

Rates and Predictors of Substance Use Among Puerto Rican Youth Following Hurricane María

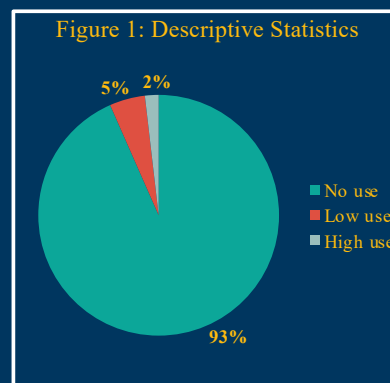
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Background

Disaster exposure puts youth at risk for developing mental health disorders, including substance use.¹ In Puerto Rico, researchers found that roughly 7% of youth surveyed following Hurricane María experienced clinically elevated symptoms of PTSD.² Current research suggests that many youth recover from symptoms³ and that strong social support may protect against substance use outside of a disaster context.⁴ **However, research is limited on substance use following natural disasters in youth.** Recent findings suggest that disaster exposure may lead to elevated short-term use and a higher likelihood of substance use later in life, especially for those severely exposed.^{5,6} The current study aimed to **first**, strategically identify Puerto Rican youth who may be at risk for engaging in alcohol and substance use and **second**, identify protective factors that may be associated with lower substance use.

Puerto Rican public school students in grades 7-12 were surveyed after Hurricane María (n=36,458). Those that reported **higher** levels of **social support** and **lower** levels of **PTSD** were **less likely to endorse high drug or alcohol use** since the hurricane.

Figure 1: Descriptive Statistics



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Method

A subset² of students (n=36,485), grades 7-12, enrolled in Puerto Rican public schools completed surveys regarding their disaster exposure and associated symptoms. Data collection occurred 5-9 months after Hurricane María made landfall. Analyses were organized into two aims as follows:

1. **Descriptive statistics** characterized frequencies of students who reported no use, low use ("a little," "somewhat"), or high use ("quite a bit," "very much").
2. **Ordinal regression** analyzed predictive effects of gender, grade, social support, and PTSD symptoms on level of substance use (none vs. low vs. high).

Results

Variable	Estimate	Std. Error	z value
Social support (adult)	-0.865	0.108	-8.042***
Social support (peer)	0.273	0.092	2.981**
Social support (teacher/counselor)	-0.242	0.062	-3.872***
PTSD symptom total	0.086	0.004	22.276***
Grade	0.388	0.014	27.549***
Female gender	-0.195	0.179	-1.093
PTSD x Female gender	-0.015	0.005	-2.726**
Soc. supp. (adult) x Female gender	-0.023	0.152	-0.155
Soc. supp. (peer) x Female gender	-0.034	0.141	-0.242
Soc. supp. (t/c) x Female gender	-0.049	0.090	-0.548
No use vs. low use	6.386	0.182	35.01
Low use vs. high use	7.785	0.186	41.82

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Discussion & Implications

1. High social support, low PTSD symptomatology, and lower grade appeared to serve as protective factors against high substance use after disaster.
2. Findings suggest that **social support and PTSD prevention efforts** may help mitigate negative impacts of disaster on Puerto Rican youth substance use.

References

1. Adams, Z. W., Danielson, C. K., Sumner, J. A., McCauley, J. L., Cohen, J. R., & Ruggiero, K. J. (2015). Comorbidity of PTSD, major depression, and substance use disorder among adolescent victims of the spring 2011 tornadoes in Alabama and Joplin, Missouri. *Psychiatry*, 78(2), 170-185.
2. Orengo-Aguayo, R., Stewart, R. W., de Arellano, M. A., Suárez-Kindy, J. L., & Young, J. (2019). Disaster exposure and mental health among Puerto Rican youths after Hurricane María. *JAMA network open*, 2(4), e192619-e192619.
3. Felix, E., You, S., Vermeir, E., & Canino, G. (2013). Family influences on the long term post-disaster recovery of Puerto Rican youth. *Journal of abnormal child psychology*, 41(1), 111-124.
4. Heerde, J. A., & Hemphill, S. A. (2018). Examination of associations between informal help-seeking behavior, social support, and adolescent psychosocial outcomes: A meta-analysis. *Developmental Review*, 47, 44-62.
5. Danielson, C. K., Sumner, J. A., Adams, Z. W., McCauley, J. L., Carpenter, M., Amstadter, A. B., & Ruggiero, K. J. (2017). Adolescent Substance Use Following a Deadly U.S. Tornado Outbreak: A Population-Based Study of 2,000 Families. *Journal of Clinical Child and Adolescent Psychology*, 46(5), 732-745.
6. Fuchs, R., Glaude, M., Hansel, T., Osofsky, J., & Osofsky, H. (2021). Adolescent risk substance use behavior, posttraumatic stress, depression, and resilience: Innovative considerations for disaster recovery. *Substance abuse*, 42(3), 358-365.