

Predictors of Delivering Large-for-Gestational Age Babies: Pre-pregnancy Body Mass Index Versus Gestational Weight Gain

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Pre-pregnancy body mass index (PP-BMI) and gestational weight gain (GWG) are anthropometric tools, reflecting the balance between maternal and foetal metabolism. With increase global prevalence of delivering large-for-gestational age (LGA) babies, recognizing factors that anticipate this outcome becomes crucial. Possibility of delivering LGA babies by mothers from overweight and obese PP-BMI categories, based on their GWG was therefore evaluated. A nested case-control study was conducted at Teaching Hospital, Peradeniya, recruiting 512 pregnant mothers. Maternal PP-BMI and GWG were calculated and categorized based on National Guidelines. Birth weight >3.5kg at 37-40 weeks gestation was defined as LGA. Associations of PP-BMI and GWG with LGA babies were assessed by chi-square test and $p < 0.05$ considered significant. The odds of delivering LGA babies by overweight and obese mothers were assessed by their GWG, within a case-control sample. Prevalence of overweight and obesity were 22.3% and 5.0%, respectively. Prevalence of LGA babies was 17.8%, and 27% of pregnant mothers had excess GWG. Statistically significant association was observed between delivering LGA babies with overweight ($\chi^2=38.3$, $p < 0.001$) and obese ($\chi^2=33.3$, $p < 0.001$) PP-BMI categories. Possibility of delivering LGA babies was 3.2 times higher among mothers with overweight PP-BMI and excess GWG (95% CI-1.8-7.2), with compared to mothers with normal PP-BMI and excess GWG. The odds of delivering LGA babies was 3.4 times higher among mothers who had obese PP-BMI with excess GWG (95% CI-1.6-7.3), with compared to normal PP-BMI mothers with excess GWG. Also, likelihoods of delivering LGA babies was 5.0 times higher among mothers who had obese PP-BMI and adequate GWG (95% CI-2.0-12.3), with compared to mothers with normal PP-BMI and adequate GWG. Therefore, in studied cohort, possibility of delivering LGA babies was higher among mothers with adequate or excess GWG and obese PP-BMI. Similarly, excess GWG by overweight PP-BMI increases possibilities of delivering LGA babies.

Keywords: Body mass index, Pregnancy nutrition, Birth weight, Anthropometry

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