

# Tweets indicate nicotine dependence, withdrawal symptoms of JUUL users

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## What Twitter can teach us about the side effects of JUULing

JUUL users tweet about symptoms of nicotine dependence on Twitter—perhaps without even realizing that's what they're experiencing—finds a new research study from Pitt's Center for Research on Media, Technology, and Health.



**1,986**  
Total tweets analyzed

**1/5**  
Tweets mentioning dependence-related themes

Sidani, et al, Drug and Alcohol Dependence, August 2019.

This infographic depicts how JUUL users tweet about symptoms of nicotine dependence. Credit: Mattie Winowitch/UPMC

As e-cigarette brand JUUL continues to climb in popularity among users of all ages, University of Pittsburgh School of Medicine researchers took a unique approach to analyzing its impact by using Twitter to investigate any mention of nicotine effects, symptoms of dependence and withdrawal in regards to JUUL use.

The study revealed that 1 out of every 5 tweets mentioning JUUL identified for the analysis also referenced addiction-related themes. The full results are published in the journal *Drug and Alcohol Dependence*.

"Many news stories have reported that people are using JUUL and experiencing what sound like acute effects of nicotine exposure and symptoms of dependence," said lead author Jaime Sidani, Ph.D., assistant director of Pitt's Center for Research on Media, Technology, and Health. "We turned to Twitter to gather [real-time data](#) on what people are sharing about their JUUL use."

To complete the study, Sidani and her team of researchers created search filters within Twitter's Filtered Streams interface to collect data on all

available tweets matching the terms "[juul](#)," "juuls" and "juuling," as well as their hashtag equivalents between April 11, 2018, and June 16, 2018.

After additional narrowing of search results by implementing specific keywords, excluding commercial content and ensuring the tweets were in first-person context, a final data set of 1,986 tweets remained for final analysis by two independent coders.

Of these tweets, 21.1% were coded as being related to dependence (335 tweets), nicotine effects (189 tweets), quitting JUUL or withdrawal, or both (42 tweets). Sidani said these findings aren't surprising when considering the powerful dose of nicotine that JUUL provides. In addition, JUUL uses a nicotine salt formula, which is designed to increase the rate of absorption and create a more palatable vapor, making JUUL a more appealing option compared to other modes of nicotine delivery.

"We found many self-reported symptoms of [nicotine dependence](#)," said co-author A. Everette James, J.D., director of the Pitt Health Policy Institute and interim dean of Pitt's Graduate School of Public Health. "Because of the lack of public knowledge about the dependence risks, it makes sense that many people seemed surprised about experiencing symptoms of withdrawal when they could not use their device."

Sidani and her team hope to continue studying the social conversation surrounding JUUL and its addictive properties, as well as promote the use of Twitter and other [social media platforms](#) as analysis tools for related research topics.

"By leveraging real-time data from the Twitter platform, we can research timely health trends on an unprecedented scale," said co-author Jason Colditz, M.Ed., program coordinator at Pitt's Center for Research on Media, Technology, and Health.

"In this study, we detected candid narratives related to JUUL dependence, a relatively recent public health trend that deserves further investigation."

**More information:** Jaime E. Sidani et al, I wake up and hit the JUUL: Analyzing Twitter for JUUL Nicotine Effects and Dependence, *Drug and Alcohol Dependence* (2019). DOI: [10.1016/j.drugalcdep.2019.06.005](https://doi.org/10.1016/j.drugalcdep.2019.06.005)

Provided by University of Pittsburgh

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