

ACEs and Pregnancy: Time to Support All Expectant Mothers

James J. Hudziak, MD

In their article, “Maternal Adverse Childhood Experiences and Infant Development,” Racine et al¹ add another important piece to what is known about the importance of maternal health and wellness in infant health outcomes. The authors collected data from a questionnaire as a proxy measure of the Adverse Child Experience Scale from nearly 2000 mothers during pregnancy.² The authors compared these self-reported Adverse Child Experiences Scale scores to later psychosocial risk and hostile parenting when their infants were 4 months of age and to measures of child development at age 12 months.

The main finding resonates with all of us who work in this field. Carrying an infant in the womb is not easy work, and the authors claim this job is made even more difficult if a mother has endured adverse childhood experiences (ACEs) during her own childhood and adolescence, thus demonstrating a transmission of vulnerability to her child’s development through maternal behavior.¹ However, it is important to understand the limitations of this study. Most importantly, the study is built almost entirely on maternal self-report.

The study was also conducted among a mature group of mothers (mean age = 30.87 years) who were highly educated (91% had some college and 79% had a college or graduate degree) and not living in poverty (75% of families earned \$80 000 per year). Interestingly, older maternal age, higher education, and lack of poverty are protective for positive

child outcomes. This study reveals that even with these protective factors, ACEs still matter. The findings of this study would likely reveal the impact of ACEs to be many times more powerful had the mothers been teenagers, undereducated, living in abject poverty, or in the grips of poly-substance abuse, in which cases Adverse Child Experiences Scale scores are typically so much higher.

The take-home point is clear. Maternal adversity, regardless of economic or educational attainment, needs to be asked about and addressed. The scars of adversity are carried from 1 generation to the next and have been shown to impact parenting and subsequent child development. These findings are not isolated. Other groups have demonstrated the impact of maternal emotional behavioral health on brain size, subsequent behavior, and substance use and abuse.^{3–14}

This transgenerational transmission of ACEs risk is a sobering call to duty for health care professionals who care for children and in turn must also ensure that their caregivers are also cared for or will be in the future. All expectant mothers deserve the best health promotion, illness prevention, and treatment options available. For mothers who carry stress into pregnancy, great progress has been made in the areas of mindfulness, exercise, and cognitive behavioral therapy.^{15–17} For women struggling with alcohol and drug abuse, treatment programs need to be specialized for pregnancy.

Overall health depends critically on emotional behavioral health.

Division of Child Psychiatry, Vermont Center on Children, Youth, and Families, Burlington, Vermont; Robert Larner College of Medicine, The University of Vermont and Fletcher Allen Health Care, Burlington, Vermont; Erasmus University Medical Center-Sophia Children’s Hospital, Rotterdam, Netherlands; Department of Psychiatry (Child), School of Medicine, Washington University in St Louis, St Louis, Missouri; and Department of Psychiatry, Geisel School of Medicine, Dartmouth College, Hanover, New Hampshire

Opinions expressed in these commentaries are those of the author and not necessarily those of the American Academy of Pediatrics or its Committees.

DOI: <https://doi.org/10.1542/peds.2018-0232>

Accepted for publication Jan 25, 2018

Address correspondence to James J. Hudziak, MD, Department of Psychiatry, The University of Vermont, 1 South Prospect St, Room 3213, Burlington, VT 05405. E-mail: james.hudziak@med.uvm.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

Copyright © 2018 by the American Academy of Pediatrics

FINANCIAL DISCLOSURE: The author has indicated he has no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: The author has indicated he has no potential conflicts of interest to disclose.

To cite: Hudziak JJ. ACEs and Pregnancy: Time to Support All Expectant Mothers. *Pediatrics*. 2018;141(4):e20180232

Nowhere is this clearer than in the special relationship between a mother and child. The literature is now full of powerful evidence that maternal antenatal adversity, anxiety, depression, substance use and abuse, and

socioeconomic disadvantage may lead to long-term negative consequences in a child's emotional, behavioral, and general medical health.^{18,19} As evidenced in the article by Racine et al,¹ this is a story of all mothers who have

endured adversity over the course of their lives.

ABBREVIATION

ACE: adverse childhood experience

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2017-2495.

REFERENCES

1. Racine N, Plamondon A, Madigan S, McDonald S, Tough S. Maternal adverse childhood experiences and infant development. *Pediatrics*. 2018;141(4):e20172495
2. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) study. *Am J Prev Med*. 1998;14(4):245–258
3. Davis EP, Sandman CA, Buss C, Wing DA, Head K. Fetal glucocorticoid exposure is associated with preadolescent brain development. *Biol Psychiatry*. 2013;74(9):647–655
4. Rifkin-Graboi A, Bai J, Chen H, et al. Prenatal maternal depression associates with microstructure of right amygdala in neonates at birth. *Biol Psychiatry*. 2013;74(11):837–844
5. Qiu A, Rifkin-Graboi A, Chen H, et al. Maternal anxiety and infants' hippocampal development: timing matters. *Transl Psychiatry*. 2013;3:e306
6. Vieten C, Astin J. Effects of a mindfulness-based intervention during pregnancy on prenatal stress and mood: results of a pilot study. *Arch Womens Ment Health*. 2008;11(1):67–74
7. Buss C, Davis EP, Shahbaba B, Pruessner JC, Head K, Sandman CA. Maternal cortisol over the course of pregnancy and subsequent child amygdala and hippocampus volumes and affective problems. *Proc Natl Acad Sci USA*. 2012;109(20):E1312–E1319
8. El Marroun H, Jaddoe VW, Hudziak JJ, et al. Maternal use of selective serotonin reuptake inhibitors, fetal growth, and risk of adverse birth outcomes. *Arch Gen Psychiatry*. 2012;69(7):706–714
9. Sandman CA, Buss C, Head K, Davis EP. Fetal exposure to maternal depressive symptoms is associated with cortical thickness in late childhood. *Biol Psychiatry*. 2015;77(4):324–334
10. El Marroun H, Tiemeier H, Steegers EA, et al. Intrauterine cannabis exposure affects fetal growth trajectories: the Generation R Study. *J Am Acad Child Adolesc Psychiatry*. 2009;48(12):1173–1181
11. Holz NE, Boecker R, Baumeister S, et al. Effect of prenatal exposure to tobacco smoke on inhibitory control: neuroimaging results from a 25-year prospective study. *JAMA Psychiatry*. 2014;71(7):786–796
12. Liu J, Lester BM, Neyzi N, et al. Regional brain morphometry and impulsivity in adolescents following prenatal exposure to cocaine and tobacco. *JAMA Pediatr*. 2013;167(4):348–354
13. El Marroun H, Hudziak JJ, Tiemeier H, et al. Intrauterine cannabis exposure leads to more aggressive behavior and attention problems in 18-month-old girls. *Drug Alcohol Depend*. 2011;118(2–3):470–474
14. Treit S, Zhou D, Lebel C, Rasmussen C, Andrew G, Beaulieu C. Longitudinal MRI reveals impaired cortical thinning in children and adolescents prenatally exposed to alcohol. *Hum Brain Mapp*. 2014;35(9):4892–4903
15. Woolhouse H, Mercuri K, Judd F, Brown SJ. Antenatal mindfulness intervention to reduce depression, anxiety and stress: a pilot randomised controlled trial of the MindBabyBody program in an Australian tertiary maternity hospital. *BMC Pregnancy Childbirth*. 2014;14:369
16. Uysal N, Sisman AR, Dayi A, et al. Maternal exercise decreases maternal deprivation induced anxiety of pups and correlates to increased prefrontal cortex BDNF and VEGF. *Neurosci Lett*. 2011;505(3):273–278
17. Ladouceur R, Dugas MJ, Freeston MH, Léger E, Gagnon F, Thibodeau N. Efficacy of a cognitive-behavioral treatment for generalized anxiety disorder: evaluation in a controlled clinical trial. *J Consult Clin Psychol*. 2000;68(6):957–964
18. Hudziak JJ, Novins DK. Illuminating the complexities of developmental psychopathology: special series on longitudinal and birth cohort studies. *J Am Acad Child Adolesc Psychiatry*. 2013;52(1):6–8
19. Shonkoff JP, Garner AS; Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption, and Dependent Care; Section on Developmental and Behavioral Pediatrics. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*. 2012;129(1). Available at: www.pediatrics.org/cgi/content/full/129/1/e232

ACEs and Pregnancy: Time to Support All Expectant Mothers

James J. Hudziak

Pediatrics 2018;141;

DOI: 10.1542/peds.2018-0232 originally published online March 20, 2018;

Updated Information & Services

including high resolution figures, can be found at:
<http://pediatrics.aappublications.org/content/141/4/e20180232>

References

This article cites 18 articles, 2 of which you can access for free at:
<http://pediatrics.aappublications.org/content/141/4/e20180232#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):
Fetus/Newborn Infant
http://www.aappublications.org/cgi/collection/fetus:newborn_infant_sub
Psychiatry/Psychology
http://www.aappublications.org/cgi/collection/psychiatry_psychology_sub

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:
<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



PEDIATRICS[®]

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

ACEs and Pregnancy: Time to Support All Expectant Mothers

James J. Hudziak

Pediatrics 2018;141;

DOI: 10.1542/peds.2018-0232 originally published online March 20, 2018;

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/141/4/e20180232>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 345 Park Avenue, Itasca, Illinois, 60143. Copyright © 2018 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN[®]

