Impact of a lifestyle intervention on stillbirth and other adverse perinatal outcomes in a cohort of obese women (Winner of the SIMPEUBRAIN Award, in memory of Claudio Bastia)

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Objective. Obesity is a well-known risk factor for several adverse perinatal outcomes. This study evaluates if a lifestyle intervention (LI) started early in pregnancy, has a benefit, namely in preventing stillbirth (SB).

Materials and Methods. This is a prospective cohort study including singleton obese women (BMI ≥ 30) delivered at a tertiary hospital between 2016 and 2020. A group of them was randomly referred to an ad-hoc clinic for LI (LI group). The program started at the 9-12th week implementing a low-glycemic index, low-saturated fat diet (total intake 1500 kcal/d), and physical activity. Follow-up was granted until delivery. The remaining received standard care (SC group) in public and private settings. Perinatal outcomes were collected. Student t-test, chi-squared test, and multivariate logistic regression were performed.

Results. A total of 14,849 deliveries occurred in the study period, and 1963 (13.2%) were considered obese. Among them, 654 (33.2%) entered the LI program. Gestational diabetes and preterm birth did not differ between groups, while severe obesity and hypertensive disorders were higher in the LI group (Table 1). Antepartum SB (5.1/1000) was more frequent in the SC group, in particular the SB risk increased with each class of obesity (OR 2.58, 95%CI 1.13-5.86), while it was reduced in those who received LI (OR 0.10, 95%CI 0.01-0.79). On the other hand, a low Apgar score was more frequent in the LI with respect to the SC group (p = 0.001).

Conclusions. An early intervention through LI program can prevent antepartum SB among obese women. Further randomized controlled trials are required to prove this effect.

<table>
<thead>
<tr>
<th>Table 1. Maternal characteristics and perinatal outcomes.</th>
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</thead>
<tbody>
<tr>
<td>Indonesia</td>
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<tr>
<td>Maternal characteristics</td>
</tr>
<tr>
<td>Mean age</td>
</tr>
<tr>
<td>Standard Care (N=1300)</td>
</tr>
<tr>
<td>Lifestyle Intervention (N=654)</td>
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<tr>
<td>P-value</td>
</tr>
<tr>
<td>Sex male</td>
</tr>
<tr>
<td>36.8 ± 5.5</td>
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<tr>
<td>36.8 ± 5.7</td>
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<tr>
<td>0.000</td>
</tr>
<tr>
<td>Maternal age</td>
</tr>
<tr>
<td>248 (37.5)</td>
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<tr>
<td>287 (44.2)</td>
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<tr>
<td>0.066</td>
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<tr>
<td>Country of origin</td>
</tr>
<tr>
<td>Italy</td>
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<tr>
<td>686 (52.4)</td>
</tr>
<tr>
<td>623 (47.6)</td>
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<tr>
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<tr>
<td>Others</td>
</tr>
<tr>
<td>473 (57.3)</td>
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<tr>
<td>461 (56.4)</td>
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<tr>
<td>0.060</td>
</tr>
<tr>
<td>Ethnicity</td>
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<tr>
<td>Caucasian</td>
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<tr>
<td>705 (56.1)</td>
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<tr>
<td>351 (45.1)</td>
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<tr>
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<tr>
<td>African</td>
</tr>
<tr>
<td>253 (19.1)</td>
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<td>206 (25.1)</td>
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<tr>
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<tr>
<td>108 (8.3)</td>
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<td>Low Education level (5th year)</td>
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<td>351 (45.1)</td>
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<td>Obesity categories</td>
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</tr>
<tr>
<td>791 (74.8)</td>
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<td>81 (6.2)</td>
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<tr>
<td>Class II</td>
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<td>257 (23.6)</td>
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<td>104 (25.3)</td>
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<tr>
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<td>78 (14.5)</td>
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<td>Preterm Birth</td>
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<td>53 (6.3)</td>
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<tr>
<td>0.011</td>
</tr>
</tbody>
</table>

Conclusions. An early intervention through LI program can prevent antepartum SB among obese women. Further randomized controlled trials are required to prove this effect.