Risk Factors Associated with the Development of Large for Gestational Age (LGA) Infants in Ontario
Ontario Agency for Health Protection and Promotion, ON Canada

Anna Vanderlaan, MPH
Daniel Harrington, PhD
Heather Manson, MD, FRCP, MHSc

Abstract

Large for gestational age (LGA) is defined as "the number of singleton live births whose birth weight is above the 90th percentile of the sex-specific birth weight for gestational age reference, expressed as a proportion of all singleton live births." The birth of an LGA infant can pose significant, immediate and long-term health risks for both mother and child.

In order to understand how risk factors affect LGA outcomes in Ontario, bivariate analyses were performed on Better Outcomes and Registry Network (BORN) data, extracted from the BORN Information System (BIS).

The following risk factors were all significantly associated with LGA births among Ontario mothers:
- Pre-pregnancy overweight and obesity
- Gestational and pre-existing diabetes
- Advanced maternal age
- History of previous birth (parity)

Interventions targeted at reducing the impact of LGA-related health consequences should focus on modifiable factors, such as helping women maintain healthy weights before conception and throughout pregnancy. Databases such as BIS should be used routinely for monitoring and contributing to an evidence base for improving public and population health.

Contact & References
Anna Vanderlaan, Product Development Advisor, Public Health Ontario | Santé publique Ontario, Phone: 647 260 7571, Email: Anna.vanderlaan@uhnpg.ca

Issue and Research Question

The birth of an LGA infant can pose immediate health risks for mother and child, including:
- prolonged labour
- shoulder dystocia
- fetal hypoxia
- caesarean delivery
- birth trauma
- intrauterine death
- Later in life:
  - diabetes
  - asthma
  - obesity
  - metabolic syndrome

Later in life: a better understanding of risk factors associated with the development of LGA infants, using locally-relevant data is necessary for informing public health practice and ultimately improving health outcomes for mothers and their babies.

Research Question: What risk factors are associated with the development of LGA infants and what do the Ontario-specific data indicate about these risks?

Methods

Analyses utilized BIS data corresponding to all singleton live-births occurring in Ontario between April 2012 and December 2013. Births were analyzed across a range of maternal factors including:
- gestational diabetes
- pre-existing diabetes
- body mass index (BMI)
- age
- parity

Results

In Ontario, there were 236,527 singleton live-births between April 2012 and December 2013, and LGA was present in slightly more than ten per cent of these (n=24,228). The prevalence of risk factors extracted from the overall BIS cohort, and within LGA births specifically is presented in Table 1. There were significant associations between LGA births and gestational diabetes, pre-existing diabetes, pre-pregnancy BMI, maternal age, and parity. Figures 1-4 express the relationship between the selected BIS risk factors and LGA birth using unadjusted ORs with 95% confidence intervals.

Table 1. Prevalence of risk factors in the overall BIS cohort, and among LGA births

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Prevalence in the overall BIS cohort</th>
<th>Prevalence among LGA births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational Diabetes</td>
<td>5.4%</td>
<td>7.9%</td>
</tr>
<tr>
<td>Pre-existing Diabetes</td>
<td>0.9%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Pre-pregnancy Overweight</td>
<td>25.0%</td>
<td>29.1%</td>
</tr>
<tr>
<td>Pre-pregnancy Obesity</td>
<td>19.0%</td>
<td>30.9%</td>
</tr>
<tr>
<td>Maternal Age ≥ 17</td>
<td>0.8%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Parity 0</td>
<td>43.5%</td>
<td>32.5%</td>
</tr>
</tbody>
</table>

Implications for Practice

Public health has a role in interventions related to modifiable risk factors (e.g., overweight and obesity, chronic disease). For example, a review of successful and potentially scalable public health interventions to help women reach healthy weights before conception, and maintain healthy weights throughout pregnancy may be warranted. Such interventions could prove valuable in reducing the incidence of LGA births in Ontario.