

## Exploring the Dose-Response Association of Lifestyle Behaviors and Mental Health among High School Students in the US: A Secondary Analysis of 2021 Adolescent Behaviors and Experiences Survey Data

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**Abstract :** Introduction: Mental health includes one's emotional, psychological, and interpersonal well-being; it ranges from "good" to "poor" on a continuum. At the individual-level, it affects how a person thinks, feels, and acts. Moreover, it determines how they cope with stress, relate to others, and interface with their surroundings. Research has yielded that mental health is directly related with short- and long-term physical health (including chronic disease), health risk behaviors, education-level, employment, and social relationships. As is the case with physical conditions like diabetes, heart disease, and cancer, mitigating the behavioral and genetic risks of debilitating mental health conditions like anxiety and depression can nurture a healthier quality of mental health throughout one's life. In order to maximize the benefits of prevention, it is important to identify modifiable risks and develop protective habits earlier in life. Methods: The Adolescent Behaviors and Experiences Survey (ABES) dataset was used for this study. The ABES survey was administered to high school students (9th-12th grade) during January 2021- June 2021 by the Centers for Disease Control and Prevention (CDC). The data was analyzed to identify any associations between feelings of sadness, hopelessness, or increased suicidality among high school students with relation to their participation on one or more sports teams and their average daily consumed screen time. Data was analyzed using descriptive and multivariable analytic techniques. A multinomial logistic regression of each variable was conducted to examine if there was an association, while controlling for grade-level, sex, and race. Results: The findings from this study are insightful for administrators and policymakers who wish to address mounting concerns related to student mental health. The study revealed that compared to a student who participated on zero sports teams, students who participated in 1 or more sports teams showed a significantly increased risk of depression ( $p < 0.05$ ). Conversely, the rate of depression in students was significantly less in those who consumed 5 or more hours of screen time per day, compared to those who consumed less than 1 hour per day of screen time ( $p < 0.05$ ). Conclusion: These findings are informative and highlight the importance of understanding the nuances of student participation on sports teams (e.g., physical exertion, social dynamics of team, and the level of competitiveness within the sport). Likewise, the context of an individual's screen time (e.g., social media, engaging in team-based video games, or watching television) can inform parental or school-based policies about screen time activity. Although physical activity has been proven to be important for emotional and physical well-being of youth, playing on multiple teams could have negative consequences on the emotional state of high school students potentially due to fatigue, overtraining, and injuries. Existing literature has highlighted the negative effects of screen time; however, further research needs to consider the type of screen-based consumption to better understand its effects on mental health.

**Keywords :** behavioral science, mental health, adolescents, prevention

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