

Women, quitting smoking for New Years? Time it with your period

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Credit: Vera Kratochvil/public domain

The menstrual cycle appears to have an effect on nicotine cravings, according to a new study by Adrianna Mendrek of the University of Montreal and its affiliated Institut universitaire en santé mentale de Montréal.

"Our data reveal that incontrollable urges to smoke are stronger at the

beginning of the follicular phase that begins after menstruation. Hormonal decreases of oestrogen and progesterone possibly deepen the withdrawal syndrome and increase activity of neural circuits associated with craving," Mendrek said. She believes that it could therefore be easier for women to overcome abstinence-related withdrawal symptoms during the mid-luteal phase, i.e. after ovulation, when their levels of oestrogen and progesterone are elevated, but psycho-social factors cannot be excluded, as tested women were explicitly asked in the study about the phase of their [menstrual cycle](#). "Taking the menstrual cycle into consideration could help women to stop smoking," Mendrek said. The findings were published in *Psychiatry Journal*.

The researchers came to their conclusion by working with 34 men and women who each smoke more than 15 cigarettes a day. They filled out questionnaires and had undergone MRI brain scans, which were taken while they looked at either neutral pictures or pictures designed to make them want to smoke. The women were scanned twice - once at the beginning of the follicular phase of their menstrual cycle and then again at the mid-luteal phase. Oestrogen and progesterone levels were also measured.

Fewer than one ex-smoker in ten manages to stay that way after a year, and women who smoke have a harder time quitting than men, even when they smoke the same amount. In drug studies involving rodents (nicotine and other substances), scientists have observed sex differences. "Female rats become addicted more quickly, and are willing to work harder for the same quantity of dose," Mendrek explained. This observation led Mendrek's team to conclude that females are perhaps at higher risk of addiction, and sex hormones could be the reason why.

The situation is much more difficult to unravel when it comes to humans. Each smoker is unique in terms of his or her tobacco use, personal history, personality, social situation and environment. "Stress,

anxiety and depression are probably the more important factors to take into consideration," Mendrek said. "Having said that, amongst young people, tobacco use by women is unfortunately increasing."

The researchers led their study with two specific objectives in mind. The first was to check if there are gender differences in the neuronal circuits linked to craving. The second was to determine if the electrocortical changes associated with nicotine withdrawal fluctuate in tandem with hormone variations.

No significant differences were found between the men and [women](#) insofar as the neuronal circuits were concerned. However, the activation patterns for the females varied considerably over their menstrual cycle. Certain areas of their frontal, temporal and parietal cortex revealed greater activation during the follicular phase, while limited activation was recorded in the hippocamp during the luteal phase.

Mendrek hopes her conclusions will encourage researchers to pay greater attention to biology when designing their research protocols. "A greater knowledge of the neurobiological mechanisms governing addiction should enable us to better target treatment according to the smokers profile," she said.

Provided by University of Montreal

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