

# Depression & anxiety symptoms linked to vaping nicotine and THC in teens and young adults

American Heart Association Epidemiology, Prevention, Lifestyle & Cardiometabolic Health Scientific Sessions 2023, Abstract 602

## Research Highlights:

- A study of more than 2,500 people ages 13-24 found that nicotine-only vapers, THC-only vapers and dual vapers (of nicotine and THC) were more likely to report anxiety symptoms, depressive symptoms and suicidal thoughts when compared with their peers who did not use electronic cigarettes or vape THC.
- Approximately 60% of the nicotine-only, THC-only and dual vapers self-reported that they experienced anxiety symptoms, versus about 40% of participants who never vaped. Anxiety symptoms were more frequently reported among THC-only vapers.
- Over half of the nicotine-only, THC-only and dual vapers self-reported that they experienced symptoms of depression versus 25% of non-vapers.

## Embargoed until 3 p.m. CT/4 p.m. ET, Tuesday, February 28, 2023

DALLAS, February 28, 2023 — A survey of more than 2,500 teens and young adults led by the American Heart Association found that vaping nicotine and THC, the psychoactive component in marijuana, was associated with self-reported symptoms of depression and anxiety. The study's preliminary findings will be presented at the Association's [Epidemiology, Prevention, Lifestyle & Cardiometabolic Health Scientific Sessions 2023](#), which will be held in Boston, February 28-March 3, 2023, and offers the latest science on population-based health and wellness and implications for lifestyle and cardiometabolic health.

The use of pod-based e-cigarettes has [surged](#) among youth and young adults in recent years. Previous studies have identified links between vaping and symptoms of both anxiety and depression among young adults.

“Younger people have long been vulnerable to tobacco use, may experience greater harm from nicotine and other drugs and may be targeted by tobacco advertisers and marketers,” said study author Joy Hart, Ph.D., a professor of communication at the University of Louisville in Kentucky. “E-cigarette

devices are still relatively new compared to other tobacco products, such as combustible cigarettes and pipes, so more research is needed to try to better understand the popularity of e-cigarettes, including reasons for vaping and the associated health risks among youth.”

The researchers, several of whom work for the Association, conducted an online survey among 2,505 teens and young adults, ages 13-24, to gauge mental health differences among nicotine-only vapers, THC-only vapers, dual vapers of both nicotine and THC and people who had never vaped any product. The study was focused on 1,921 people who had never vaped or were current vapers, defined as having vaped in the past 30 days. Of those participants, 562 individuals reported they had never vaped, 370 had vaped only nicotine, 159 had vaped only THC, and 830 were dual vapers of nicotine and THC.

The analysis of the participants’ survey responses found:

- Approximately 70% of the THC-only vapers and 60% of the nicotine-only vapers and dual vapers reported experiencing anxiety symptoms — such as worries, flashbacks, panic attacks and situational anxieties— within the past week, compared to about 40% of participants who had never vaped.
- Over half of the nicotine-only vapers, THC-only vapers and dual vapers reported experiencing symptoms of depression — such as difficulty engaging in or being interested in activities normally enjoyed, whether they felt that depression interfered with their ability to do the things they needed to do at work, at school or at home and whether depression interfered with their social life and relationships — within the past week, compared to 25% of non-vapers.
- More than 50% of people in all vaping groups reported having suicidal thoughts within the past 12 months, compared to only one-third of the non-users.
- About a quarter of the dual vapers and nicotine-only vapers started vaping nicotine to calm down or feel less stressed, and one-third of participants in both groups reported that they currently vaped nicotine to cope with feelings of anxiety. In contrast, about half of THC-only vapers started vaping THC and currently vaped THC to relieve anxiety symptoms.
- Around 20% of nicotine-only vapers and dual vapers started vaping to help feel less depressed and currently vaped for this reason. About one-third of THC-only vapers started vaping THC and nearly half currently vaped TCH to feel less depressed.

Dual vapers were significantly more likely than nicotine-only vapers to indicate addiction to nicotine, which was defined in this study as behavior such as waking up at night to vape. Dual vapers of nicotine and THC were also significantly more likely to say they felt less depressed after they started vaping, whereas nicotine-only vapers were more likely to report that vaping had no impact on their feelings of depression. This may be related to dual users' stronger addiction to these products, rather than the positive impacts of the products on their mental health, the researchers said.

"Although we knew that THC was commonly vaped, we were surprised to have so many dual vapers—more than double the nicotine-only vapers. Dual use may either compound the addictive nature of vaping or attract people who are more prone to addiction, as well as have an impact on symptoms of depression. These findings suggest the importance of addressing the use of THC and the need for building resilience and coping skills for teens and young adults," Hart said.

The study had limitations: the use of cross-sectional data did not allow researchers to assess whether symptoms of anxiety and depression, as well as suicidal thoughts, were caused or exacerbated by the use of the THC and nicotine vapes, or whether the existence of those symptoms had an effect on the use of the vape products; collecting online data via a web-based panel meant that participants may not be representative of all U.S. teens and young adults; and the data were self-reported.

"When better coping skills are developed, there may be fewer temptations to try to manage anxiety symptoms and similar mental health challenges through vaping, as well as better refusal skills if offered an electronic cigarette. Increased priority on more positive behaviors to alleviate tension and manage anxiety symptoms may reduce the likelihood of vaping, possible addiction and the increased risk of negative health outcomes," said Rose Marie Robertson, M.D., FAHA. Robertson is deputy chief science and medical officer of the American Heart Association, co-director of the Association's National Institutes of Health/U.S. Food and Drug Administration-funded Tobacco Center of Regulatory Science and senior author on the study. "There is also an urgent need for effective communication campaigns and educational programs to increase understanding among youth and young adults of the risks of using e-cigarettes."

Future research, Robertson said, is needed to examine the long-term connections between mental health and vaping, whether nicotine-only, THC-only or both nicotine and THC.

“This study showed the striking significance of issues with mental health in users of both nicotine vapes as well as THC vapes, and as new products continue to come on the market, I think that this is something that we will continue to see,” said Loren E. Wold, Ph.D., FAHA. Wold is assistant dean for biological health research in the College of Nursing, a professor in the Colleges of Nursing and Medicine (physiology and cell biology) at The Ohio State University and lead of the writing committee for the Association’s [2022 Statement on Cardiopulmonary Consequences of Vaping in Adolescents](#).

“These products were developed as smoking cessation tools for those that use traditional cigarettes, so I’m very curious now what the implications are with mental health in users who are using these products to help stop smoking.”

Additional co-authors are Jeffrey Willett, Ph.D.; Allison Groom, M.A.; Robyn L. Landry; Angel Bassett, M.A.; Mary Dunn, Ph.D.; Kandi Walker, Ph.D.; Thomas Payne, Ph.D.; and Anshula Kesh, M.P.H., B.D.S. Authors’ disclosures are listed in the abstract.

The study was funded by a grant from the Kaiser Permanente National Community Benefit Fund at the East Bay Community Foundation. Through the American Heart Association Tobacco Center for Regulatory Science, the Association works closely with investigators at institutions across the country to pursue research that adds to the existing knowledge about the health impacts of smoking and nicotine-related products including e-cigarettes, findings that can help inform public health and the regulation of tobacco products.

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companies, device manufacturers and health insurance providers and the Association's overall financial information are available [here](#).

### **Additional Resources:**

- Multimedia is available on the right column of release link <https://newsroom.heart.org/news/depression-anxiety-symptoms-linked-to-vaping-nicotine-and-thc-in-teens-and-young-adults?preview=c30b14f8eb24c1a3519f6e7e9e0d0513>
  - **Video interview:** Rose Marie Robertson, M.D., FAHA, senior author on the study and deputy chief science and medical officer of the American Heart Association and co-director of the Association's National Institutes of Health/U.S. Food and Drug Administration-funded Tobacco Center of Regulatory Science.
  - **Video interview:** American Heart Association volunteer expert, Loren E. Wold, Ph.D., FAHA, assistant dean for biological health research in the College of Nursing, a professor in the Colleges of Nursing and Medicine (physiology and cell biology) at The Ohio State University and lead of the writing committee for the Association's [2022 Statement on Cardiopulmonary Consequences of Vaping in Adolescents](#).
- AHA news release: [Use of e-cigarettes had negative cardiovascular effects similar to smoking cigarettes](#) (October 2022)
- AHA news release: [People who vape had worrisome changes in cardiovascular function, even as young adults](#) (October 2022)
- AHA news release: [No health benefits among adults who used both e-cigarettes and traditional cigarettes](#) (May 2022)
- AHA health information: [Quit Vaping – Quit Smoking – Quit Tobacco](#)
- AHA health information: [The Ugly Truth About Vaping](#)
- For more news from AHA EPI Lifestyle Conference 2023, follow us on Twitter [@HeartNews](#) **#EPIlifestyle23**.

The American Heart Association's EPI/LIFESTYLE 2023 Scientific Sessions is the world's premier meeting dedicated to the latest advances in population-based science. The meeting will be held **Tuesday-Friday, February 28 – March 3, 2023, at the Omni Boston Seaport in Boston, Massachusetts**. The primary goal of the meeting is to promote the development and application of translational and population science to prevent heart disease and stroke and foster cardiovascular health. The sessions focus on risk factors, obesity, nutrition, physical activity, genetics, metabolism, biomarkers, subclinical disease, clinical disease, healthy populations, global health and prevention-oriented clinical trials. The Councils on Epidemiology and Prevention and Lifestyle and Cardiometabolic Health (Lifestyle) jointly planned the

EPI/Lifestyle 2023 Scientific Sessions. Follow the conference on Twitter at **#EPIlifestyle23**.

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