Examining Maternal Chronic Conditions and the Effects on Congenital Anomalies in Florida 2014 - 2017

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Research Excellence Initiative
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Outline

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Introduction

➢ 70% of all deaths worldwide are attributable to chronic disease
➢ Occurrence is likely to increase in the coming decades
➢ Half of the US population is affected by at least one chronic disease
➢ More than half of reproductive-aged women (i.e., 19-49 years-old) are at risk of developing serious chronic disease
➢ The rate of preterm birth in Florida increased in 2017 moving from 10.15% in 2016 to 10.22% in 2017
Congenital anomalies Risk Factors

- Chronic Conditions
  - Diabetes
  - Hypertension
  - Obesity

- Sociodemographic Factors
  - Age
  - Education
  - Race/Ethnicity
  - Marital Status

- Behavioral Factors
  - Smoking
  - Alcohol use
Objectives

To describe the characteristics of mothers in Florida for the period 2014-2017.

To determine the prevalence of congenital anomalies in Florida for the period 2014-2017.

To investigate the association between maternal risk factors and the occurrence of congenital anomalies in Florida for the period 2014-2017.
Research Question

Maternal chronic conditions and the occurrence of congenital anomalies

• What are the characteristics of mothers who gave birth in Florida during 2014 -2017?
• What is the prevalence of congenital anomalies in Florida during 2014 -2017?
• What are the risk factors associated with the occurrence of congenital anomalies among mothers?
Methods

➢ Study Population:
  ❖ Entire Florida population from 2014-2017

➢ Data Source:

➢ Data Analysis:
  ❖ Descriptive study – chi-square
  ❖ Analytic study – logistic regression
  ❖ SAS 9.4- all calculations
Percentage of congenital anomalies by education in Florida, 2014 -2017

- High School or Less: 44.70%
- Some College: 35.20%
- Graduate: 20.10%

Percentage of congenital anomalies by marital status in Florida, 2014 -2017

- Married: 51.90%
- Unmarried: 48.10%
Percentage of congenital anomalies by mothers Body Mass Index categories

- Under weight: 13.0%
- Normal Weight: 39.9%
- Over weight: 23.5%
- Obese: 23.7%
Percentage of Congenital anomalies by Comorbidities

- Pre-Diabetes: 98.3%
- Gestational Diabetes: 93.4%
- Chronic Hypertension: 98.0%
- Gestational Hypertension: 99.9%
- Smoking: 91.7%
- Alcohol Use: 99.4%

Comorbidities: Yes, No

Percentage of mothers with congenital anomalies by comorbidities.
Congenital Anomalies by Urban/Rural Counties in Florida, 2014-2017

- Urban: 75.2%
- Rural: 24.8%
Percentage of Congenital anomalies in Florida 2014-2017

- 99.41% with congenital anomalies
- 0.61% without congenital anomalies
# Logistic Regression Analysis - Sociodemographic Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Odds Ratio</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 19 years</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>19 to 34 years</td>
<td>0.9</td>
<td>(0.8 - 1.1)</td>
</tr>
<tr>
<td>35+ years</td>
<td>1.1</td>
<td>(0.9 - 1.4)</td>
</tr>
<tr>
<td><strong>Race/ Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NH-White</td>
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<td></td>
</tr>
<tr>
<td>NH-Black</td>
<td>1.0</td>
<td>(0.9 - 1.1)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.8</td>
<td>(0.8 - 0.9)</td>
</tr>
<tr>
<td>Other</td>
<td>1.0</td>
<td>(0.9 - 1.1)</td>
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<tr>
<td><strong>Marital Status</strong></td>
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<tr>
<td>Married vs Unmarried</td>
<td>1.0</td>
<td>(0.9 - 1.1)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
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</tr>
<tr>
<td>High School or Less</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td>1.0</td>
<td>(0.9 - 1.1)</td>
</tr>
<tr>
<td>Graduate</td>
<td>0.9</td>
<td>(0.9 - 1.0)</td>
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</tbody>
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## Logistic Regression Analysis - Comorbidities

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio</th>
<th>Confidence Interval</th>
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</thead>
<tbody>
<tr>
<td>Pre-Pregnancy Diabetes</td>
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<tr>
<td>Yes vs No</td>
<td>2.1</td>
<td>(1.7 - 2.6)</td>
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<tr>
<td>Gestational Diabetes</td>
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<td></td>
</tr>
<tr>
<td>Yes vs No</td>
<td>1.4</td>
<td>(1.3 - 1.6)</td>
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<tr>
<td>Chronic Hypertension</td>
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</tr>
<tr>
<td>Yes vs No</td>
<td>1.2</td>
<td>(1.0- 1.4)</td>
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<tr>
<td>Gestational Hypertension</td>
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<td></td>
</tr>
<tr>
<td>Yes vs No</td>
<td>2.5</td>
<td>(0.8 - 7.8)</td>
</tr>
<tr>
<td>Body Mass Index cat</td>
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<td></td>
</tr>
<tr>
<td>Underweight</td>
<td>1.4</td>
<td>(1.2 - 1.5)</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>1.1</td>
<td>(1.0 - 1.1)</td>
</tr>
<tr>
<td>Over weight</td>
<td>1.1</td>
<td>(1.0-1.1)</td>
</tr>
<tr>
<td>Obese</td>
<td>1.1</td>
<td>(1.0-1.2)</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes vs No</td>
<td>1.2</td>
<td>(1.1 - 1.4)</td>
</tr>
<tr>
<td>Alcohol Use</td>
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<td></td>
</tr>
<tr>
<td>Yes vs No</td>
<td>1.1</td>
<td>(0.7 - 1.5)</td>
</tr>
</tbody>
</table>
Discussion

➢ Most birth in Florida are without congenital anomalies
➢ Mothers Located in rural are counties are more likely to report birth congenital anomalies
➢ There are differences by age, race/ethnicity, education and marital status
➢ However, Sociodemographic characteristics were not statistically significant in the regression model
➢ Maternal chronic conditions are associated with high risk of children developing congenital anomalies
Continued/Future Studies

- Map the prevalence of congenital anomalies by county from 2014-2017
- Analyze ten years trends in congenital anomalies from 2010 to 2017
- Analyze congenital hospitalizations in Florida, 2014-2017
- Analyze difference in age, race/ethnicity in rural vs. urban counties
Acknowledgements

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  ❖ Chronic Disease Epidemiologist- Florida Department of Health

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  ❖ Epidemiologist/Evaluator Manager-Florida Department of Health
References

