ASSOCIATION BETWEEN NEIGHBORHOOD VIOLENCE AND BIOLOGICAL STRESS IN CHILDREN

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Why was this study conducted?
Exposure to violence across the life-course has lasting psychological and physiological implications. For children specifically, constant exposure to violence elicits a “fight or flight” response which dramatically increases cortisol levels and can impact brain development. The stress of living in an environment where one is exposed to violence at the neighborhood level and in the home may increase children’s risk of experiencing these adverse health outcomes.

What was the purpose of this study?
The purpose of our study was to explore the relationship between neighborhood violence and biological stress response in children. The exposures we examined on the neighborhood level was density of businesses that served alcoholic beverages, as areas with higher density are more likely to have higher rates of reported violence; violence, as measured by reports of violent crime; and domestic violence. Rates of exposure to these indicators were calculated based on distance from a child’s home (500-, 1000-, and 2000-m radius).

How was this study conducted?
We conducted a matched, cross-sectional study of 85 African American children between the ages of 5 and 16 from 51 neighborhoods in New Orleans, Louisiana between January 2012 and July 2013. Cortisol reactivity was tested for each participant using the Trier Social Stressor Test for Children (TSST-C), using saliva samples. The test was administered in the afternoon, before test administration, and twice after to capture peak cortisol level and cortisol recovery. Telometer length was measured using extracted DNA.
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What are the main results?
We found that the increased density of liquor and convenience stores within a 500-m radius of a child’s home was associated with decreased telemeter length. Higher rates of domestic violence were also associated with decreased telemeter length. Children in neighborhoods with higher density of liquor and convenience stores were less likely to reduce cortisol levels after the TSST-C test. Rate of reports of domestic violence and violent crime also led to blunted cortisol levels in children after taking the TSST-C test. Children exposed to violent crime within 500-m of their home and children living in neighborhoods with high density of liquor and convenience stores had steeper declines in cortisol levels during the day.

What do these findings mean?
Neighborhood stressors examined were significantly associated with biological stress in children. Greater exposure to domestic violence, violent crime at the neighborhood level, and living in areas with high density of liquor and convenience stores are associated with shorter telemeter length, lower acute cortisol levels, blunted cortisol recovery, and steeper cortisol declines.

What are the strengths and limitations of the study?
One strength of the study was the use of neighborhood exposure metrics to more accurately represent a child’s neighborhood. One limitation of the study is the lack of applicability to other demographic groups.

How can these results be used to improve the health of women and their families?
We need to look at neighborhoods as targets for interventions to address the external influence of violence exposure on children’s health.