



WVU research finds men more likely than women to drink while using fentanyl, meth

The behavior can exacerbate the toxic effects



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Ask almost anyone what's driving overdose deaths nowadays, and they'll likely have one answer: fentanyl.

But while the powerful synthetic opioid is certainly a driver — nearly 67% of last year's overdose deaths in Pennsylvania involved fentanyl, [per state data](#) — research from West Virginia University suggests that alcohol may be amplifying the danger, especially for men.

The study, led by Zheng Dai, assistant director of health analytics at the WVU Health Affairs Institute in Morgantown, found that although men and women use illicit substances at nearly equal rates, men are more likely to drink while using — a pattern that can exacerbate the toxic effects.

Published in May in the Journal of Studies on Alcohol and Drugs, [the study found](#) that when alcohol was part of an overdose, men were more likely to die than women. The ratio of male to female deaths rose from about 2-to-1 when alcohol wasn't involved to more than 3-to-1 when it was.

Dai was quick to point out that the data does not simply “say that alcohol leads to death.” The main takeaway from the research, he said, is that alcohol is not risk-free and that it should not be considered a safe intoxicant when paired with other substances, especially fentanyl and methamphetamine.

Deadly mixing mechanics

To understand how this plays out in the body, Mark Guy, a doctor at Allegheny Health Network's Center for Recovery Medicine who specializes in addiction medicine and substance use disorders, described how alcohol, benzodiazepines and opioids all act as central nervous system depressants — each suppressing breathing.

When combined, they don't just stack; the effect is multiplied.

“When you have alcohol on board, you may use more, use differently” in ways that can be harmful or dangerous, Guy said. “People who drink a lot slowly become less and less responsive ... their respiratory pattern becomes more problematic, and then they can just stop breathing.”

With opioids such as fentanyl, the research highlights, alcohol increases respiratory depression. Combining the two produces enhanced toxicity, which increases one's susceptibility to fatal overdose, Dai explained.

The danger isn't only chemical. Alcohol lowers inhibitions and impairs decision-making, leading people to use riskier drug combinations or doses. In that sense, alcohol acts as both a chemical and behavioral amplifier of overdose danger.

“People don't make their best decisions when they're drinking,” Guy said. “Your ability to make decisions on what to use, how to use, where to use it ... goes way down.”



(James Hilston/Post-Gazette)

Inside the data

The WVU study analyzed more than 12,000 accidental overdose deaths in West Virginia, from 2005 through early 2023. It drew on forensic research data the investigators developed in collaboration with West Virginia's Medical Examiner to determine how sex differences play a role in the deaths, Dai said.

During that timeframe, the team documented 2,057 accidental overdose deaths in the state involving alcohol and at least one other substance. Men accounted for 1,578 of those deaths, compared with 479 women.

Per capita, West Virginia has led the nation in overdose deaths since 2013, averaging almost 82 deaths per 100,000 people, according to the [latest data](#) from the Centers for Disease Control and Prevention. The next highest state is Tennessee, which averages a little more than 52 overdose deaths per 100,000 people. Pennsylvania averages about 37 deaths per 100,000.

The researchers first determined the substance most commonly involved in deaths, and fentanyl, Dai said, "is number one."

Though the postmortem data can't reveal how much alcohol was consumed

or the timing of use, Dai said the trend was unmistakable.

“The more alcohol you use, the lower judgment you have,” he said, cautioning that while alcohol is not usually the immediate cause of overdose, it heightens danger when combined with other substances.

Beyond the immediate danger

Guy said there are also risks that extend beyond accidental overdose.

While opioids generally do not cause a lot of “end-organ damage,” Guy said, they do increase the likelihood of falling unconscious, which, in turn, increases the risk of choking on one’s own vomit if the fluid is aspirated into the lungs.

In other words, dulled reflexes increase the risk of choking or lung injury.

Over time alcohol carries its own toll. “Alcohol use on a chronic basis does cause significant risk,” including increased rates of cancer, liver damage, hematoma and more.

Dai said he hopes the study’s findings will encourage more nuanced public health messaging.

“We want to educate the public that even moderate drinking is never risk-free,” he said, emphasizing that when someone uses multiple substances, even if they are prescribed by a doctor, there are significant dangers when adding alcohol to the mix.

He believes the message should fit within harm-reduction efforts: acknowledging that people may still use substances but arming them with life-saving awareness.

Looking ahead, Dai hopes to expand his analysis beyond West Virginia — a state with one of the nation’s lowest alcohol consumption rates, [per the CDC](#).

“Our speculation is that in a state with higher alcohol consumption, we should be able to find a higher male-to-female ratio,” he said.

Future research will also look at blood-alcohol concentrations in overdose victims to better quantify risk.

“Right now, we just have yes or no,” Dai said. “If we can have detailed concentration of alcohol, maybe that would be a much stronger association.”

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