Photo & Graphics Group

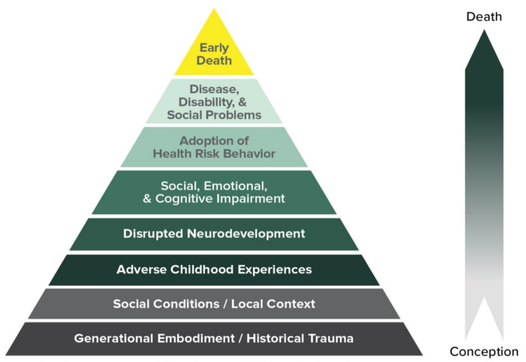
Investigating Possible Likelihoods Between Reproductive Mental Health Effects and Adverse Childhood Events

Sara Milrad, MD, PhD[1], Haeyoung Lee, Pharm.D.[2], Kay Connors, MSW[1],
Olawunmi Ibraheem, BA[1], Brijan Fellows, MSW[3], Susan dosReis, Ph.D.[2]
[1] University of Maryland Baltimore, Department of Psychiatry
[2]University of Maryland Baltimore, School of Pharmacy

INTRODUCTION:

- Women who have a history of childhood adverse events experience unique mental and physical health challenges that may have wide-ranging effects on their reproductive health and on their children, should they choose to become mothers.[1,2, 3]
- In a sample of women from Louisiana, increased ACEs predicted increased risk of fertility difficulties and amenorrhea (RR = 1.09, 95% CI 1.05-1.13 and RR = 1.07, 95% CI 1.04-1.10, respectively), and decreased fecundability [fecundability ratio (FR) = 0.97, 95% CI 0.95-1.00]. [3]
- Those who experience adverse childhood events (ACEs) have a greater tendency to suffer from substance use disorders.[4]
- Women in middle or upper-class communities who have at least 4 ACEs have a 4-fold tendency to use substances while pregnant. [5]
- In a Canadian sample, ACEs in women predicted depressive symptoms in pregnancy (AOR= 1.26, CI 1.12-1.43), the postpartum period (AOR= 1.34, CI 1.17-1.52), and across the perinatal period (AOR= 1.31, CI 1.12-1.54). [6]
- Many women in our community might have idiosyncratic needs that warrant targeted interventions
- To that end, we assessed the needs of mothers in our community who have a past or current history of substance use with survey data
- In this analysis, we aimed to explore the likelihoods of menstrual problems, pre-menstrual mood problems, and postpartum mood challenges in mothers who have a history of substance use in relation to their experiencing childhood trauma

SCHEMATIC RATIONALE:



Mechanism by which Adverse Childhood Experiences Influence Health and Well-being Throughout the Lifespan

METHODS:

Data Collection

- **Study Design:** Cross-sectional
- **Data Source:** Overview of Family Needs Assessment Study
- **Study Participants:** 58 US mothers aged at least 18 years old who had a previous history of opioid use disorders and at least one child under age 5.
- **Data Collection:** A study flyer was used to recruit study participants from regional substance use recovery programs. Collected self-reported information on demographics, the Adverse Child Experience Scale (ACES) questionnaire, and reproductive health for analysis. ACE total scores, except for one question about sexual trauma*, were dichotomized as 0-4, and 5-9.
  - *This question was omitted because of concerns that mandatory Child Protective Services reporting requirements may impact study participation

Questions

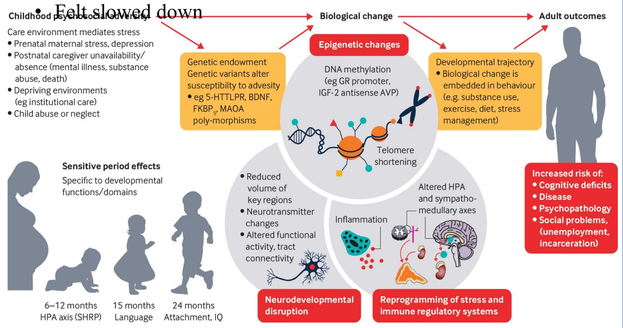
- The Adverse Child Experience Scale (ACES) questionnaire
  - ACE total scores, except for one question about sexual trauma, were dichotomized as 0-4, and 5-9.
- Reproductive health outcomes
  - Menstrual problems
  - Difficult getting pregnant
  - Postpartum mood/energy challenges

Statistical Analysis

- Fisher's exact test was performed to compare the differences in demographics and reproductive health between the low (0-4) and high (5-9) ACES groups.
- Univariate logistic regression models estimated odds ratio (OR) of reproductive health outcomes between low and high ACES.

SURVEY QUESTIONS:

- Description of menstrual period:
- "Periods are unchanged; No periods because pregnant or recently gave birth; Periods have become irregular or changed in frequency, duration, or amount; No periods for at least a year; Having periods"
  - "Periods have become irregular" and "No periods for at least a year" were compared against the other combined descriptions
- "During the week before your period starts, do you have a serios problem with your mood?" (yes/no)
- "How often did you have the following feelings in the year after your most recent birth?" (Never, Rarely, Sometimes, Often, Always)
  - I felt down, depressed, or sad
  - Felt hopeless
  - Felt slowed down



RESULTS:

Table 1. Baseline Characteristics of 58-18+ Year-Old Survey Participants Stratified by Low (0-4) or High ACES (5-9) Scores

	Low ACES n= 27		High ACES n= 31		*P-value* [a]
	N	(%)	N	(%)	
Age (years) [Mean, (SD)]	32.3	5.2	31.4	6.5	0.26
Age Categories (years)					0.38
18-34	6	22.2	11	35.5	
35-50	21	77.8	20	64.5	
Race					0.24
White	5	18.5	11	35.5	
non-white	22	81.5	20	64.5	
Education Level					0.26
Less than High School	7	25.9	14	46.7	
High School	11	40.7	10	33.3	
Some College/Trade School	9	33.3	6	20.0	

Abbreviation; ACES, Adverse Childhood Experiences
a. p-value was estimated by fisher's exact test.

- Our sample had a positively skewed distribution of ACES, even without the question about sexual trauma.

Table 2. Odds Ratios of Mental Health Effects Related Outcomes in 58 Survey Participants by ACE Groups

	Unadjusted OR [a]	95% CI
Menstrual problems		
Menstrual Periods	1.80	0.59, 5.55
Pre-Menstrual Mood Problems	2.28	0.58, 8.86
Difficult getting pregnant	0.45	0.04, 5.23
Postpartum Mood/Energy Challenges		
Feeling sluggish or slowed down[b]	3.43	1.10, 10.72
Depressed	2.87	0.95, 8.75
Hopeless	1.42	0.50, 4.03

Abbreviation; OR, odds ratio; CI, confidence interval
a. Reference group; Low ACE group as reference group
b. Did you feel more tired or sluggish?

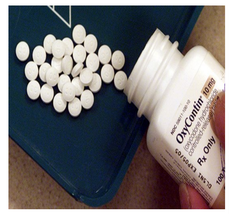
SUMMARY of RESULTS:

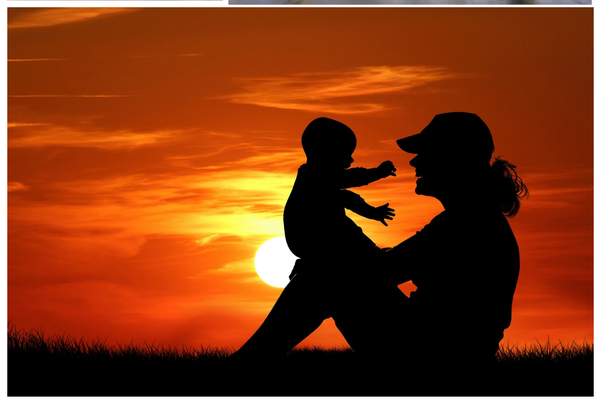
- Our sample had a **positively skewed** distribution of ACES, even without the question about sexual trauma.
- The 58 participants were on average 31.8 (SD, 5.9) years old. There were 27 participants in the low ACES group (i.e., 0-4) and 31 in high ACES group (i.e., 5-9).
- The high ACES group **did not** have a significantly higher odds of feeling depressed (OR, 2.87; 95% CI: 0.95, 8.75), hopeless (OR, 1.42; 95% CI: 0.50, 4.03), or mood change in menses (OR, 2.28; 95% CI: 0.58, 8.86) relative to those with lower ACES score.

This is research study was produced by the University of Medicine School of Medicine under 2019-V3-GX-0038, awarded by the Office of Victims of Crimes, Office of Justice Programs, U.S. Department of Justice. The opinions, findings, and conclusions or recommendations expressed in this poster presentation are those of the contributors and do not necessarily represent the official position or policies of the U.S Department of Justice.

CONCLUSIONS:

- Average ACES score was higher in this sample compared to mothers without a history of substance use, even without the question pertaining to sexual trauma (53% met "high ACES" 5+ score vs 29.3% met "high ACES" 4+ score[3]).
- Our analysis is limited by small sample size, lack of multivariate OR, higher than average ACES score, lack of data about sexual trauma, and lack of subcategory stratification of trauma (i.e. physical vs sexual).
- Further research is needed in larger samples of this vulnerable population to better assess the impact of adverse childhood experiences on women's reproductive health
- Subsequent studies should develop targeted interventions aimed at alleviating the idiosyncratic needs of different patient populations at risk





REFERENCES:

1. Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American journal of preventive medicine*, *14*(4), 245-258.
2. Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., ... & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet Public Health*, *2*(8), e356-e366.
3. Jacobs, M. B., Boynton-Jarrett, R. D., & Harville, E. W. (2015). Adverse childhood event experiences, fertility difficulties and menstrual cycle characteristics. *Journal of Psychosomatic Obstetrics & Gynecology*, *36*(2), 46-57.
4. Leza, L., Siria, S., López-Goñi, J. J., & Fernandez-Montalvo, J. (2021). Adverse childhood experiences (ACEs) and substance use disorder (SUD): a scoping review. *Drug and alcohol dependence*, *221*, 108563.
5. Currie, C. L., & Tough, S. C. (2021). Adverse childhood experiences are associated with illicit drug use among pregnant women with middle to high socioeconomic status: findings from the All Our Families Cohort. *BMC pregnancy and childbirth*, *21*, 1-9.
6. Racine, N., Zumwalt, K., McDonald, S., Tough, S., & Madigan, S. (2020). Perinatal depression: The role of maternal adverse childhood experiences and social support. *Journal of affective disorders*, *263*, 576-581.

All authors have no conflicts of interest to declare.