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Smoking and Mental Health: Associations between Adolescent E-cigarette Use and Feelings and Behaviors toward Suicide

Background: Tobacco use remains a principal cause of morbidity and mortality in the U.S., and often begins in teenage years. In the past 5 years, the use and availability of e-cigarettes has dramatically increased among adolescents; between 2017-2019, current e-cigarette use among high school students increased from 11.7% to 27.5%, driving overall tobacco use among high school students to 31.2%. E-cigarette use among adolescents promotes nicotine dependence and results in more dangerous combustible tobacco use. Previous studies have associated nicotine addiction from traditional smoking with an increased risk of suicidal behavior. Smoking has also been found to predict suicidal ideation and behavior among adolescents. Suicide is the second leading cause of death among high school-aged youths 14–18 years, and between 2009–2018, suicide rates among this age group increased from 6.0 to 9.7 per 100,000 population. Considering what is known about the psychosocial correlation between regular cigarettes and suicide, little is known about the association between feelings and behaviors toward suicide among adolescents who use e-cigarettes. This study examined the association between current adolescent e-cigarette use and suicidal feelings and behaviors, compared to non-e-cigarette users.

Methods: Using a cross-sectional study design, we examined nationally representative data from the 2019 Youth Risk Behavior Survey. Adolescents were defined as those people between 13 and 17 years of age, and among the respondents, 11,929 qualified. We defined current e-cigarette users as those who reported 1) having ever used an electronic vapor product, and 2) used an electronic vapor product in the past 30 days. The measure for feelings toward suicide was how often participants reported feeling hopeless or sad every day for two weeks, within the past twelve months. Suicide-related behavior measures included how often responders reported having 1) ever seriously considered attempting suicide, 2) made a plan to attempt suicide, 3) actually attempted suicide, and 4) needed to be treated by a doctor or nurse after an injurious suicide attempt. We used descriptive statistics to describe the sample population, and chi-square analysis to determine differences between current e-cigarette users and non-e-cigarette users.

Results: Of the 11,172 participants included in this study, the majority were female (51.33%), White (59.58%), and in 9th grade (30.34%). The average age was 16 (± 1.02), and 30.96% reported current e-cigarette use. Chi-square analysis revealed that compared to non-e-cigarettes users, current e-cigarette users were more likely to report feeling sad or hopeless, considering suicide, making a suicide plan, attempting suicide, and having to receive treatment after an injurious suicide attempt ($p < 0.05$).

Conclusion: Findings suggest that e-cigarette users are more likely to report suicide-related feelings and behaviors, compared to non-e-cigarette users. These results can inform targeted prevention and cessation interventions to discourage e-cigarette use and address mental health among adolescents. Further, longitudinal studies remain important to better understand e-cigarette use and its long-term influence on mental health.