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EDITED AND REVIEWED BY
Ronadip R. Banerjee,
Johns Hopkins University, United States

*CORRESPONDENCE
Zheng Feei Ma
✉ zhengfeeima@gmail.com

RECEIVED 01 August 2023
ACCEPTED 25 September 2023
PUBLISHED 25 October 2023

CITATION
Ma ZF (2023) Editorial: Nutrient requirements
and diabetes during pregnancy.
Front. Nutr. 10:1270576.
doi: 10.3389/fnut.2023.1270576

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Editorial: Nutrient requirements and diabetes during pregnancy

Zheng Feei Ma*

College of Health, Science and Society, University of the West of England, Bristol, United Kingdom

KEYWORDS

iodine deficiency, maternal, pregnancy, diabetes, gestational

Editorial on the Research Topic

Nutrient requirements and diabetes during pregnancy

Introduction

“Good health and wellbeing” is one of the Sustainable Development Goals (SDG) adopted by the United Nations in 2015 that highlights the importance of healthy lives and wellbeing for everyone at all ages. This include reducing the maternal mortality rates and preventable deaths under 5 years of age. One of the measures that can be taken to address these issues is to ensure that women meet the required nutrient recommendations, which may help to ensure the development of normal growth and good health of the infants. Hence, the nutritional status of women during pregnancy is critical for both the women and their infants. In particular, the first 1,000 days of life has been reported to be important for the prevention of non-communicable diseases in the later stage of life. Certain maternal conditions during pregnancy [e.g., iodine deficiency and gestational diabetes mellitus (GDM)] may lead to increased risks of some adverse health outcomes in infants (1). Therefore, the collection of the published papers in this Research Topic aimed to focus on the nutrient requirements and diabetes during pregnancy (Zhang et al.; Liu et al.; Gao et al.; Yan et al.)

One of the published papers included in this Research Topic focused on the maternal metabolism at different stages of pregnancy (Zhang et al.). The authors investigated the physiological hormones and nutrient metabolism characteristics of maternal serum and amniotic fluid. In their study, the dynamic temporal regulation of metabolic changes during pregnancy was associated with important maternal physiology during pregnancy (Zhang et al.). This because these metabolic changes are aim to protect the development of the fetus and ensure sufficient nutrient supply to the fetus. However, at the same time, it is important to note that some of these metabolic alterations including diabetes may have negative consequences on the infants. Therefore, there has been an increasing interest in exploring the effects of such metabolic alteration on the infant long-term health outcomes (2).

Another three published studies in this Research Topic were associated with GDM, which is one of the most common metabolic complications during pregnancy (Liu et al.; Gao et al.; Yan et al.). This because insulin resistance is mediated by increased level of fat deposits and placental hormones, leading to the blocking of insulin actions from binding to its receptors (3).

The prevalence of GDM has been reported to range from 1 to 14%. In addition, other factors including obesity and physical inactivity are associated with higher insulin resistance, which leads to increased prevalence of GDM (4). Infants born to mothers who are diagnosed with GDM may have a higher risk of becoming obese or developing diabetes later in life (4).

Some micronutrient deficiencies during pregnancy have been associated with adverse pregnancy and infant outcomes. One of the common micronutrient deficiencies reported in pregnant women is iodine deficiency (5, 6). Iodine deficiency has been reported to affect about 30% of the world populations (7). For example, children of women with mild iodine deficiency during pregnancy were reported to have lower scores in reading accuracy, comprehension and verbal IQ than those of women with sufficient iodine status during pregnancy (8, 9). If left untreated, mild iodine deficiency during pregnancy may progress to severe iodine deficiency, which can lead to even greater harm and adverse obstetric outcome including increased risk of pregnancy loss and infant mortality (10).

Another common micronutrient deficiency during pregnancy is iron deficiency. There are up to 38% of women during pregnancy who reported to have anemia, with increased prevalence in low-income countries. In women with GDM, there is an association with intrauterine fetal hypoxia, which limits the oxygen supply to the fetus and may potentially increase the risk of iron deficiency in the fetus. This occurs as fetal erythropoiesis (production of red blood cells) increases, sometimes exceeding the system's capacity to adequately supply iron (11). Therefore, it is imperative to ensure that women are getting enough nutrients during pre-pregnancy and throughout pregnancy to prevent such adverse effects.

Therefore, it is important to note that these specific maternal conditions such as nutrient deficiencies and GDM are associated with higher risk of maternal and infant complications. In addition, the fetus is dependent on the maternal nutrition for normal growth and development. Therefore, good maternal nutrition plays an important role in ensuring healthy pregnancy and infant outcomes.

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Call to action

Balancing nutrient requirements and managing diabetes during pregnancy is a multifaceted task. In addition, one of the public health initiatives should advocate for accessible and comprehensive support for pregnant women, especially with diabetes, to ensure that they receive the necessary support and resources to foster a healthy future for themselves and their newborns. Other public health initiatives include strategies to increase awareness of maternal nutrition status in women. The examples of nutrition information that may be interested to pregnant women are healthy eating, breastfeeding, heart burn, morning sickness and weight management. This is because increased awareness of maternal nutrition status may help them make better decisions and changes in their daily lives to protect their own health and fetal health (12).

Author contributions

ZM: Writing—original draft, Writing—review and editing.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author declared that they were an editorial board member of *Frontiers*, at the time of submission. This had no impact on the peer review process and the final decision.

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