COMMENTS AND RESPONSES

Comment on: Bardenheier et al. Variation in Prevalence of Gestational Diabetes Mellitus Among Hospital Discharges for Obstetric Delivery Across 23 States in the United States. Diabetes Care 2013;36:1209–1214

Bardenheier et al. (1) presented data on prevalence of gestational diabetes mellitus (GDM) associated with delivery as a function of state and race. They identified a number of important risk factors including race, maternal age, state, insurance, and obesity. Overlooked in the article was any discussion of the role of vitamin D. Vitamin D deficiency is an important risk factor for GDM. A review found that "serum 25-hydroxyvitamin D (25OHD) <50 nmol/L in pregnancy was significantly related to the incidence of GDM with an odds ratio of 1.61 (95% CI 1.19–2.17; $P=0.002$)" (2).

Solar ultraviolet-B (UVB) irradiance is the most important source of vitamin D for most Americans (3). Solar UVB doses in summer have been found protective against many types of cancer (3) and dental caries in youth (4). From Fig. 1 and Table 2 in ref. 1, it is evident that rates of GDM among hospital discharges are higher at higher latitudes and in the northeastern states and lower in the southwestern states—in general agreement with the findings for cancer and dental caries. Thus, given the observational data, it is a very intriguing hypothesis to suggest that vitamin D from solar UVB irradiance reduces risk of GDM. Such definitive studies need to be considered.

Researchers at the Medical University of South Carolina conducted a randomized controlled trial of supplementation of 4,000 IU/day vitamin D3, which led to finding that a serum 25OHD concentration of 40 ng/mL (100 nmol/L) is required for optimal concentrations of 1,25-dihydroxyvitamin D during pregnancy, and that there are no adverse effects such as hypercalcemia or hypercalcuria (5). 1,25-dihydroxyvitamin D is the active metabolite of vitamin D and, among other things, controls expression for at least 200 genes. In addition, there are many other health benefits of high 25OHD, including reduced risk of primary cesarean section, preeclampsia, premature delivery, low birth weight, and maternal infection (5).

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