



The Association Between Cigarette and Cocaine Use and Suicidal Ideation

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Introduction

- Despite efforts to reverse suicide rates in the United States, the past two decades have seen a 35% increase (CDC, 2020). This makes suicide one of the leading causes of death in the United States (CDC WISQARS).
- Cocaine and cigarette use have both been associated with an elevated risk of suicidal behavior (Petit et al., 2012). A recent study detected cocaine in the system of 13.1% of individuals who died by suicide compared to only 4.4% in individuals who died suddenly, reflecting higher likelihood of suicide among cocaine users (Sosa et al., 2025). Additionally, one study found that among cigarette smokers, nicotine concentrations in the blood ranged from 5-56 ng/mL, and cotinine ranging from 140-2,100 ng/mL (Moriya et al., 2007). This study reflected elevated levels of cigarette use among individuals who die by suicide.
- The literature indicated that both Cigarette and Cocaine Use are independently associated with an elevated risk of Suicidal Ideation. Notably, there is a need for more research to be conducted concerning the combined effects of cigarette and cocaine use on suicide risk.

Research Questions

- Is there an independent association between Cigarette Use and Suicidal Ideation?
- Is there an independent association between Cocaine Use and Suicidal Ideation?
- Is there an elevated risk of Suicidal Ideation among individuals who have used both Cigarettes and Cocaine?

Methods

Sample

2024 National Survey on Drug Use and Health (NSDUH), a publically available dataset developed by the Center for Behavioral Health Statistics and Quality (CBHSQ)

The NSDUH dataset includes 58,633 total participants, representing the civilian, noninstitutionalized population of the United States, aged 12 or older.

Measures

- Lifetime Cocaine Use was measured with the question "Have you ever, even once, used any form of cocaine?" and was coded dichotomously in terms of the absence or presence of Lifetime Cocaine Use.
- Lifetime Cigarette Use was measured with the question "Have you ever smoked part or all of a cigarette?" and was also coded dichotomously in terms of the absence or presence of Lifetime Cigarette Use.
- Past-Year Suicidal Ideation was measured with the question "At any time in the past 12 months, did you seriously think about trying to kill yourself?" and was coded in terms of the presence or absence of past-year suicidal thoughts.

Results

Univariate

Among respondents in the NSDUH study:

- About 11% recorded having tried cocaine before
- About 57% recorded having smoked a cigarette before
- About 7% reported having had suicidal thoughts before

Bivariate

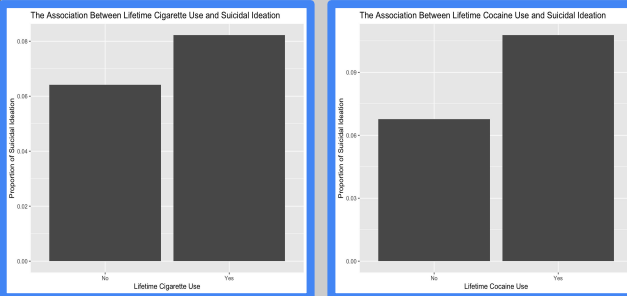


Figure 1 (Left): The Proportion of Past-Year Suicidal Ideation Among Lifetime Cigarette Use

Figure 2 (Right): The Proportion of Past-Year Suicidal Ideation Among Lifetime Cocaine Use

- Bar Charts and Chi-Squared Analyses revealed both Lifetime Cigarette Use ($X^2 = 54.7$, $p < 0.01$) and Lifetime Cocaine Use ($X^2 = 127.9$, $p < 0.01$) were each independently associated with an elevated likelihood of Past-Year Suicidal Ideation.
- Chi-Squared Analyses revealed that individuals with a history of Lifetime Cigarette Use had elevated rates of Suicidal Ideation (8%, compared to those with NO history of Cigarette Use (6%) (Figure 1).
- Chi-Squared Analyses revealed that individuals with a history of Lifetime Cocaine Use had elevated rates of Suicidal Ideation (11%, compared to those with NO history of Cocaine Use (7%) (Figure 2).

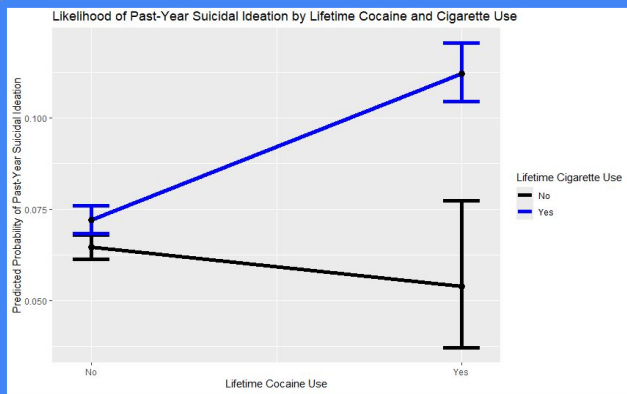


Figure 3: The Proportion of Past-Year Suicidal Ideation Among Lifetime Cocaine Use Holding Lifetime Cigarette Use Constant

- Logistic Regression Analysis revealed that Lifetime Cigarette Use significantly MODERATED the relationship between Lifetime Cocaine Use and Suicidal Ideation (O.R. = 1.97, CI: 1.34, 3.02, $p < 0.01$).
- Among those with NO history of Cigarette Use, Lifetime Cocaine Use was NOT significantly associated with Past-Year Suicidal Ideation (O.R. = 0.82, CI: 0.54, 1.19, $p = 0.344$).
- Furthermore, individuals with a history of both Lifetime Cigarette Use and Lifetime Cocaine Use had 1.97 times higher odds of reporting Past-Year Suicidal Ideation compared to those with a history of Lifetime Cigarette Use but not Lifetime Cocaine Use.
- Significantly, among those with NO history of Cocaine Use, Lifetime Cigarette Users had 1.13 times the odds of Past-Year Suicidal Ideation compared to Non-Cigarette Users. Meaning that Lifetime Cigarette Use was statistically significant even without Lifetime Cocaine Use (O.R. = 1.13, CI: 1.04, 1.22, $p < 0.01$).
- Figure 3 Reflects: Among Lifetime Cigarette Users (Blue Line), the predicted probability of Suicidal Ideation INCREASED among those with a history of Cocaine Use. Conversely, among Lifetime NON-Cigarette Users (Black Line), the predicted probability slightly DECREASED, reflecting a non-significant association.

Discussion

- Lifetime Cigarette Use MODERATED the association between Lifetime Cocaine Use and Past-Year Suicidal Ideation. Suggesting that co-occurring lifetime use of Cocaine and Cigarettes carries a greater risk of Suicidal Ideation than either substance alone.
- The non-significant association between Lifetime Cocaine Use and Suicidal Ideation among Non-Cigarette Users suggests that Cocaine Use alone may not be sufficient to elevate the risk of Suicidal Ideation, rather its risk may be dependent on co-occurring Cigarette Use.
- The significant effect of Lifetime Cigarette Use suggests that Lifetime Cigarette Use carries an independent risk for Suicidal Ideation even without the presence of Lifetime Cocaine Use.
- The Bivariate results initially suggested that both substances were independently associated with Past-Year Suicidal Ideation, however the Logistic Regression model revealed that this association is more complex than initially expected.

Limitations

- Both explanatory variables, Lifetime Cocaine Use and Lifetime Cigarette Use were measured in terms of the presence or absence ("Yes" or "No") of lifetime use, meaning they do not capture important variables such as the frequency or severity of use.
- There are several possible confounding variables (e.g. depression, anxiety, alcohol use, history of trauma) that are not present in this model and could explain part of the observed association.
- In this study substance use and Suicidal Ideation were self-reported, meaning that Self-Report Bias may exist.
- Future research is needed to determine the role of other covariates (e.g. depression, anxiety, alcohol use).
- The sample used is notably imbalanced with significantly fewer Lifetime Cocaine Users than Non-Users, contributing to the wide confidence interval in Figure 3. A larger sample could reveal more accurate results.

Implications

- These findings suggest that individuals with co-occurring Cocaine and Cigarette use represent a particularly elevated risk group for Suicidal Ideation, meaning they should be prioritized in behavioral health screenings and intervention efforts. It may be effective to integrate treatment methods that address substance use simultaneously, rather than targeting single substances in order to reduce suicide risk.

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