A New Population-based Reference for Gestational Age-specific Size-at-birth of Singapore Infants

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Abstract

Introduction: There is currently a lack of representative data for local gestational age-specific size-at-birth percentile charts. Existing charts also suffer from limitations relating to the measurement of gestational age (GA) and an outdated population. We aim to construct reference values and charts for size-at-birth from 35 to 41 weeks, based on the healthy local population.

Materials and Methods: Prospective observational birth cohort study which recruited pregnant mothers from the 2 major public hospitals with obstetric service in Singapore, at <14 weeks gestation and data was collected for birth weight, length and head circumference of infants born from November 2009 to May 2011. Percentile curves were created separately for male and female infants using the lambda-mu-sigma (LMS) method. The new percentile curves were then compared with other internationally published growth charts.

Results: Smoothened curves for birth weight, length and head circumference centiles were created from 863 infants (460 males, 403 females). Male infants consistently exceeded female infants in all 3 variables at each GA. For a male and female Singapore infant at 38 weeks gestation, the 10-50-90th centile values for weight would be 2663-3096-3597 vs. 2571-2966-3417 grams, for length 46.4-48.6-51.1 vs. 45.6-48.0-50.4 cm, and for head circumference 32.0-33.5-35.2 vs. 31.4-32.9-34.6 cm. There was no statistically significant difference between ethnic groups. On comparing our birth weight curves with data from Finland across all gestations, birth weights in our term infants (GA ≥ 37 weeks) were found to be lower across the 10-50-90th percentiles.

Conclusion: The new centile charts in this study may be used as reference charts for size-at-birth for a subgroup of near-term and term infants. The use of foreign charts may lead to misclassification of small for gestational age (SGA) or large for gestational age (LGA) infants.

Key words: Birth head circumference, Birth length, Birth weight


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