

# Fetal macrosomia in home and birth center births in the United States: Maternal, fetal, and newborn outcomes

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## INTRODUCTION

### Fetal Macrosomia

- Defined as at least 4000 g birthweight, but no formal consensus on classifications
- 7.9% prevalence in the US
- Can lead to maternal and neonatal complications during labor, birth, and post-birth
- Cannot be accurately diagnosed prenatally

### Community Birth

- Birth planned to take place at home or birth center, in contrast to planned hospital birth
- Preterm labor is generally a contraindication for community birth, therefore, birthweights in this population are higher than average in the US (22.6% macrosomia prevalence in a previous community birth study)

### Research Questions

1. Is macrosomia associated with selected maternal and neonatal outcomes in planned community births?
2. To what extent are the known adverse effects of macrosomia mitigated when considering macrosomia as an effect modifier?

## STUDY DESIGN

- Cohort study using data from the Midwives Alliance of North America Statistics Project 4.0, birth years 2012–2018
- Excluded: not planning community birth, transferred care to another provider prior to labor, non-US, breech, multiples, birthweight <2500 g, gestation <37 weeks

### Exposure: Macrosomia

- Non-macrosomia (reference): 2501–3999 g, grade 1: 4000–4499 g, grade 2: 4500–4999 g, grade 3: ≥5000 g

### Maternal and Neonatal Outcomes

- 3<sup>rd</sup> or 4<sup>th</sup> degree perineal tear, postpartum hemorrhage, cesarean, neonatal birth injury, shoulder dystocia, neonatal respiratory distress, NICU stay >24 hours, perinatal death

### Covariables

- Maternal race, advanced maternal age (>35 years), maternal education, marital status, parity and mode of birth (primiparous, multiparous without cesarean history, multiparous with cesarean history), gestational diabetes, preeclampsia, pre-gravid BMI (<30, ≥30), neonatal sex

## ANALYTIC METHODS

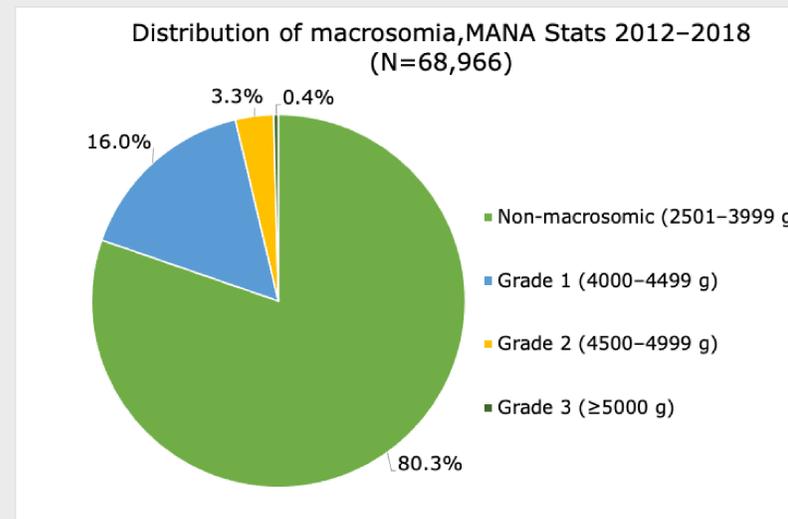
### Research Q1

- Logistic regression models (non-macrosomia as reference group) to test for association between 3 grades of macrosomia and each outcome
- Adjusted for primiparity, pre-gravid BMI, preeclampsia, gestational diabetes

### Research Q2

- Selected predictors were analyzed for association with each outcome using unconditional logistic regression models, separately for each subset of fetal macrosomia grade
- Grades 2 and 3 macrosomia grouped together to increase power

## RESULTS



### Research Q1

- Outcome rate rises with increasing grade of macrosomia. Among those with shoulder dystocia, 1.4% were non-macrosomic, 6.3% were grade 1, 15.2% were grade 2, and 26% were grade 3
- No statistically significant differences in perinatal death rates (small numbers)
- Dose-response relationship for perineal trauma, postpartum hemorrhage, shoulder dystocia, neonatal respiratory distress, and NICU stay >24 hours, but NOT cesarean

### Research Q2

- We hypothesized that a dose-response effect and substantial effect modification would be discernible, but no consistent relationships were observed
- Primiparity and multiparity with cesarean history were associated with most outcomes, compared to multiparity without cesarean history

## CONCLUSIONS AND IMPLICATIONS

- Most of this sample of newborns was non-macrosomic
- Our results were consistent with earlier studies and corroborated in this sample of planned community births
- Nuanced definitions of macrosomia are essential to understanding and interpreting risk
- We can't say that macrosomia in community births is more or less risky than hospital settings based on our results
- Prevention, management, and education remain the best strategies in mitigating effects of macrosomia because pre-birth fetal weight estimation is imprecise
- Full results and references can be found in the published manuscript: <https://doi.org/10.1111/birt.12506>

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