



Impact of Maternal Nutrition Supplementation and Probability of Low Birth Weight During Pregnancy

Zhihui Liu*

Department of Obstetrics and Gynaecology, College of Medicine, Dong-A University, Busan, Republic of Korea

DESCRIPTION

Low Birth Weight (LBW), defined as a birth weight of less than 2500 g, is a major public health concern as it is associated with increased risks of infant mortality, morbidity, and long-term adverse health outcomes. LBW can result from two main causes one is Preterm Birth (PTB), which refers to delivery before 37 weeks of gestation, and Small-For-Gestational Age (SGA), which is a birth weight below the 10th percentile for gestational age. Both PTB and SGA can be influenced by maternal nutritional status before and during pregnancy, as well as by other factors such as infections, environmental exposures, and genetic variations. Maternal nutrition supplementation is one of the strategies to improve maternal and fetal health and prevent LBW and its components. However, the evidence on the effectiveness and safety of different types of supplements is not conclusive. The most common supplement recommended for pregnant women is Iron-Folic Acid (IFA), which aims to prevent maternal anemia and neural tube defects in the fetus. However, IFA alone may not be sufficient to address the multiple micronutrient deficiencies that are prevalent in many Low- and Middle-Income Countries (LMICs), where the burden of LBW is highest. Therefore, Multiple Micronutrient Supplements (MMS), which contain a range of vitamins and minerals, have been proposed as an alternative or an addition to IFA.

Several systematic reviews and meta-analyses have compared the effects of MMS versus IFA on maternal, fetal, and infant outcomes, including LBW and its components. The results have been inconsistent and sometimes contradictory, depending on the inclusion criteria, the quality of the studies, and the outcome measures. However, some general trends can be observed from the most recent and comprehensive reviews. For example, in 2019 it was found that MMS reduced the risk of LBW by 11%, SGA by 8%, and stillbirth by 8%, compared to IFA, based on 17 trials from LMICs. However, there was no significant effect on PTB, maternal anemia, or neonatal mortality. In 2020 it was

found similar results, with MMS reducing the risk of LBW by 12%, SGA by 9%, and stillbirth by 9%, compared to IFA, based on 19 trials from LMICs. However, this review also found that MMS increased the risk of PTB by 7%, possibly due to the increased survival of preterm infants who would otherwise die in utero. Both reviews concluded that MMS may have benefits for fetal growth and survival, but also potential harms for PTB, and that more research is needed to identify the optimal composition, dosage, timing, and target population of MMS. Other types of maternal nutrition supplements that have been studied for their impact on LBW and its components include calcium, zinc, vitamin A, vitamin D, omega-3 fatty acids, and probiotics. However, the evidence for these supplements is less robust and more variable than for MMS, and the mechanisms of action are not well understood. Therefore, more high-quality trials are needed to evaluate the effects of these supplements on maternal and fetal health, and to determine the best combination and timing of supplements for different contexts and populations.

CONCLUSION

Maternal nutrition supplementation is a promising intervention to prevent LBW and its components, but the evidence is not conclusive and consistent. Besides the type of supplement, the timing of supplementation may also affect the impact of maternal nutrition on LBW and its components. Some studies have suggested that early supplementation, starting before or in the first trimester of pregnancy, may have greater benefits than late supplementation, starting in the second or third trimester. More research is needed to optimize the design and delivery of supplements, and to balance the benefits and risks for different outcomes and settings. Meanwhile, policy-makers and practitioners should consider the local prevalence and causes of LBW, the availability and cost of supplements, and the preferences and needs of pregnant women, when deciding on the best supplement regimen for their context.

Correspondence to: Zhihui Liu, Department of Obstetrics and Gynaecology, College of Medicine, Dong-A University, Busan, Republic of Korea, E-mail: liuzhu@uni.kr

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