

### Pre-Pregnancy Maternal Nutritional Status and Physical Activity Levels During Pregnancy Associated with Birth Size Outcomes in Minangkabau Women, Indonesia

Arif Sabta Aji,<sup>1</sup> Yusrawati Yusrawati,<sup>2</sup> Safarina G. Malik,<sup>3</sup> and Nur Indrawaty Lipoeto<sup>2</sup>

<sup>1</sup>Universitas Alma Ata Yogyakarta; <sup>2</sup>Andalas University; and <sup>3</sup>Eijkman Institute for Molecular Biology

**Objectives:** To analyse the association between maternal physical activity status and birth size outcomes and whether other determinants of confounding variable such as pre-pregnancy BMI (PP BMI) and gestational weight gain (GWG) during pregnancy affect birth size outcomes.

**Methods:** A prospective birth cohort study. Subject's PAL was measured at the first trimester (T1) and third trimester (T3) during pregnancy. Birth size outcomes were measured immediately after birth.

**Results:** The analyses included 183 mother and infant pairs with a mean newborn birth weight of  $3211.75 \pm 434.70$  g. Pregnant women at T3 had two times lower physical activity than T1 of pregnancy (OR, 2.18; CI, 1.044–4.57;  $P = 0.045$ ). Maternal PAL at T1 and T3

were in sedentary level (74.30% and 77%, respectively). There was no association between PP BMI and physical activity level during pregnancy. We found no significant association between PAL during pregnancy and birth size outcomes ( $P > 0.05$  for all comparisons). However, we had a significant association with birth weight after our confounder adjustment ( $P = 0.032$ ). There was a significant interaction between maternal PAL and PP BMI on birth weight and head circumference (Pinteraction  $< 0.05$ ).

**Conclusions:** Our study provides evidence that neither maternal physical activity status nor pre-pregnancy BMI in the prenatal period are associated with birth size outcomes (birthweight, birth length, and head circumference).

**Funding Sources:** This research was supported by the Ministry of Research, Technology and Higher Education of the Republic of Indonesia (Menristekdikti) with project name The Research of Master Program Leading to Doctoral Degree for Excellent Students (PMDSU Batch-2) in the year of 2018 (Grant No: 050/SP2HL/LT/DRPM/2018) and Indonesian Danone Institute Foundation (Grant No: 007/ROGD/IDIF/X2016). The views expressed herein are those of the individual authors and do not necessarily reflect those of Indonesia's Danone Institute Foundation (IDIF).