

APSAC Research to Practice Brief

Study Title: Inequities in Pediatric Abusive Head Trauma According to Neighborhood Social and Material Deprivation: A Population-Level Study in British Columbia, Canada

Study Authors: Emilie Beaulieu, Andy Jiang, Alex Zheng, Fahra Rajabali and Ian Pike

Brief Authors: Debangshu Roygardner and Vincent J. Palusci

Introduction:

Abusive head trauma (AHT) prevention initiatives have concentrated efforts mostly on the implementation of awareness and education campaigns targeting parents, caregivers, childcare providers, and the general population. While these initiatives have produced mixed results over the years a recent study in British Columbia (BC), Canada, suggested a 35% decrease in AHT hospitalizations since the implementation of the Period of PURPLE Crying program in 2009. PURPLE is a primary, universal AHT prevention program providing educational materials to parents of all newborns during maternity admission or home birth that has been implemented in eight different countries, including Canada, United States, and Australia. PURPLE is considered a promising Evidence-Based Practice by the [California Evidence-Based Clearinghouse \(2018\)](#).

To ensure that AHT prevention programs equitably protect all children from AHT, regardless of their neighborhood social and material context, the authors sought to determine whether there was a reduction in AHT cases in BC among all socioeconomic levels.

Study Aims:

The first aim of this study was to explore the relationship between neighborhood social and material deprivation and the rates of AHT among British Columbians 0–24 months old in order to determine whether there was a social gradient. Second, to determine whether the observed relationship differed according to sex given that there is some evidence that boys and girls have different AHT risk. Third, to determine whether the relationship between deprivation and AHT was modified by the implementation of the PURPLE program.

Study Sample:

A population-based cross-sectional study design was used to determine the significance of relationship between neighborhood social and material deprivation index scores and AHT case data collected in BC. Definitions included: material deprivation (education, employment, and income) and social deprivation (living alone, single-parent families, and separated/divorced families). Children aged 0–24 months with a definite diagnosis of AHT between 2005 and 2017 in BC were included. Age (continuous: months), sex (categorical: male/female), year in which the AHT event occurred (continuous), and home postal code at the time of the event were extracted for all children. Year in which the AHT occurred was categorized as “pre” (January 1, 2005 to December 31, 2008) and “post” (January 1, 2009 to December 31, 2017) PURPLE program implementation – pre-post program variable (binary: pre/post). Social and material deprivation scores were expressed in quintiles, ordinal: 1 (least deprived) to 5 (most deprived). The outcome variable of interest was the number of AHT cases over the study period.

Findings:

Sixty-six (66) confirmed cases of AHT were reported between 2005 and 2017 in BC, an incidence rate of 5.82 AHT cases per 100,000 population. The majority were boys (57.5%) and less than 12 months old at the time of the event. The highest proportion of cases was observed in the most deprived social and material quintiles. AHT rates per 100,000 population tended to increase progressively from the least deprived to most deprived quintiles for both social and material deprivation. Among boys, the rate of AHT increased by 71% for each material deprivation quintile increase, while it increased by 15% among girls. The relationship between social deprivation and AHT rates was not significantly different for boys and girls. The authors hypothesized that the difference in the relationship between AHT rates and material deprivation we observed for boys and girls may be related to caregivers' different expectations of the crying pattern of infants according to the child's sex since adults may be less tolerant of boys' cries given gender-based stereotypes. There was no change observed in AHT rate disparities between the least and most deprived neighborhoods following the PURPLE program implementation.

Recommendations:

While there are a number of limitations pointed out in the article, these results highlight the complex relationships between neighborhood deprivation and individual characteristics such as sex. This emphasizes the need for additional research and continuing integration of new knowledge into current AHT prevention programs. Nevertheless, these findings prompt reflections regarding sex-sensitive education about crying expectations and deprivation to be added to current AHT prevention resources to further prevent AHT cases equitably. As the authors suggest, given that the most deprived neighborhoods continued to face higher risk or rates of AHT following the implementation of the PURPLE program, the results suggest that additional AHT prevention services for children and families living in the most vulnerable neighborhoods should be used to reduce inequities. A universal program approach, like the PURPLE program, can alter societal knowledge and behavioral norms with regard to AHT prevention. These findings imply a need for intensifying AHT prevention services (addressing both neighborhoods and individual risk factors) proportionately to the levels of neighborhood material and social disadvantage – an intervention approach referred to as proportionate universalism. Partnerships with current programs providing services to young children should be developed to increase the dose of the PURPLE program to families living in high-risk neighborhoods.

Bottom Line:

Recognizing the role of the child's sex and neighborhood social and physical environment in AHT risk and providing additional services in universal AHT prevention programs proportionate to the levels of neighborhood material and social disadvantage are important considerations. AHT follows a social gradient, in which AHT rates increase directly and proportionately with increases in neighborhood material and social deprivation. This study provides new knowledge and suggests different considerations to prevent AHT equitably.

Citation: Beaulieu, E., Jiang, A., Zheng, A., Rajabali, F., Pike, I. (2020). Inequities in pediatric abusive head trauma according to neighborhood social and material deprivation: A population-level study in British Columbia, Canada. *Child Maltreatment*, 25(3) 300-307.

<https://doi.org/10.1177/1077559519892332>

About the Research to Practice Authors:

Debangshu Roygardner, PhD (Debangshu.Roygardner@sps.cuny.edu) is the Director of Evaluation for Mental Health Services at New York Foundling, an affiliate of the Vincent J. Fontana Center for Child Protection, and Consortial Faculty of Psychology at the City University of New York.

Vincent J. Palusci, MD, MS (Vincent.palusci@nyulangone.org) is Professor of Pediatrics at New York University Grossman School of Medicine. Dr. Palusci is a general and child abuse pediatrician at Bellevue Hospital in New York City and chairs the Hassenfeld Children's Hospital Child Protection Committee at NYU Langone Health. Both are members of the APSAC Center for Child Policy Expert Panel on Abusive Head Trauma.