

Sarah E Williams MD, Joseph Hagan ScD, Monika S Patil MD

Department of Pediatrics, Division of Neonatology, Baylor College of Medicine, Texas Children's Hospital

BACKGROUND

Racial disparities in infant health outcomes are prevalent in the United States.

- In 2018, while overall infant mortality rate (IMR, death of an infant before their first birthday) was 5.7 per 1000 live births, the IMR for Non-Hispanic Black (NHB) infants was nearly double this at 10.8 per 1000 live births.¹

In Texas, the single leading cause of death for NHB infants is prematurity/low birth weight

- Congenital anomaly is the leading cause for all other racial and ethnic groups²

Racial disparities in infant outcomes are multi-factorial and include disparities in the quality of the delivery hospital.

PURPOSE

To understand if there are differences based on race in the mortality and morbidity of very-low birth weight (VLBW, <1500g birthweight) patients taken care of at a large academic medical center in Texas.

METHODS

Design

- Retrospective, cross-sectional, cohort study of Vermont Oxford Network data
- Inclusion:** VLBW infants, self-reported maternal racial and ethnic information, admitted to the Texas Children's Hospital (TCH) Neonatal Intensive Care Unit (NICU) from January 1, 2016-December 31, 2020.
- Exclusion:** Major congenital anomalies

Analysis

- Logistic and linear regression analyses comparing race categories for binary and quantitative outcomes, respectively, after controlling for maternal and patient characteristics that differed significantly.

Table 1. VLBW Outcomes

	Black Non-Hispanic (n=377)	Hispanic All (n=382)	White Non-Hispanic (n=323)	Asian Non-Hispanic (n=79)	P-value	Adjusted p-value†
Early Outcomes						
APGARs at 5 minutes ¹	8 (6, 9)	8 (6, 8)	8 (6, 8)	8 (7, 9)	0.026	0.770
PPV during initial resuscitation ²	253 (67.1)	241 (63.1)	210 (65.0)	42 (53.2)	0.118	0.144
Intubation during delivery room resuscitation ²	158 (41.9)	172 (45.0)	139 (43.0)	27 (34.2)	0.348	0.477
Cardiac Compressions in delivery room ²	14 (3.7)	13 (3.4)	10 (3.1)	0 (0)	0.391	0.984
Hypothermia ²	23 (6.1)	31 (8.1)	26 (8.1)	4 (5.1)	0.566	0.579
Early Onset Sepsis ²	8 (2.1)	8 (2.1)	4 (1.2)	0 (0)	0.476	0.807
Severe IVH ²	37 (9.8)	37 (9.7)	43 (13.3)	5 (6.3)	0.201	0.076
Died within 12 hours ²	7 (1.9)	7 (1.8)	2 (0.6)	1 (1.3)	0.497	0.543
Respiratory Distress Syndrome ²	247 (65.5)	259 (67.8)	228 (70.6)	45 (57.0)	0.113	0.038
Pneumothorax ²	11 (2.9)	35 (9.2)	21 (6.5)	2 (2.5)	0.002	0.011
Gastrointestinal Perforation ²	13 (3.5)	22 (5.8)	10 (3.1)	1 (1.3)	0.130	0.343
Late Outcomes						
Death before discharge ²	46 (12.2)	62 (16.2)	31 (9.6)	5 (6.3)	0.017	0.139
Death before discharge or major morbidity ^{2,3}	192 (50.9)	227 (59.4)	184 (57.0)	28 (35.4)	<0.001	<0.001
Late Onset Sepsis ²	40 (10.6)	47 (12.3)	36 (11.2)	7 (8.9)	0.793	0.812
BPD – moderate to severe ²	141 (37.4)	158 (41.4)	147 (45.5)	22 (27.9)	0.017	0.001
Severe ROP ²	15 (4.0)	25 (6.5)	26 (8.1)	5 (6.3)	0.153	0.025
Patent Ductus arteriosus ²	71 (18.8)	94 (24.6)	86 (26.6)	20 (25.3)	0.081	0.007
Necrotizing Enterocolitis ²	25 (6.6)	29 (7.6)	19 (5.9)	5 (6.3)	0.838	0.927
Cystic Periventricular Leukomalacia ²	11 (2.9)	3 (0.8)	11 (3.4)	1 (1.3)	0.078	0.063
Length of Stay (days) ¹	68 (44, 108)	69 (42, 103)	76 (45, 111)	71 (43, 100)	0.388	0.018

1. Median (interquartile range), Wilcoxon rank sum test p-value, linear regression adjusted p-value
 2. Frequency (%), Fisher's exact test p-value, logistic regression adjusted p-value
 3. Major Morbidity defined as severe IVH, moderate to severe BPD, severe ROP, and necrotizing enterocolitis
 †Adjusted for birthweight, gestational age, multiple gestation, maternal HTN and maternal diabetes.

RESULTS

Death before discharge was highest for the Hispanic ethnic group, and second highest in NHB infants (p = 0.017)

- Hispanic mothers had highest frequency of extreme pre-term deliveries.
- Non-Hispanic Black mothers had higher rates of hypertension.
- Non-Hispanic Asian mothers had higher rates of gestational diabetes
- Non-Hispanic white mothers had higher rates of multiple gestation.

After multivariable analysis,

- No significant difference in mortality between groups
- Significant difference existed between groups for the combined outcome of death before discharge or major morbidity (p< 0.001)

CONCLUSION

When controlling for differences in patient and maternal characteristics, there is no significant racial or ethnic difference in VLBW infant mortality in this cohort at a single academic center in Texas

Further Research

- Collect ZIP code related data for patients of this academic center to identify neighborhoods with higher percentages of preterm and very low birthweight

REFERENCES

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- "Maternal and Child Health Epidemiology: 2020 Healthy Texas Mothers and Babies Data Book," Texas Department of State Health Services