

Genes: An extra hurdle to quitting smoking during pregnancy?

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Researchers from the Peninsula Medical School and the University of Bristol, using data from the Avon Longitudinal Study of Parents and Children and the Exeter Family Study of Childhood Health, have identified a common genetic variant that explains why some women may find it more difficult to quit smoking during pregnancy.

Their paper, "A common genetic variant in 15q24 nicotinic acetylcholine receptor gene cluster (CHRNA5-CHRNA3-CHRNA4) is associated with a reduced ability of women to [quit smoking in pregnancy](#)", is published in *Human Molecular Genetics*.

Maternal [smoking](#) during pregnancy is associated with low birth weight and problems at birth. Statistically, women are more likely to quit smoking during pregnancy than at any other time in their lives, but some pregnant women continue to smoke despite a strong and direct public health message.

The study tested whether a genetic variant that is related to greater cigarette consumption was also responsible for a reduced likelihood of quitting smoking during pregnancy.

The research team studied 7,845 women of European descent from the South West of England. Using 2,474 women who smoked regularly immediately before they became pregnant, the association between the variant and smoking cessation and smoking quantity during pregnancy was analysed.

When asked about smoking in the first trimester of pregnancy, 28% of the women said they had given up. However, this figure was only 21% in the group of women with two copies of the smoking addiction gene, whereas in women with two copies of the non-addictive gene, 31% said they had quit.

Asked again in the third trimester, 47% of women with two copies of the non-addictive gene said they had stopped smoking, compared with only 34% of women with two copies of the smoking addiction gene.

Dr. Rachel Freathy from the Peninsula Medical School commented: "Pregnant women are under considerable health and social pressure to stop smoking, and quitting in such circumstances is influenced by a number of factors including the age of the expectant mother, their education and whether or not their partners smoke. However, we were keen to investigate whether the genetic variant that influences increased cigarette consumption also had a role to play as an extra hurdle to quitting smoking during pregnancy, and our study suggests that it does."

Dr. Freathy added: "However, we would not wish our findings to be used as an excuse to avoid giving up smoking during pregnancy. It is clear from our study that a considerable proportion of [women](#) did manage to quit smoking, despite inheriting two addiction copies of the gene. We stress the importance for all expectant mothers who smoke to make use of the resources available from their GP surgeries, local PCTs and pharmacists in their bid to quit smoking, for the benefit of their health and the health of their unborn children."

Professor Tim Frayling, a senior author on the paper, added "There are parallels between our results and those of genetic studies which have implicated appetite-regulatory pathways in obesity. Both quitting smoking and obesity are thought by many scientists, health care professionals and policy makers to be a matter of "self-control" and have

much social stigma attached. The identification of common genetic variants may help a little to emphasize that physiology plays an important role in 'socially unacceptable' phenotypes."

Source: The Peninsula College of Medicine and Dentistry

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