Men Died of Overdose Two to Three Times More Often Than Women

More research is needed on the diverse biological, behavioral and social factors underlying sex-based differences in drug use.

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Men Died of Overdose at 2-3 Times Greater a Rate Than Women in the U.S. in 2020-2021

Men were significantly more vulnerable than women to overdose deaths involving opioid and stimulant drugs in 2020-2021, according to a new study analyzing death records data from across the United States.

The study found that men had a 2 to 3 times greater rate of overdose mortality from opioids (like fentanyl and heroin) and psychostimulants (like methamphetamine and cocaine). While it has been known that men use drugs at higher rates than women, the researchers found that this alone does not explain the gap in overdose deaths, noting that biological, behavioral, and social factors likely combined to increase the mortality risk for men.

The study, published in Neuropsychopharmacology, was led by investigators at the Icahn School of Medicine at Mount Sinai in New York City and the National Institute on Drug Abuse (NIDA), part of the National Institutes of Health.

“Though men and women are being exposed to the modern, fentanyl-contaminated drug supply, something is leading men to die at significantly higher rates. It may be that men use drugs more frequently or in greater doses, which could increase their risk of death, or there may be protective factors among women that reduce their risk of death compared to men,” said Nora Volkow, MD, director of NIDA and one of the co-authors on the study. “Understanding the biological, behavioral, and social factors that impact drug use and our bodies’ responses is critical to develop tailored tools to protect people from fatal overdose and other harms of drug use.”

In 2021, nearly 107,000 people died of a drug overdose, largely driven by potent, illicit fentanyl which now contaminates the drug supply. Data have consistently shown that the rate of drug overdose deaths is significantly higher for men than women. In addition, data suggest that men are more likely than women to use almost all types of illicit drugs.

Building on these data, researchers sought to determine the extent to which this known sex

difference in overdose mortality varies by drug, state, and age, and to investigate whether the increased rate of overdose death among men held true when controlling for higher rates of drug misuse among men compared to women.

To do so, researchers conducted a state-by-state analysis of nationally representative epidemiological data on overdose mortality among people aged 15 to 74 from 2020 to 2021 in the U.S., using the Centers for Disease Control and Prevention's Wide-ranging Online Data for Epidemiologic Research (CDC WONDER) platform. The scientists also used state-level, nationally representative data from the National Surveys on Drug Use and Health (NSDUH) to estimate and control for rates of drug misuse (taking drugs in a way not recommended by a health care provider) among men compared to women. The NSDUH is conducted annually by the Substance Abuse and Mental Health Services Administration.

For specific drugs, and after controlling for the sex-specific rate of drug misuse, the researchers found that the overall rates of drug overdose death by sex from 2020-2021 were:

- Synthetic opioids (e.g., fentanyl): 29.0 deaths per 100,000 people for men, compared to 11.1 for women
- Heroin: 5.5 deaths per 100,000 people for men, compared to 2.0 for women
- Psychostimulants (e.g., methamphetamine): 13.0 deaths per 100,000 people for men, compared to 5.6 for women
- Cocaine: 10.6 deaths per 100,000 people for men, compared to 4.2 for women

The higher overdose death rate in men was observed across the lifespan (ages 15 to 74 overall) and was consistent across states, even after accounting for other demographic factors such as household net worth.

In addition, when the authors analyzed the data by 10-year age groups, they found that for overdose deaths involving synthetic opioids like fentanyl, men had greater rates than women across each group within the entire 15 to 74 age range measured in the study. For the three other drug categories assessed, men also had greater overdose mortality rates compared to women across the lifespan, with few exceptions. Due to limited data, for heroin, the youngest and oldest age groups (age ranges 15 to 24 and 65 to 74) were excluded from analysis; for psychostimulants and cocaine, the oldest age group (age range 65 to 74) was excluded from analysis.

While researchers also found that men reported misusing drugs more than women, the magnitude of difference recorded for overdose mortality between men and women was substantially greater than the difference of reported drug misuse. For example, by comparing the data from CDC WONDER and NSDUH, the researchers found that men had a 2.8 greater rate of cocaine overdose mortality compared to women, though men only had a 1.9 greater rate of cocaine misuse compared to women.

The authors hypothesize that it is a combination of biological (e.g., men may have a greater vulnerability to the toxicity of drugs than women), behavioral (e.g. men may use these drugs in a riskier way than women), as well as other social- and gender-related factors.

“These data emphasize the importance of looking at the differences between men and women in a multilayered way,” said Eduardo R. Butelman PhD, assistant professor of psychiatry at the Icahn School of Medicine at Mount Sinai and a lead author on the study. “Moving forward, it will be important for researchers to continue to investigate how biology, social factors, and behaviors intersect with sex and gender factors, and how all of these can impact addictive drug misuse and overdose deaths.”

For more information on substance and mental health treatment programs in your area, call the free and confidential National Helpline 1-800-662-HELP (4357) or visit www.FindTreatment.gov.

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