Effect of Gestational obesity and Gestational Diabetes on neonatal adiposity - Results of mediation analysis from a cohort study in South India

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INTRODUCTION

• Neonates born to mothers with Gestational Diabetes Mellitus (GDM) have an increased risk of adverse effects.
• GDM affects more than 17.8 million women worldwide, among whom 28% are in India(1); while obesity affects 20.4% women in India (2).
• We aimed to understand the independent effect of gestational obesity and GDM with neonatal adiposity and if GDM has a mediating effect.
• MAASTHI is a pregnancy cohort established in public hospitals of Bengaluru, South India to study the impact of glucose level in pregnancy on adverse effects in infants (3).

METHODS

MAASTHI
• Cohort established in April 2016.

Study location
• 3 public hospitals in Bengaluru.

Duration
• Apr 2016 to Feb 2019.

Sample
• 1120 pregnant women in 14 -36 gestational weeks.

GDM diagnosis
• FBS>=92 mg/dL and 2-hour 75 g PPBS >= 153 mg/dL. (4)

Gestational obesity
• Sum of skinfold thickness > 90th percentile of the distribution.

Neonatal adiposity
• Sum of skinfold thickness > 85th percentile of the distribution.

RESULTS

• In our study, 16.4% of women had GDM.
• The proportion of babies with adiposity was higher among women with obesity (25.7% vs13.5%) and women with GDM (23.9% vs 12.7%) when compared to their respective control groups.
• The odds of having adiposity in babies was 1.90 times higher in women with obesity (95% CI: 1.16, 3.12) and 1.99 times higher for women with GDM (95% CI: 1.31, 3.02) after adjusting for other confounders.
• GDM mediates 25.2% of the total association between gestational obesity and neonatal adiposity.

Table 1: Results of mediation analysis adjusted for potential confounders

<table>
<thead>
<tr>
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<th>OR (95% CI)</th>
<th>P value</th>
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<tbody>
<tr>
<td>Natural direct effect</td>
<td>1.90(1.16, 3.10)</td>
<td>0.011*</td>
</tr>
<tr>
<td>Natural indirect effect</td>
<td>1.16(1.04, 1.30)</td>
<td>0.008*</td>
</tr>
<tr>
<td>Marginal total effect</td>
<td>2.20(1.35, 3.58)</td>
<td>0.001*</td>
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<tr>
<td>Proportion mediated</td>
<td>0.252</td>
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DISCUSSION

• Gestational obesity and GDM are independently and causally related to offspring adiposity, in low and middle-income urban Indians.
• Interventions focused on obesity prevention in women, and efficient management of GDM might reduce childhood obesity.
• Examining the determinants of chronic diseases from a life course perspective in LMICs is useful.

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REFERENCES