

Shaving cream might harm sperm: study

Phthalates found in personal-care products

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Scientists are warning men the compounds in their shaving cream may be causing subtle changes in their sperm, reducing their chances of becoming fathers.



The problem, they say, is a ubiquitous class of chemicals called phthalates found in, among other things, such personal-care products as body sprays, colognes, shampoo and shaving cream, as well as in food packaging (most recently in some boxed mac 'n' cheese products).

Phthalates appear to affect the DNA in sperm cells, not by changing the genes themselves, but by attaching little chemical “tags” that stick to some parts of a sperm cell’s DNA.

This can make genes more or less active than usual during sperm production, a change known as an epigenetic effect.

“There has always been this heavy concern in the past with expectant moms not smoking and not drinking, for example, to protect the fetus,” lead author Richard Pilsner, an environmental health scientist at the University of Massachusetts Amherst, said in a statement.

“In this study, we see that dad’s environmental health contributes to reproductive success.”

Spermatogenesis — sperm production — is a 72-day process, he added. “Our study shows that this preconception time-period may represent an important development window by which environmental exposures may influence sperm epigenetics, and in turn, early life development,” Pilsner said.

“So, in the same way mom needs to be careful, dad also needs to.”

There’s long-standing evidence of sperm changes through epigenetics, but phthalates appear to be a new source and may be contributing to an apparent global slump in sperm counts.

In July, researchers reported a 52.4-per-cent drop in sperm concentration, and a 59.3-per-cent decline in total sperm count among men from Western countries (North America, Europe, Australia and New Zealand), with no sign of a levelling-off in recent years.

Phthalates are known hormone disrupters and are “pervasive environmental contaminants,” Pilsner and his co-authors wrote in the journal *Human Reproduction*. The chemicals have been linked with decreased sperm counts and motility, and increased sperm DNA damage. They have also been known to decrease testosterone in early fetal life at the time the genitals are forming.

The new study involved 48 men undergoing IVF with their female partners. Most were white, over age 30 and overweight; four were current smokers. Although all were seeking fertility treatment, only 12 had been diagnosed with male factor infertility. During IVF, eggs are retrieved from the woman, mixed with her partner’s sperm and the resulting embryos transferred back to her uterus.

Each of the men provided a semen sample the same day of egg retrieval. They also provided a urine sample, which was analyzed for eight different phthalate concentrations. The researchers also analyzed DNA extracted from sperm left over after IVF.

After adjusting for age, BMI and whether or not the men smoked, the team found higher concentrations of phthalate metabolites were associated with sperm DNA methylation on 131 regions of a sperm cell’s genome, notably genes related to growth, development and “basic cellular function,” the team writes.

With methylation, molecules attach themselves to our DNA, acting like “dimmer” switches, usually lowering the activity of genes. These changes can be passed down to our children.

Most of the phthalates were known, or suspected testosterone blockers.

The phthalate-associated changes in sperm DNA also appeared to affect the quality of blastocysts, or days-old embryos. That suggests that could affect early-life development.

The researchers warn the study sample was modest and that more research is needed to replicate their findings.

Still, “the message is, if you’re planning on getting pregnant, men may have an environmental responsibility prior to conception,” Pilsner said.