



Risk Factors and Adverse Perinatal Outcomes among Term and Preterm Infants Born Small-for-Gestational-Age: Secondary Analyses of the WHO Multi-Country Survey on Maternal and Newborn Health

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Abstract

Background: Small for gestational age (SGA) is not only a major indicator of perinatal mortality and morbidity, but also the morbidity risks in later in life. We aim to estimate the association between the birth of SGA infants and the risk factors and adverse perinatal outcomes among twenty-nine countries in Africa, Latin America, the Middle East and Asia in 359 health facilities in 2010–11.

Methods: We analysed facility-based, cross-sectional data from the WHO Multi-country Survey on Maternal and Newborn Health. We constructed multilevel logistic regression models with random effects for facilities and countries to estimate the risk factors for SGA infants using country-specific birthweight reference standards in preterm and term delivery, and SGA's association with adverse perinatal outcomes. We compared the risks and adverse perinatal outcomes with appropriate for gestational age (AGA) infants categorized by preterm and term delivery.

Results: A total of 295,829 singleton infants delivered were analysed. The overall prevalence of SGA was highest in Cambodia (18.0%), Nepal (17.2%), the Occupied Palestinian Territory (15.1%), and Japan (15.0%), while the lowest was observed in Afghanistan (4.8%), Uganda (6.6%) and Thailand (9.7%). The risk of preterm SGA infants was significantly higher among nulliparous mothers and mothers with chronic hypertension and preeclampsia/eclampsia (aOR: 2.89; 95% CI: 2.55–3.28) compared with AGA infants. Higher risks of term SGA were observed among sociodemographic factors and women with preeclampsia/eclampsia, anaemia and other medical conditions. Multiparity (≥ 3) (AOR: 0.88; 95% CI: 0.83–0.92) was a protective factor for term SGA. The risk of perinatal mortality was significantly higher in preterm SGA deliveries in low to high HDI countries.

Conclusion: Preterm SGA is associated with medical conditions related to preeclampsia, but not with sociodemographic status. Term SGA is associated with sociodemographic status and various medical conditions.

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Introduction

Small for gestational age (SGA) refers to infants whose size and weight is less than the average range for infants of the same gestational age. GA is not only a major indicator of perinatal

mortality and morbidity [1,2], but also increases the risk of chronic diseases such as cardiovascular disease and diabetes or developmental outcomes later in life [3,4]. In a UK population-based cohort study from 1997 to 2003, 43% of stillbirths were related to SGA [5]. Among 135 million infants born in low- and middle-income

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