

### Prevalence and Predictors of Inflammation in Pregnant Women: Multi-Country Analysis From BRINDA Project

Hanqi Luo,<sup>1</sup> Chelsea Cole,<sup>2</sup> Afrin Jahan,<sup>3</sup> Janet Peerson,<sup>4</sup> Yi-An Ko,<sup>5</sup> O. Yaw Addo,<sup>6</sup> Parminder Suchdev,<sup>7</sup> and Melissa Young<sup>3</sup>

<sup>1</sup>Emory University; <sup>2</sup>Rollins School of Public Health, Emory University, Hubert Department of Global Health; <sup>3</sup>Hubert Department of Global Health, Rollins School of Public Health, Emory University; <sup>4</sup>University of California, Davis; <sup>5</sup>Department of Biostatistics and Bioinformatics, Rollins School of Public Health, Emory University; <sup>6</sup>Centers for Disease Control and Prevention, Nutrition Branch, International Micronutrient Malnutrition Prevention and Control Program Unit; and <sup>7</sup>Nutrition Branch, International Micronutrient Malnutrition Prevention and Control Program Unit, Centers for Disease Control and Prevention

**Objectives:** Limited data exist on the prevalence and predictors of inflammation during pregnancy. We aimed to characterize the inflammatory pattern and predictors of subclinical inflammation across pregnancy using multi-country analysis.

**Methods:** The Biomarkers Reflecting Inflammation and Nutritional Determinants of Anemia (BRINDA) project compiled 17 datasets of pregnant women ( $n = 14,077$ ) from 15 countries in both high- and low-income settings. Datasets were included if at least one inflammation biomarker (C-reactive protein, CRP, or  $\alpha$ -1-acid glycoprotein, AGP) were collected. We estimated the prevalence of any subclinical inflammation (defined as CRP  $>5$  mg/L or AGP  $>1$  g/L), examined AGP

and CRP patterns throughout pregnancy, and assessed the relationship between inflammation and covariates such as maternal age, gestational age, socioeconomic, and water and sanitation factors for each dataset.

**Results:** The prevalence of inflammation varied from 16.6% in Afghanistan to  $< 1\%$  in Vietnam using elevated AGP and from 52.9% in the US to 7.6% in Vietnam using elevated CRP. Inflammation was common but varied across datasets:  $>40\%$  in 5 datasets, 20–40% in 6 datasets, 10– $< 20\%$  in 5 datasets and  $< 10\%$  in one dataset. AGP decreased with increasing gestational age ( $P < 0.01$  in all seven datasets with gestational age information); however, the magnitude of decrease in AGP varied by country. In contrast, CRP showed an inconsistent pattern by gestational age. In multivariable models, the predictors of inflammation included age, trimester, urban or rural residence, socioeconomic status, improved sanitation, improved drinking water, lactating and smoking status, although strengths of association differed by dataset.

**Conclusions:** Although there was considerable heterogeneity in the prevalence of inflammation, inflammation was common across pregnancy in diverse settings. AGP, a measure of long-term inflammation, decreased across pregnancy in all countries, whereas the pattern for CRP was inconsistent. The relationship between socioeconomic and health factors and inflammation varied across countries.

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