

## **Abstract**

**Background:** Deaths related to drugs and guns have increased in the past 20 years in the United States since 2000. However, the contribution of drugs and guns to the life expectancy in the U.S. has not been studied in depth in the past. This study will aim to examine trends in drug- and firearm-related mortality, understand the age-specific patterns of mortality, and analyze the effect of drugs and guns on life expectancy in the U.S. over the last two decades.

**Methods:** This study is a cross-sectional descriptive analysis of nationally representative vital registration data from the United States of America, using data from CDC WONDER and the population data from the Census Bureau between 2000 to 2020.

**Results:** Notable increases of drug-related deaths in 30- to 40-year-olds in both men and women between 2000 and 2020 were found with a shift to the younger generation. There was a sudden increase of firearm-related deaths for 20- to 50-year-olds in men, and late teen to 40-year-olds in women in 2020. We found that guns and drugs have been increasingly shortening the life expectancy in the U.S. between 2000 and 2020, by as much as 1.67 years for men and 0.63 years and women in 2020.

**Conclusion:** The increasing trend in mortality from guns and drugs has affected the age group of 20s to 50s the most. The sudden and rapid shift in the pattern of drug- and firearm- related deaths are concerning, and an effective intervention is needed to stop this trend.

**Keywords:** mortality, life expectancy, firearm, guns, drugs, opioid, overdose