

# Postpartum Depression Risk Factors for Mothers with History of Substance Use

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## BACKGROUND

- Increased vulnerability to depression and substance use during both pregnancy and postpartum periods.
- Mothers with serial early prenatal substance use screening had decreased substance use by the end of their pregnancy, and their infants had decreased diagnosis of Neonatal Opioid Withdrawal Syndrome (NOWS).

## HYPOTHESIS

- Mothers with history of substance use have additional risk factors that further increases their predisposition towards postpartum depression.

## METHODS

- Retrospective cohort study of mothers and their infants using prenatal clinic and hospital data between 1/2015 - 12/2017.
- Maternal and infant characteristics were also collected
- The Edinburgh Postpartum Depression Scale Scores (EPDS) were collected at:
 
- For analysis, mothers were divided into two groups based on their highest EPDS at any of the three time points: <12 vs. ≥ 12

## RESULTS

Fig. 1: Location of the 217 mothers who completed EPDS with substance use on their first prenatal screen

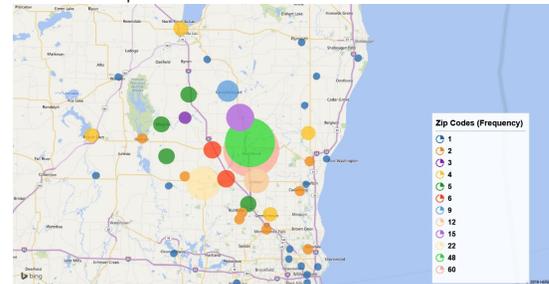


Table 1: Significant Differences in Maternal Demographics and Risk factors between EPDS Score <12 and EPDS Score ≥12†

Maternal Demographics	EPDS Score <12 n = 171	EPDS Score ≥ 12 n = 46	p-Value
1. Maternal Age (years)			0.854
< 20	5.9	6.7	
20 - 29	62.6	68.7	
30 - 39	31.0	28.7	
≥ 40	0.0	0.0	
2. Race			0.178
Caucasian/White	93.0	87.0	
African American/Black	3.5	4.4	
Hispanic	2.8	4.4	
Other	0.6	4.4	
3. Nulliparity	32.8	28.3	0.546
4. Single Marital Status	50.9	60.9	0.241
5. Zip Code Median Income Quartile (\$)			0.036
1st Quartile (1 - 42,999)	1.2	8.9	
2nd Quartile (43,000 - 53,999)	3.3	3.9	
3rd Quartile (54,000 - 70,999)	74.3	69.8	
4th Quartile (71,000+)	19.3	13.3	
6. Public Insurance	48.0	78.3	0.000
7. Employed	70.2	41.3	0.000

Table 2: Significant Differences in Maternal and Infant Risk Factors between EPDS Score <12 and EPDS Score ≥12†

Maternal Risk Factors	EPDS Score <12 n = 171	EPDS Score ≥ 12 n = 46	p-value
1. Tobacco Use	49.9	58.5	0.128
2. Alcohol Use	24.7	24.4	0.971
3. No. of Prenatal Substance Use Screen 0 or 1	30.0	18.6	0.198
≥ 2	70.0	81.4	
4. Earliest Prenatal Substance Use Screen			0.077
1st Trimester	72.3	33.6	
2nd Trimester	14.8	29.7	
3rd Trimester	12.9	17.6	
5. Positive Prenatal Urine Drug Screen	21.5	58.4	0.187
6. Positive Urine Drug Screen at Delivery	29.9	37.9	0.319
7. Maternal Prenatal Psychiatric Diagnosis			0.000
Depressive Disorder	16.5	21.7	
Anxiety Disorder	23.3	22.9	
History of Post Partum Depression	0.6	13.0	
Bipolar/Mood Disorder	4.3	10.9	
Other	8.9	8.5	
8. Treatment of Self Harm	47.8	23.9	0.005
9. Intake of Psychiatric Medications during pregnancy	0.6	9.8	0.021
10. Intake of Psychiatric Medications post pregnancy	28.5	47.7	0.021
11. Infant Risk Factors			0.000
1. Term gestation	31.0	69.6	
2. Positive Urine Drug Screen	57.0	51.8	0.465
3. Positive Meconium Drug Screen	11.6	18.2	0.078
4. Neonatal Abstinence Syndrome (NAS)	22.3	30.2	0.032
5. Treatment for NAS	11.4	30.2	0.002
6. Length of Stay (days)	8.8	30.2	0.001
Mean ± SD	4.0 ± 3.0	10.1 ± 13.0	0.000
Median (25th - 75th Percentile)	2 (2 - 3)	2 (2 - 17)	

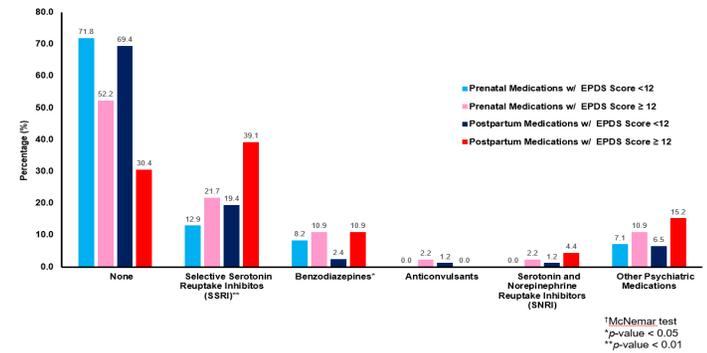
Table 3: Significant Unadjusted and Adjusted Odds Ratio [OR(95%CI)] for the Risk Factors of EPDS Score ≥12†

Risk Factors	Adjusted** OR (95% CI)
1. Maternal Diagnosis	Reference
Depression Disorder	2.25 (0.71 - 7.19)
Anxiety Disorder	1.35 (0.44 - 4.05)
History of Postpartum Depression	77.02 (6.33 - 938.93)**
Bipolar/Mood Disorder	1.81 (0.36 - 9.21)
Other Psychiatric Disorder	1.15 (0.22 - 6.13)
2. Infant Diagnosis	Reference
Well Baby	Reference
Neonatal Abstinence Syndrome	2.90 (1.05 - 7.97)*
3. Earliest Prenatal Substance Screen	Reference
First trimester (0-13 weeks)	Reference
Second Trimester (14 - 28 weeks)	1.37 (0.51 - 3.69)
Third Trimester (27 - 40 weeks)	1.10 (0.39 - 3.31)
4. No. of Prenatal Substance Screens	Reference
0 - 1 screen	Reference
≥ 2 screens	2.31 (0.84 - 6.32)
5. Psychiatric Medication during Pregnancy	Reference
No	Reference
Yes	0.66 (0.26 - 1.21)
6. Postpartum Psychiatric Medication	Reference
No	Reference
Yes	4.40 (1.95 - 9.92)***

†Logistic Regression  
\*\*Adjusted to demographic variables  
\*p-value <0.05, \*\*p-value <0.01, \*\*\*p-value <0.001

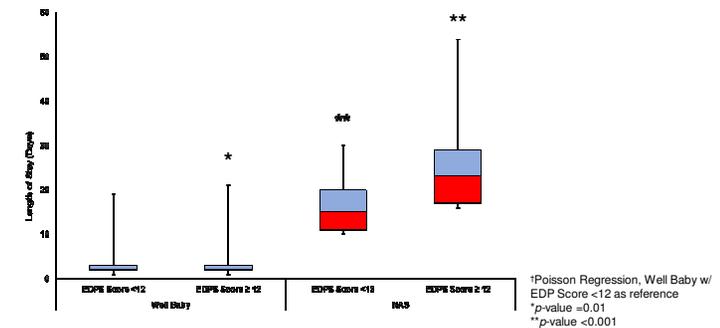
## RESULTS

Figure 1: Comparison of Prenatal and Postpartum Medications with EPDS Scores Showing Significant Differences in SSRI and Benzodiazepine Use†



†Chi-Square or Fisher Exact test, \*p-value <0.05, \*\*p-value <0.01, \*\*\*p-value <0.001

Figure 2: Significant Differences of EPDS Scores between Mothers whose Infants are Well or with NAS†



†Poisson Regression, Well Baby w/ EDP Score <12 as reference  
\*p-value <0.01  
\*\*p-value <0.001

## CONCLUSION

- We identified socioeconomic factors, psychiatric comorbidities and treatment, infants with diagnosis of NOWS and their LOS as postpartum depression risk factors for mothers with a history of substance use.

## SPECULATION

- Further evidence-based prevention strategies are needed and should include, close postpartum and infant follow up, screening and treatment of depression, and reliable parenting skills.

## REFERENCE

- Boden, S., Jones, C., & Cabacungan, E. (2020). Improved Maternal and Infant Outcomes with Serial Early Prenatal Substance Use Screening. *Submitted for Publication.*