

## Editorial

**Nutrition versus Great Obstetric Syndrome: A Bridge too Far?****Hermanto T. Joewono**

The term 'the great obstetrical syndromes' (not discrete entities, with more than one cause)<sup>1</sup> refers to preterm labor, preterm premature rupture of membranes, preeclampsia, small for gestational age (SGA), large for gestational age (LGA), stillbirth etc. The "Great Obstetrical Syndromes" are associated with defective deep placentation,<sup>2</sup> The same opinions mentioned (biomarkers) and as well <sup>3,4</sup> (added gestational diabetes on the list and biomarkers). More specifically explained that trigger for abnormal placental development and the subsequent cascade of events remains unknown.<sup>5</sup> Various dietary and lifestyle factors have been associated with an increased risk of preeclampsia; however, causality has been difficult to prove. Maternal interventions in dietary advice and modifications have lacked significant success in preventing FGR.<sup>6</sup>

There are at least two papers on nutrition in pregnancy, on behalf of FIGO released paper think nutrition first.<sup>7</sup> Women's nutrition and health can play a role in the intergenerational transmission of human health capital, ensuring future health, happiness, longevity, and economic progress. Epigenetic modifications, a modifiable risk factor, undernutrition and overnutrition may be associated with GOS<sup>8,9</sup>. Different findings found no significant associations were observed between dietary and infant's outcomes.<sup>10</sup> And that several nutrients and dietary factors previously believed to be implicated in the risk of pre-eclampsia have now been shown to have no effect on risk such as vitamins C and E, magnesium, salt,  $\omega$ -3 long-chain polyunsaturated fatty acids (fish oils) and zinc.<sup>11</sup> Findings in other specific nutrition related group; Undernutrition group<sup>12</sup> confirmed relationship with fetal growth restriction, low birth weight (LBW) and preterm birth. Obese group<sup>13</sup> increased risk for several GOS, increasing risk of developing preeclampsia with OR 6.04 in women whose BMI was  $\geq 40$  kg/m<sup>2</sup>. Vegan group<sup>8,9</sup>: Only potential concerns on neonatal adverse outcomes. Fasting group; Ramadan fasting: no adverse effects on birth weight or preterm birth rate. In Surabaya, some animal studies showed no effect of maternal fasting to the neuronal number and apoptotic index of newborn *Rattus norvegicus* cerebrum and cerebellum<sup>14,15</sup>.

Important on nutrition in pregnancy;<sup>8,9</sup> limitations of available evidence, many questions remain unanswered due to the many challenges of performing high-quality research in pregnancy. Thus, many recommendations for intake are based on observational studies and expert consensus, and lack randomized trials to support them. Other unanswered questions on nutrition are; absorption, distribution, metabolism, excretion or pharmacokinetics – dynamics of nutrition the same between potato dominant eaters (Western) versus rice dominant eaters (Asia)? Is it wise to treat iron deficiency anemia without measuring the blood albumin level? Of note also, finding in mechanism of autophagy that is essential for the cellular response to starvation and other types of stress that can be an answer to what happen during fasting state.<sup>16</sup> The most of the GOS result from non nutritional causes.<sup>17</sup> Markers for this GOS without nutritional related items. In conclusion: correlation between nutritional modification and great obstetrics syndrome is positive but large multi centre multi ethnicity, multi trimester with various group of nutrition studies are needed to further elaborate what have been found to specifically conclude causal relationship.

GOS: Great Obstetrical Syndrome LGA: Large for Gestational Age SGA: Small for Gestational Age DOHaD: Developmental Origins of Health and Disease FIGO: International Federation of Gynecologist & Obstetricians NIH: National Institute of Health LBW: Low Birth Weight FGR: Fetal Growth Restriction GDM: Gestational Diabetes Mellitus MDI: Mental Development Index.

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**REFERENCES**

1. Di Renzo, GC. The Great Obstetrical Syndromes. *J Matern-Fetal Neonatal Med.* 2009; 22(8): 633–5.
2. Brosens I, Pijnenborg R, Vercruyse L, and Romero R, The “Great Obstetrical Syndromes” are Associated with Disorders of Deep Placentation. *Am J Obstet Gynecol.* 2011 ; 204(3): 193–201.
3. NIH. Biomarkers for the ‘Great Obstetrical syndromes’ . 2022.
4. Gauster M and Desoye G. Great obstetrical syndromes: It’s all in the placenta. *Obgyn Key.*2020: 10.
5. Karumanchi SA, Lim K, August P. Preeclampsia: Pathogenesis. *UpToDate* Sep 2022.
6. Melamed M. on behalf of FIGO initiative on fetal growth: Best practice advice for screening, diagnosis, and management of fetal growth restriction. *Int J Gynecol Obstet.* 2021;152(Suppl. 1):3–57.
7. Hanson MA. The FIGO recommendations on adolescent, preconception, and maternal nutrition: “Think Nutrition First”. *Int J Gynecol Obstet.*2015; 131(S4) : S213–S53.
8. Garner CD. Nutrition in pregnancy: Assessment and counseling. *Up to Date* Sep 2022.
9. de Seymour DV, Beck KL, Conlon CA, et al.. An Investigation of the Relationship between Dietary Patterns in Early Pregnancy and Maternal/Infant Health Outcomes in a Chinese Cohort. *Front Nutr.*2022;9:775557. doi;10.3389.
10. Perry A, Stephanou A, Rayman MP. Dietary factors that affect the risk of pre-eclampsia. *BMJ Nutrition, Prevention & Health* 2022;0:e000399. doi:10.1136/ bmjnph-2021-000399
11. Hendrixson DT, Manary MJ, Trehan I, Wall LL. Undernutrition in pregnancy: Evaluation, management, and outcome in resource-limited areas. *Up to Date* Sept 2022.
12. Ramsey PS, Schenken RS. Obesity in pregnancy: Complications and maternal management. *Up to Date* Sept 2022.
13. Ucik N H, Hermanto TJ, Muhammad Miftahussurur, et al.. Effect of fasting during pregnancy to the number of cerebral and cerebellar neuron of newborn *Rattus norvegicus*. *Jur Ilmiah Ked Wijaya Kusuma.* 2020; 9(1): 1- 8.
14. Yunita KS, Hermanto TJ, Muhammad Miftahussurur. Effect of fasting during pregnancy to the number of cerebral and cerebellar neuron apoptotic index of newborn *Rattus norvegicus* *Care. Jur Ilmiah Ilmu Kes.* 2021;9(2): 298-308.
15. Yoshinori Ohsumi. *Autophagia*. Noble prize winner 2016 in Physiology or Medicine
16. Cui L, Quinn MJ, Zhang HJ. Origins of the great obstetrics and gynecologic syndromes. *Am J Obstet Gynecol.* 2021;225(3):349. doi: 10.1016.
17. Romero R, Jung E, Chaiworapongsa T, et al. Toward a new taxonomy of obstetrical disease: improved performance of maternal blood biomarkers for the great obstetrical syndromes when classified according to placental pathology. *Am J Obstet Gynecol.* 2022;227:615.e1-25.