

# Study links high cholesterol levels to lower fertility

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High cholesterol levels may impair fertility in couples trying to achieve a pregnancy, according to a study by researchers at the National Institutes of Health, the University at Buffalo (New York), and Emory University in Atlanta.

Couples in which each partner had a high [cholesterol](#) level took the longest time to reach pregnancy. Moreover, couples in which the woman had a [high cholesterol](#) level and the man did not also took longer to achieve pregnancy when compared to couples in which both partners had [cholesterol levels](#) in the acceptable range.

"We've long known that [high cholesterol levels](#) increase the risk for heart disease," said the study's first author, Enrique Schisterman, Ph.D., chief of the Epidemiology Branch at the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), the institute that led the study. "In addition to safeguarding their health, our results suggest that couples wishing to achieve pregnancy could improve their chances by first ensuring that their cholesterol levels are in an acceptable range."

The study findings were published online in *JCEM, The Journal of Clinical Endocrinology and Metabolism*.

Cholesterol is a waxy, fat-like substance found in all cells of the body. It's used to make a number of substances, including hormones and vitamin D. High [blood cholesterol levels](#) typically do not cause any signs

or symptoms, but can increase the chances for heart disease.

For the current analysis, the researchers studied couples who were not being treated for infertility but who were trying to conceive a child. The researchers enrolled 501 couples from four counties in Michigan and 12 counties in Texas from 2005 to 2009. The couples were part of the Longitudinal Investigation of Fertility and the Environment (LIFE) study, established to examine the relationship between fertility and exposure to environmental chemicals and lifestyle. The women taking part in the study ranged from 18 to 44 years of age, and the men were over 18. The couples were followed until pregnancy or for up to one year of trying.

Study volunteers provided blood samples, which the researchers tested for free cholesterol. The measurement of free cholesterol is used in research, and differs from the [cholesterol test](#) given in doctors' offices. Cholesterol tests administered by physicians measure the cholesterol subtypes: HDL cholesterol, LDL cholesterol and triglycerides. For the study, Dr. Schisterman and his colleagues relied on a test to measure the total amount of cholesterol in the blood, but which did not distinguish between cholesterol subtypes. The researchers theorized that blood cholesterol might be related to fertility as the body uses cholesterol to manufacture sex hormones like testosterone and estrogen.

The researchers calculated the probability that a couple would achieve pregnancy by using a statistical measure called the fecundability odds ratio (FOR). The measure estimates couples' probability of pregnancy each cycle, based on their serum cholesterol concentrations.

The researchers found that on average, those couples in which the female did not become pregnant during the study duration had the highest free cholesterol levels. In general, high free cholesterol levels were correlated with longer times to pregnancy and lower fecundability

odds ratios. Couples in which the female had a high cholesterol level and the male did not also took longer to achieve pregnancy when compared to couples in which both partners had cholesterol levels in the acceptable range. In their analysis, the study authors accounted for potential racial differences, as well as differences by age, body mass index, and education.

Among study participants, Hispanic males had the highest free cholesterol levels.

Standard cholesterol testing by physicians typically evaluates cholesterol scores in terms of the balance of HDL and LDL cholesterol, with a low ratio of HDL to LDL cholesterol signifying an increased risk for heart disease. Although the researchers did not evaluate the ratio of these two cholesterol subtypes, Dr. Schisterman said that high free cholesterol levels are likely to indicate an unfavorable HDL to LDL ratio.

"From our data, it would appear that high cholesterol levels not only increase the risk for cardiovascular disease, but also reduce couples' chances of pregnancy," Dr. Schisterman said.

**More information:** The study, "Lipid Concentrations and Couple Fecundity: The LIFE Study," was published online, ahead of print.

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