

Cannabis Vaping and Mental Health: The Association of Delta-9-Tetrahydrocannabinol (THC) and Cannabidiol (CBD) with Anxiety and Depression

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Introduction: Cannabis use is associated with psychiatric comorbidities, where vaping cannabis has recently become popular among adolescents. This trend is concerning due to the increasing accessibility and potency of cannabis products, which may pose greater risks. The use of delta-9- tetrahydrocannabinol (THC) and cannabidiol (CBD) produces different neurophysiological and pharmacologic effects. However, it remains unclear whether vaping THC and CBD has different associations with depression and anxiety in adolescents.

Methods: We analysed cross-sectional data from three years (2021-2023) of the U.S National Youth Tobacco Survey, encompassing 69,899 adolescents aged 11 to 18. Participants reported their current cannabis vaping behaviours of CBD and THC, and completed the Patient Health Questionnaire for Depression and Anxiety-4 to assess depressive and anxiety symptoms. Analyses adjusted for covariates known to be associated with cannabis vaping and psychological disorders.

Results: Findings indicated that adolescent THC vaping (aOR=1.40, 95%CI=1.20, 1.64) and dual CBD/ THC vaping (aOR=1.51, 95%CI=1.22, 1.86) were positively associated with depressive symptoms. Both THC vaping (aOR=1.18, 95%CI=1.01, 1.38) and CBD vaping (aOR=1.74, 95%CI=1.24, 2.46) were positively related to anxiety symptoms. Adolescents who vaped CBD-only products also had a higher likelihood of experiencing anxiety symptoms (aOR=1.51, 95%CI=1.05, 2.17) than those who vape THC-only products.

Discussions and Conclusions: This study suggests that vaping of THC, CBD and dual THC/ CBD cannabinoid products is related to different psychological disorders in adolescents. Adolescents vaping CBD-only products exhibit higher anxiety symptoms, whereas THC-only and Dual THC/ CBD vaping are associated with higher depressive symptoms.

Implications for Practice or Policy: Future public health research should consider differentiating between CBD and THC in cannabis use, and conducting longitudinal studies in better understanding these associations to develop targeted intervention strategies to deter adolescent vaping.

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