can harm a fetus have been suspected for some time. Caffeine crosses through the placenta to the fetus, but can be difficult for the fetus to metabolize because of the under-developed metabolic system. Caffeine also may influence cell development and decrease placental blood flow, which may lead to an adverse effect on fetal development.

Women in the study were asked about their intake of caffeinated beverages as well as the type of their drinks, timing of initial drink, the frequency and amount of intake, and whether they changed consumption patterns since becoming pregnant. Sources of caffeine included coffee, tea, caffeinated soda and hot chocolate.

Researchers estimated the amount of caffeine intake in various types of beverages using the following conversion: For every 150 milliliters of beverage, 100 milligrams for caffeinated coffee, 2 milligrams for

decaffeinated coffee, 39 milligrams for caffeinated tea, 15 milligrams for caffeinated soda, and 2 milligrams for hot chocolate. Information on other potential risk factors for miscarriage -- including maternal age, race, education, household income marital status, smoking, alcohol consumption, hot tub use, exposure to magnetic fields during pregnancy, and symptoms related to pregnancy such as nausea and vomited -- also were collected during the in-person interview and controlled during analyses. Pregnancy outcomes up to 20 weeks of gestation were determined for all participants.

Overall, 172 of women in the study (16.18 percent) miscarried. Whereas 264 women (25 percent) reported no consumption of any caffeine containing beverages during pregnancy, 635 women (60 percent) reported 0-200 mg of caffeine intake per day, and 164 women (15 percent) had 200 mg or more of daily caffeine consumption.

Critics had maintained that the association was not so much a high dose of caffeine intake that increased the risk of miscarriage, but that women with a healthy pregnancy are more likely (than those about to miscarry), to reduce their caffeine intake due to nausea, vomiting, and aversion to caffeine, Li said. "Therefore, the critics claimed that the observed association was a result of reduction of caffeine intake by healthy pregnant women," he said.

So what's a fatigued mom-to-be supposed to do for her daily energy jolt?

"If you definitely need caffeine to get you going, try keeping it to one cup or less a day. Avoiding it may be even better. Consider switching to decaffeinated coffee and other decaffeinated beverages during your pregnancy," said Tracy Flanagan, MD, Director of Women's Health, Kaiser Permanente Northern California. "Learn to perk up instead with natural energy boosts like a brisk walk, yoga stretches, snacking on dried fruits and nuts."

Source: Edelman PR

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