

Vaping and Suicidality Among Adolescents: A Possible Link?

Hafiz Olatunde MD, MPH^{1*}; Alexandra Urhi MD²;
Okelue Edwards Okobi MD, MSc³; Joseph Ikekwere MD, MPH⁴

¹Jydes Family Clinic, 3550 Old Milton Pkwy, Alpharetta, GA, 30005.

²Department of Mental Health, Federal Medical Center, Asaba, Delta State, Nigeria

³Lakeside Medical Center, Belle Glade, Florida, USA

⁴Clinical Instructor, University of Illinois at Chicago, Chicago, IL 60612

Email: hafizolatunde@yahoo.com; sandyurhi255@gmail.com;
drokelue.e.okobi@gmail.com; ikejoseph20@gmail.com

*Corresponding author details: Hafiz Olatunde MD, MPH; hafizolatunde@yahoo.com

ABSTRACT

The use of E-cigarette has increased among adolescents, as it is considered to be a cheaper, better, and safer alternative to traditional cigarettes, yet there is growing evidence that nicotine found in them may have adverse effects on the mental health of the users. In this review, we describe the association between vaping and suicidality among adolescents.

Keywords: vaping; E-cigarette; suicidality; adolescents

MANUSCRIPT

Suicide remains a significant public health concern and is a leading cause of mortality among adolescents globally. There are growing calls to lower the rate. So, it's critical to discover factors associated with increased suicide risk to develop effective suicide prevention programs.

Electronic cigarette usage poses a significant problem. The popularity of e-cigarettes among teens is due to intense marketing and promotion on social media, miscommunications, and misconceptions that e-cigarettes are not dangerous [1]. Our literature review found only four studies investigating the link between vaping and suicides in adolescents. These studies are cross-sectional in design. Taken together, these four studies so far may suggest a potential link between vaping and suicidality amongst teenagers.

In their study, Chadi et al. examined the link between depressive symptoms and suicidality using e-cigarettes and marijuana among 26,821 adolescents using the Youth Risk Behavior Survey. They reported higher odds of suicidality and depressive symptoms [2]. An explanation might be that nicotine, the primary psychoactive component in e-cigarettes, stimulates the nucleus accumbens, releasing dopamine, activating the brain's intrinsic reward pathway. Hence there is a reduction in dopamine levels, which can lead to depressed or suicidal symptoms, especially in people who use nicotine regularly or are going through nicotine withdrawal [2]. The study's limitations include data sources that were de-identified and did not include socioeconomic information. Second, the data lacked tests to determine the criterion validity of sad mood and information on pre-existing mental health problems that might have mediated or moderated the link between e-cigarette and marijuana usage and mental health symptoms [2].

Third, this sample was limited to English-speaking high school students, limiting generalizability, and data were obtained by self-report, potentially adding social-desirability bias. Fourth, because the data were cross-sectional, it could not conclude the causation or temporal sequence of drug use and mental health symptoms [2].

In their study, Lee et al. investigated the association of depression and suicidality with electronic and conventional cigarette use in 62,276 South Korean adolescents using the 2017 Korean Youth Risk Behavior Web-based Survey. Results showed that dual users showed a greater incidence of depression and suicidality for both lifetime and current usage. Users who solely used e-cigarettes showed higher rates of depression and suicidality than nonusers [3]. The study's limitations are being a cross-sectional study, and the link between depression and suicidality and traditional and electronic cigarette usage does not suggest causation. Second, the poll relied solely on self-reporting. As a result, there's a chance of information or recollection bias. Finally, only one item was used to measure depression, suicidal ideation, suicide planning, and suicide attempt [3]. In Kim et al.'s study, information from 5405 middle and high school students aged 13–18 years who had used e-cigarettes was extracted from the 2016 Korean Youth Risk Behavior Web-Based Survey to investigate the link of vaping with suicidal behaviors. Results showed when compared to individuals who had not used an e-cigarette in the previous 30 days, those who had used one for 1–30 days had greater odds of suicidal thoughts, suicidal intentions, suicidal attempts, and serious attempts [4]. Limitations included an issue with the information gathered through an anonymous, self-administered online survey apart from the cross-sectional design. Some participants may have been untruthful about their vaping habits [4].

In his study, Young-Ju Jee investigated the emotional and psychological indicators according to vaping usage among 11313 middle and high school students using data from the 2015 Korea Youth Risk Behavior Web-based Survey (KYRBS) [5].

Results showed that students who had used e- cigarettes planned to commit suicide within the last 12 months, which was statistically significant ($\chi^2=10.652$, $p=.001$), while students who had used e-cigarettes attempted to commit suicide within the previous year 12 months, which was also statistically significant ($\chi^2=9.638$, $p=.002$) [5].

Interestingly these findings are novel and highlight the potential for the link between vaping and suicidal behavior in adolescents. These persistent findings in teenagers, as well as a slew of case reports tying vaping to suicide, are cause for concern. While the biological mechanisms to explain the link between vaping and suicidality remain unknown, these results suggest exciting directions for future research. In summary, more prospective studies with longitudinal design are needed as this might help mitigate the negative impact of adolescent suicide among E-cigarette users.

REFERENCES

- [1] Department of Health U, Services H, for Disease Control C, Center for Chronic Disease Prevention N, Promotion H, on Smoking O. E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General. Accessed August 7, 2021. www.cdc.gov/tobacco
- [2] Chadi N, Li G, Cerda N, Weitzman ER. Depressive Symptoms and Suicidality in Adolescents Using E-Cigarettes and Marijuana: A Secondary Data Analysis from the Youth Risk Behavior Survey. *J Addict Med*. 2019;13(5):362-365. doi:10.1097/ADM.0000000000000506
- [3] Lee Y, Lee KS. Association of Depression and Suicidality with Electronic and Conventional Cigarette Use in South Korean Adolescents. *Subst Use Misuse*. 2019;54(6):934-943. doi:10.1080/10826084.2018.1552301
- [4] Kim JS, Kim K. Electronic cigarette use and suicidal behaviors among adolescents. *J Public Health (Bangkok)*. 2021;43(2):274-280. doi:10.1093/PUBMED/FDZ086
- [5] Jee Y. Comparison of Emotional and Psychological Indicators According to the Presence or Absence of the Use of Electronic Cigarettes among Korea Youth Smokers - ProQuest. Published 2016. Accessed August 8, 2021. <https://www.proquest.com/openview/046155cf9ade14a7312bc122fc0f466/1?pq-origsite=gscholar&cbl=936334>

AUTHOR'S CONTRIBUTIONS

Each named author has substantially contributed to the underlying research and has approved the final manuscript.

CONFLICT OF INTEREST

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