

## Does Low Birth Weight Vary Geospatially in Singapore?

Stella Rizalina Sasha,<sup>1</sup>*MBBS*, Seyed Ehsan Saffari,<sup>2</sup>*PhD*, John Carson Allen,<sup>2</sup>*PhD*, George SH Yeo,<sup>3</sup>*FRCOG*,  
Kok Hian Tan,<sup>3</sup>*FRCOG*

### Abstract

**Introduction:** Low birth weight (LBW, <2500 g) is an important risk factor for perinatal mortality and morbidity. We performed the first geospatial study of LBW in Singapore, with focus on the public sector and analysis of the national planning areas. **Materials and Methods:** A dataset of 24,615 singleton deliveries from 2012 to 2014 was obtained from the largest maternity hospital in Singapore. Maternal residences were identified with 28 planning areas according to postal code. Multiple logistic regression was used to examine associations between LBW rates and planning areas. Moran's I statistic was used to test for geospatial clustering of LBW rates among planning areas. **Results:** The LBW rate across planning areas ranged from 5.3 to 11.5 per 100 live births (median, 8.4). High LBW rates were associated with: 1) a lower individual socioeconomic status, 2) non-compliance to antenatal visits, and 3) biological factors such as maternal hypertension, low body mass index and Indian race. Moran's statistic indicated no geospatial clustering of LBW rates among the 28 planning areas ( $P = 0.12$ ). LBW rates were moderately correlated with the Socioeconomic Disadvantage Index ( $r = 0.58$ ) but uncorrelated with distance travelled to hospital ( $r = -0.08$ ). **Conclusion:** There was no evidence of clustering of LBW rates among planning areas in Singapore that would indicate inequitable distribution of health resources among planning areas. The 2 areas showing the highest rates of LBW infants were Outram and Bukit Merah. We recommend targeted health interventions and outreach programmes to encourage antenatal visits in these areas.

Ann Acad Med Singapore 2018;47:373-80

Key words: Moran's statistic, Planning areas, Socioeconomic Disadvantage Index

---

<sup>1</sup>Division of Obstetrics and Gynaecology, KK Women's and Children's Hospital, Singapore

<sup>2</sup>Centre for Quantitative Medicine, Office of Clinical Sciences, Duke-NUS Medical School, Singapore

<sup>3</sup>Department of Maternal Fetal Medicine, KK Women's and Children's Hospital, Singapore

Address for Correspondence: Dr Stella Rizalina Sasha, Division of Obstetrics and Gynaecology, KK Women's and Children's Hospital, 100 Bukit Timah Road, Singapore 229899.

Email: stella.sasha@mohh.com.sg