The Impact of Substance Use in Adolescence on Physical Health in Adulthood

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Introduction

- Alcohol consumption during adolescence disrupts brain development, increasing the risk of substance use disorders and poor physical and mental health in adulthood (Nock et al., 2017; Steinfeld & Torregrossa, 2023).
- Engaging in physical activity during adolescence may reduce the negative health effects of substance use, promoting healthier behaviors in adulthood (Huéscar et al., 2011; Simonton et al., 2018).
- Adolescent tobacco use is linked to long-term respiratory, cognitive, and general health problems by age 30, emphasizing the need for early prevention (Brook et al., 2004)

Research Questions

- Do adolescents who engage in regular substance use report poorer general health in adulthood compared to those who did not use these substances during adolescence?
- Does tracking physical activity in adulthood differ between individuals who smoked regularly during adolescence compared to those who did not?

Methods

Sample

- Respondents (n=4,192) were selected from the U.S. National longitudinal Survey of Adolescent Health (ADDHEALTH), a nationally representative study of adolescents in grades 7th-12th conducted during the 1994-1995 academic school year. Follow-up data was gathered in Wave 5, when participants were in their late thirties and forties, allowing for an analysis of long-term effects.

Measures

- General Health Status: Self-reported health status in adulthood, coded on the scale “poor”, ”fair”, “good”, “very good”, “excellent” (1-5).
- Physical Activity Tracking: Whether participants track physical activity in adulthood, coded on the scale “No”, “Yes” (0-1).
- Regular Smoking: Whether participants smoked regularly during adolescence, coded on the scale “No”, “Yes” (0-1).
- Binary Health Status: Combined general health status into binary variable, coded on the scale “poor”, “fair” and “excellent”, “very good”, “good” (0-1).

Results

Univariate:

- Slightly more individuals reporting poor health compared to those reporting good health

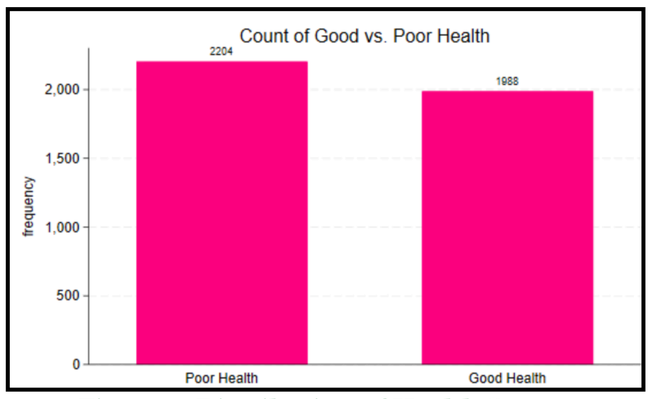

Figure 1: **Distribution of Health Status**

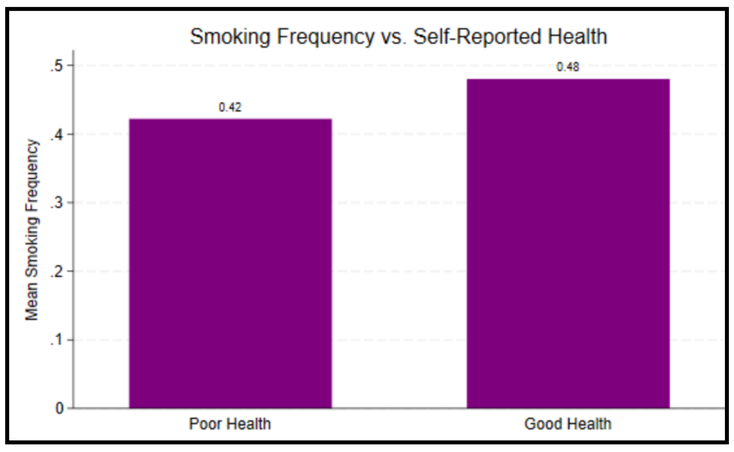

Figure 2: **Mean Smoking Frequency by Health Status**

ANOVA:

- Regular smoking was significantly associated with self-reported health status (p=0.0143), and demonstrated similar levels of variability (X2=.1168, p-value=.732)
- This analysis compares two health groups to evaluate the variation in adolescent smoking rates between them (df = 1)

Logistic Regression:

- Individuals who smoked regularly during adolescence were significantly less likely to report being in good health during adulthood

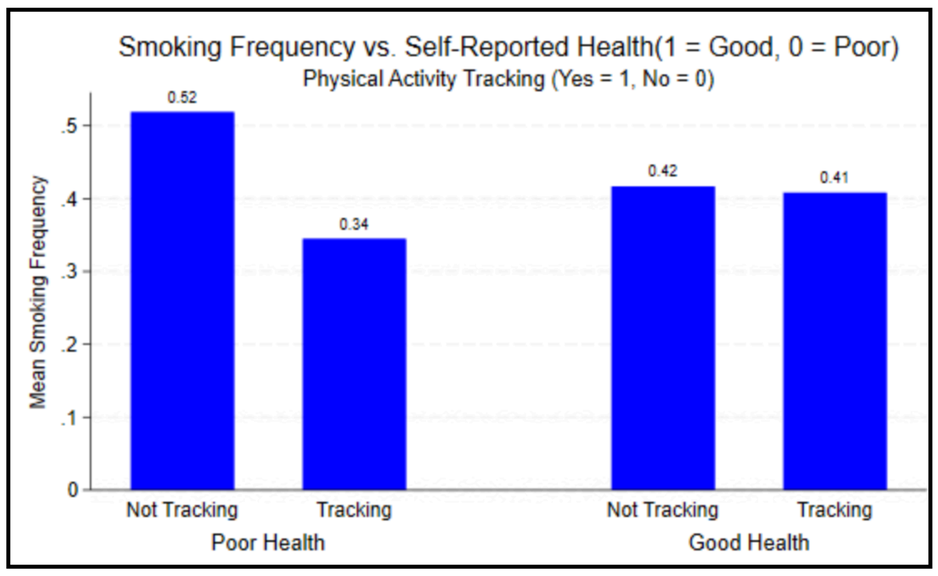

Figure 3: **Mean Smoking Frequency by Health Status and Physical Activity Tracking**

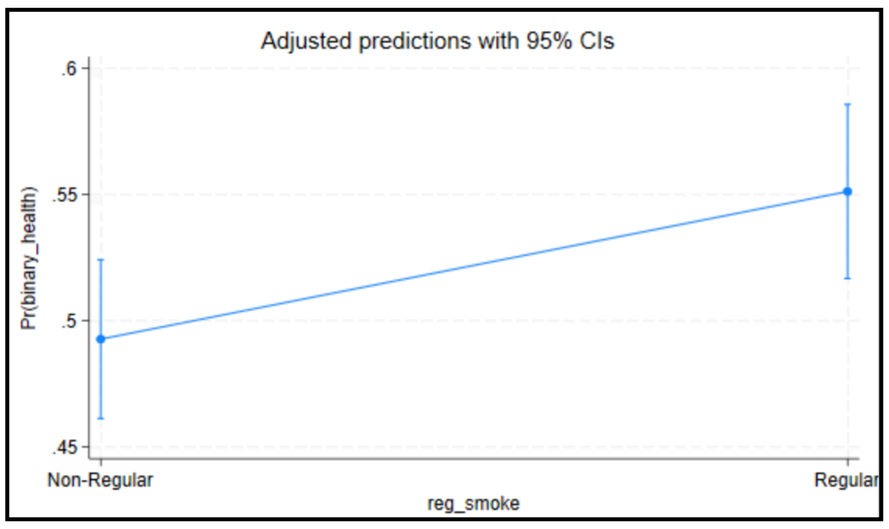

Figure 4: **Marginal Effects of Regular Smoking on Health**

Logistic Regression Results:

binary_health	Odds Ratio	Std. Error	z	P>|z|	[95% conf.	Interval]
0.reg_smoke	0.7908947	0.0757678	-2.45	0.014	.6555012	.9542537
_cons	1.228412	0.0873218	2.89	0.004	1.068652	1.412056

Discussion

- Smoking during adolescence significantly affects self-reported health status in adulthood: Regular smokers are less likely to report good health in adulthood.
- Findings contribute to public health research on the effects of adolescent lifestyle behaviors on long-term health and highlight the need for more effective smoking prevention programs.
- Future research should explore additional variables such as socioeconomic status, access to healthcare, and other health habits (i.e., diet) that may shape health outcomes.

References

Brook, J. S., Brook, D. W., Zhang, C. S., & Cohen, P. (2004). Tobacco use and health in young adulthood. *Journal of Genetic Psychology*, *165*(3), 310-323. https://doi.org/10.3200/gntp.165.3.310-323

Huéscar, E., Cervelló, E., Llamas, L., & Moreno-Murcia, J. A. (2011). Alcohol and tobacco consumption behaviors and their relationship to healthy habits in adolescents. *Behavioral Psychology-Psicologia Conductual*, *19*(3), 523-539. <Go to ISI>://WOS:000297822000002

Nock, N. L., Minnes, S., & Alberts, J. L. (2017). Neurobiology of substance use in adolescents and potential therapeutic effects of exercise for prevention and treatment of substance use disorders. *Birth Defects Research*, *109*(20), 1711-1729. https://doi.org/10.1002/bdr2.1182

Simonton, A. J., Young, C. C., & Johnson, K. E. (2018). Physical Activity Interventions to Decrease Substance Use in Youth: A Review of the Literature. *Substance Use & Misuse*, *53*(12), 2052-2068. https://doi.org/10.1080/10826084.2018.1452338

Steinfeld, M. R., & Torregrossa, M. M. (2023). Consequences of adolescent drug use. *Translational Psychiatry*, *13*(1), 313. https://doi.org/10.1038/s41398-023-02590-4