

The effect of maternal anemia on anthropometric measurements of newborns

To the Editor,

I read the interesting study by Telatar et al¹ on the effect of maternal anemia on anthropometric measurements of newborns. Anemia in pregnancy remains a major public health problem. Iron deficiency anemia is the most frequent form of anemia in pregnant women. However, minor causes of anemia include folate and vitamin B12 deficiency, hemoglobinopathies, hookworm infestations, and malaria. Low maternal hemoglobin (Hb) levels are well-known to be associated with increased risk of preterm delivery, low birth weight (LBW) babies, Apgar score <5 at one minute, intrauterine death, and perinatal mortality. I have 4 comments regarding the aforementioned study.

First, the authors reported a 43% prevalence of anemia in the studied pregnant women a figure generally similar to that recorded in developing countries. The heterogeneity in the reported estimates of anemia in countries appeared to be due to differences in anemia assessment and applied diagnostic procedures. The magnitude and variation in global, regional, and country level prevalence rates of anemia are of public health importance, particularly in planning programs to improve pregnant health.

Second, an important limitation of the study that could invariably determine the studied fetal outcomes, in particular birth weight, is the exact trimester when the anemic process was initiated. In a recent Chinese study,² the risk of LBW was increased steadily with the decrease of first trimester Hb concentration. After controlling for confounding factors, women with Hb 80-99 gm/L had significantly higher risk for LBW (odds ratio=1.44, 95% confidence interval [CI]: 1.17-1.78) than women with Hb 100-119 gm/L. On the other hand, a U shape relationship was found between Hb concentration in the third trimester of pregnancy and the risk of LBW. The LBW increased with either increasing or decreasing Hb concentrations. However, there was no remarkable elevation of the risk when Hb level was within the range of 70-119 gm/L. Women with severe anemia (Hb <70 gm/L) had a 4 fold higher risk (95% CI: 2. 1-7.5) of LBW compared with women with Hb value of 90-99 gm/L. In addition, women with a high Hb concentration (Hb >130 gm/L) had 50% higher risk (95% CI: 1.2-1.9) of LBW.³

Third, the authors stated that the highest birth weight belonged to the mother group with Hb of 9-9.5 gm/dl

and suggested the optimum Hb concentration for birth weight to be 9-9.5 gm/dl. This might be solely applicable to the Turkish pregnant women. Various factors might determine the optimum Hb value for the highest birth weight in anemic pregnant women namely, nutritional, genetic, physiological, and socio-economic backgrounds, the prevailing types of anemia in that community, and the adequacy of antenatal care. In a Chinese study,³ the lowest incidence of LBW was found in pregnant women with Hb levels at 90-99 g/L. In another British study,⁴ the minimum incidence of LBW (<2.5 kg) was found in association with Hb concentration of 95-105 gm/L. This is widely regarded as indicating anemia in the pregnant woman but, if associated with a mean corpuscular volume >84 fl, should be considered optimal. In another Iraqi study,⁵ the optimal increment of birth weight was seen in anemic pregnant women with Hb levels of 90-110 gm/L, coinciding with greatest plasma volume expansion and compensatory increase of placental vascularization in anemic pregnant to overcome hypoxia.

Fourth, gynecologists can play a crucial role in minimizing the jeopardizing aftermath of anemia on pregnant women and fetus even before conception through planning regular antenatal care visits. Such care must include early detection of potential anemia, determining their possible etiologies, provision of nutritional education, and institution of appropriate prophylactic and therapeutic remedies, in particular iron and folate.

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Reply from the Author

We thank Dr. Al-Mendalawi for his valuable comments. We agree with him regarding that maternal anemia in pregnancy remains a major public health problem in developing countries⁶⁻⁸ and also in Turkey,⁹ which was the leading point that made us conduct such a study. As stated by Dr. Al-Mendalawi, although the exact time during pregnancy when the anemic process was initiated is one of the major determinants of fetal outcomes, this issue was not the main determinant in our study which could probably be evaluated in another prospective study. In the study of Steer,¹⁰ it was found that the lowest incidence of low birth weight occurred

with a lowest hemoglobin of 95-105 g/l. In view of these findings, we wanted to emphasize the necessity of re-evaluation of commonly accepted hemoglobin level for maternal anemia as 110 g/L for developing countries with future studies.

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