Maternal and Neonatal outcomes in nulliparous women at the extremes of maternal age

Ping Wen Ngo1, Ashalatha Shetty2, Sohinee Bhattacharya3

1 FY1, Aberdeen Royal Infirmary, NHS Grampian
2 Consultant Obstetrician, Aberdeen Maternity Hospital, NHS Grampian
3 Senior Lecturer, University of Aberdeen

AIM
Comparison of maternal and neonatal outcomes among nulliparous mothers across various ages, focusing primarily on the extremes of maternal age (≤16 years and ≥40 years), while taking into account the influence of maternal demographics and pre-existing medical conditions on delivery outcomes.

BACKGROUND
1. Teenage pregnancies are on the decrease over the past few decades, but the absolute number of teenage births remains high, causing significant impact on healthcare and social services.
2. Pregnancies among older mothers, on the other hand, have increased over the years. Many studies have established the association of the extremes of maternal age with poorer pregnancy outcomes, however there are inconsistencies in the findings due to different maternal demographics and different age cut-offs.

METHODS
1. Cohort study based on data extracted from the Aberdeen Maternity and Neonatal Databank.
3. The study population was divided into five age categories: ≤16 years, 17-19 years, 20-34 years (the reference group), 35-39 years and ≥40 years.
4. Outcome measures were divided into two groups: maternal outcomes (antepartum, intrapartum and postpartum) and neonatal outcomes.
5. Descriptive analyses and chi-square test were done for all sociodemographic characteristics and outcome variables.
6. Unadjusted and adjusted odds ratios (OR and adjOR) with 95% confidence intervals (95% CI) were obtained using the binary logistic regression analyses for the presence of outcomes.
7. Statistical significance was set at a p-value < 0.05.

RESULTS
1. Teenage mothers (≤16 years) were more likely to be smokers, single, underweight, deprived and to present with late gestation at booking.
2. As compared to mothers aged 20-34 years, teenage mothers had significantly higher rates of unexplained antepartum haemorrhage and preterm delivery, and were more likely to deliver vaginally.
3. Mothers in the upper extreme (≥40 years) were more likely to be married, overweight, of higher social class, to have assisted conception, to attend early for antenatal booking and to have pre-existing medical conditions such as essential hypertension and diabetes mellitus.
4. They were also more likely to have gestational diabetes, placenta praevia, elective and emergency caesarean sections, postpartum haemorrhage and a prolonged postnatal stay of 6-20 days.
5. Mothers aged 35-39 years had the same complications as older mothers although at a lower risk, with the addition of having beta-blocker or calcium channel blocker treatments, preterm delivery and babies requiring admission to the neonatal unit.

Table 1: Summary of poorer outcomes according to maternal age group

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>≤16 years</th>
<th>17-19 years</th>
<th>20-34 years</th>
<th>≥40 years</th>
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<tbody>
<tr>
<td>Antepartum</td>
<td>Unexplained APh (adjOR 1.84, 95% CI 1.33-2.52)</td>
<td>Gestational diabetes (adjOR 1.67, 95% CI 1.28-2.19)</td>
<td>Beta-blocker use (adjOR 1.41, 95% CI 1.17-1.68)</td>
<td>Gestational diabetes (adjOR 2.42, 95% CI 1.91-3.07)</td>
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<tr>
<td>Intrapartum</td>
<td>Spontaneous vaginal delivery (adjOR 1.64, 95% CI 1.43-1.87)</td>
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<td>Elective CS (adjOR 1.90, 95% CI 1.61-2.21)</td>
<td>Elective CS (adjOR 3.19, 95% CI 2.34-4.35)</td>
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<td>PROM (adjOR 2.64, 95% CI 1.11-6.20)</td>
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<td>Emergency CS (adjOR 1.96, 95% CI 1.61-2.39)</td>
<td>Emergency CS (adjOR 3.19, 95% CI 2.34-4.35)</td>
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<td>Preeclampsia (adjOR 1.90, 95% CI 1.14-3.17)</td>
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<td>Preterm delivery (adjOR 1.72, 95% CI 1.10-2.64)</td>
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<td>Neonatal</td>
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<td>Admission to neonatal unit (adjOR 1.25, 95% CI 1.11-1.46)</td>
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</tbody>
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CONCLUSION
1. The extremes of maternal age and mothers aged 35-39 years were associated with more adverse maternal and neonatal outcomes.
2. Optimal pre-pregnancy planning and maternity care should be provided for both older mothers and teenage mothers.
3. Socioeconomic status influences obstetric outcomes to some extent - thus, it is important to highlight gaps in health education and social support for socioeconomically disadvantaged mothers.

References