ASHES, Vol. 15(1) – Pain in quitting: How smoking relates to pain sensitivity

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Last year, The DRAM reviewed a study suggesting that experiencing pain can increase a person's desire and intent to drink. Similarly, people experiencing chronic pain are significantly more likely to be diagnosed with nicotine dependence. It is thought that these individuals might smoke in an attempt to manage symptoms of pain. This week, ASHES reviews a study by Joseph Ditre and colleagues that explored whether abstaining from smoking increases pain sensitivity.

What is the research question?

Among current smokers, does abstaining from smoking increase pain sensitivity?

What did the researchers do?

The researchers recruited 165 smokers from a local community.[1] They randomized participants to either abstain from smoking for 12 to 24 hours (i.e., deprivation condition; n = 74) or continue smoking until the next study session (i.e., continued-smoking condition; n = 63).[2] During the next study session, participants responded to questions about nicotine withdrawal symptoms (e.g., irritability, trouble concentrating) during the previous 24 hours. The researchers then induced pain by applying capsaicin (i.e., a mixture of chili pepper and alcohol that temporarily sensitizes skin to heat) to a small area of the participants' forearms. The researchers assessed participant pain intensity[3] every five minutes for 30 minutes after applying capsaicin. They used analysis of variance to assess differences in pain responses across conditions, and then used correlations to assess how pain intensity relates to nicotine withdrawal symptoms.

What did they find?

During every pain assessment, participants assigned to the deprivation condition reported significantly greater pain intensity than those in the continued-smoking condition (see Figure). Among all participants, the more intense the pain following capsaicin application, the more nicotine withdrawal symptoms

participants reported during the previous 24 hours–especially impatience, sleep problems, increased appetite, and restlessness.

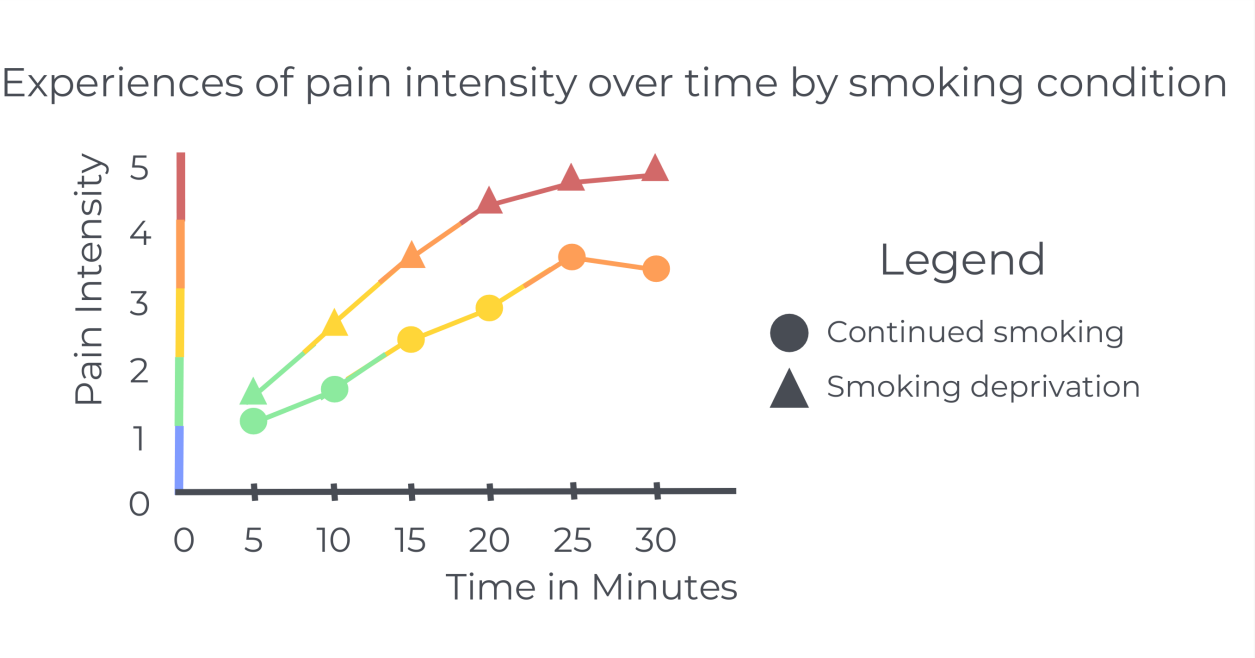


Figure. Experiences of pain intensity over time following capsaicin application by smoking condition. Click image to enlarge.

Why do these findings matter?
Abstaining from smoking not only produced withdrawal symptoms; it also increased pain sensitivity. This might make it especially hard for people currently experiencing pain to quit smoking. These people need to anticipate that pain sensitivity and symptoms like insomnia might make it harder to quit and plan ways to cope, such as with promising new therapeutic interventions.

Every study has limitations. What were the limitations in this study?
People experiencing pain as a result of injury might respond differently to extended smoking abstinence than those experiencing pain induced artificially by capsaicin. This study assessed only people who smoke greater than 14 cigarettes per day, which limits our ability to understand how pain relates to withdrawal among people with lighter smoking habits.

For more information:
SmokeFree offers tools and tips for quitting and maintaining abstinence from smoking tobacco. For additional tools, please visit the BASIS Addiction Resources page.

— Pat Williams

What do you think? Please use the comment link below to provide feedback on this article.

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[1] Participants were eligible to participate in this study if they were between 18 and 65 years old, currently smoking greater than 14 cigarettes per day, and able to speak and read english. Participants were excluded if they were currently attempting to change their smoking habits, experiencing chronic pain, treating pain with prescription medication, or experience a pepper allergy. Participants were also excluded if they did not attend both sessions of the study or were non-compliant with smoking instructions.

[2] An additional 28 participants were assigned to a deprivation condition not relevant to the current results.

[3] Pain intensity was measured on a scale of 0 to 10, where 0 = no pain and 10 = pain as bad as you can imagine.