Maternal Risk Factors for Macrosomia: Findings from a Tertiary Care Setting in the Kandy District

M.G.D.K. Abewardhana[1], A.W.D.T. Ambagaspitiya[2]*, S. Tennakoon[3], R.M.C.J. Ratnayake[4], C.N.R.A. Alles[2]

[1]Divisional Hospital, Meegalewa,
[2]Dept. of Biochemistry, Faculty of Medicine, University of Peradeniya
[3]Dept. of Community, Faculty of Medicine, University of Peradeniya
[4]Dept. of Obstetrics and Gynecology, Faculty of Medicine, University of Peradeniya
**dineshaambagaspitiya@ymail.com*

Macrosomia, defined as birth weight (BW)>3.5 kg in term babies, is an emerging concern due to the associated delivery-related complications. While maternal body mass index (BMI), gestational weight gain (GWG) and macronutrient intake during pregnancy influence BW, there is limited local evidence on their role in development of macrosomia. This study aimed to evaluate the impact of maternal BMI, GWG, and energy and macronutrient intake during first half of the pregnancy on risk of delivering macrosomic babies, in a cohort of pregnant mothers attending Teaching Hospital, Peradeniya. A prospective cohort study was conducted recruiting singleton pregnant mothers aged 19-35 years. Data on BMI and GWG were categorized based on national guidelines. Energy and macronutrient intake over a month during first half of pregnancy was assessed by a validated questionnaire - "Food Frequency Questionnaire", and analyzed via nutrient analysis software. Data from 35 mothers who delivered macrosomic babies and 309 mothers who delivered normal BW babies (2.5 kg < BW > 3.5 kg) were analyzed. Relative risks (RR) of delivering macrosomic babies by overweight and obese BMI and excess GWG were assessed. Mean energy and macronutrient intakes were compared using Independent-t-test, and $p<0.05$ considered significant. The risk of delivering macrosomic babies was 5.5 times higher with overweight BMI (RR: 5.46, 95% CI: 2.73-10.89) and 5.9 times higher with obese BMI (RR: 5.86, 95% CI: 1.93-17.75), compared to normal BMI. The risk of delivering macrosomic babies was 6.3 times higher with excess GWG than adequate GWG (RR: 6.29, 95% CI: 2.95-13.39). The mean energy, carbohydrate and protein intake were higher among mothers who delivered macrosomic babies (2639.4 ± 464.5 kCal/day, 635.4 ± 131.6 g/day, 94.9 ± 24.0 g/day) than mothers who delivered normal BW babies (2466.7 ± 561.3 kCal/day, 612.5 ± 106.9 g/day, 91.8 ± 23.8 g/day), but not statistically significant. Maternal overweight or obese BMI, and excess GWG significantly increase the risk of delivering macrosomic babies. Weight monitoring and nutritional counselling of mother with such risk factors may mitigate the risk. Further studies are necessary to evaluate the impact of maternal energy and macronutrient intakes on birth weight.

Keywords: Large birth weight, macronutrient intake, pregnancy nutrition