

Supplemental Micronutrients Administration in Pregnant Women with COVID-19: Indicated or Not?

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Abstract

More than one year has been passed since the first report of COVID-19 from Wuhan city of China. Soon this virus was spread around the world and became a pandemic and till now, over 122 million people have been infected and over 2.69 million of them have been dead due to COVID-19 infection. Many efforts have been done regarding different aspects of COVID-19 pharmacotherapy and its challenges. Coronavirus can negatively affect the immune system. This complication can be exaggerated in pregnant women with micronutrient and elemental deficiencies. Also, coronavirus itself can induce micronutrients malabsorption and result in their severe deficiencies that can lead to increased risk of infection in these group of patients. The most important micronutrients that can support the immune system are zinc, selenium, iron, vitamin A, C, D, and E. So, it has been suggested that administration of supplemental micronutrients would be helpful to prevent the severe complications of COVID-19 infection in pregnant women [4]. Vitamin A deficiency during pregnancy can result in congenital defects, anorectal malformation, schizophrenia, gestational diabetes, and diabetes mellitus. Also, excessive administration of supplemental vitamin A should be avoided during pregnancy. Vitamin C deficiency during pregnancy could be accompanied by several pregnancy complications including gestational diabetes, gestational hypertension, and preeclampsia. So, administration of supplemental vitamin C would be promising in pregnant women who are infected with new coronavirus to prevent these complications during pregnancy and boosting of the immunity system. VitaminD can play an important role in protection against viral respiratory tract infection.

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Dear editor,

More than one year has been passed since the first report of COVID-19 from Wuhan city of China. Soon this virus was spread around the world and became a pandemic and till now, over 122 million people have

been infected and over 2.69 million of them have been dead due to COVID-19 infection. Many efforts have been done regarding different aspects of COVID-19 pharmacotherapy and its challenges [1-3]. Coronavirus can negatively affect the immune system. This complication can be exaggerated in pregnant women with micronutrient and elemental deficiencies. Also, coronavirus itself can induce micronutrients malabsorption and result in their severe deficiencies that can lead to increased risk of infection in these group of patients. The most important micronutrients that can support the immune system are zinc, selenium, iron, vitamin A, C, D, and E. So, it has been suggested that administration of supplemental micronutrients would be helpful to prevent the severe complications of COVID-19 infection in pregnant women [4]. Vitamin A deficiency during pregnancy can result in congenital defects, anorectal malformation, schizophrenia, gestational diabetes, and diabetes mellitus. Also, excessive administration of supplemental vitamin A should be avoided during pregnancy [4]. Vitamin C deficiency during pregnancy could be accompanied by several pregnancy complications including gestational diabetes, gestational hypertension, and preeclampsia. So, administration of supplemental vitamin C would be promising in pregnant women who are infected with new coronavirus to prevent these complications during pregnancy and boosting of the immunity system. Vitamin D can play an important role in protection against viral respiratory tract infection through the modulation of the process of cytokine release and activation [5]. Vitamin D deficiency during pregnancy would be associated with the risk of preeclampsia, preterm birth, and low weight birth, and viral respiratory tract infection. So, vitamin D administration would be essential to prevent maternal and neonatal complications and reduce the severity of COVID-19 infection during pregnancy by enhancing the potential of the immunity system against viral infection [4, 5]. Also, it has been reported that administration of supplemental doses of vitamin E during pregnancy would be associated with immunity system amplification, improves resistance against COVID-19 infection, and better pregnancy outcomes [4]. Myo-inositol (vitamin B8), the precursor of inositol-3-phosphate, with the potential mechanism of anti-inflammatory, antioxidant, surfactant regeneration, and immune response regulation through the IL-6 cascade reduction can induce protective effects against COVID-19 especially in pregnant women [5]. Iron supplementation during pregnancy could be associated with a lower risk of low birth weight, a strengthened immunity system, and higher resistance against COVID-19 infection. Also, iron supplementation can prevent maternal/neonatal mortality and complications. So, iron is one of the most essential micronutrients that should be administered in pregnant women especially those who are infected with COVID-19. Selenium, as an anti-oxidant agent, can prevent oxidative stress during pregnancy and induce an immunity system. So, selenium administration during pregnancy would be accompanied by reduced severity of COVID-19 infection and complications during pregnancy [4]. Severe zinc deficiency during pregnancy can result in limited fetal growth and teratogenic effects. So, administration of supplemental zinc during pregnancy would be valuable to boost the immune system, reduce coronavirus replication, and avoidance of maternal/neonatal complications during the COVID-19 era [4]. Results of a recent study revealed the impaired zinc-copper balance (Zn/Cu ratio) in pregnant women infected with COVID-19. Serum zinc level has been decreased in the mentioned pregnant women with COVID-19 during all their three semesters. Also, it has been shown that serum zinc level was inversely correlated with the inflammatory markers of COVID-19 including IL-6, ESR, and CRP [6]. In these pregnant women with COVID-19 administration of supplemental zinc would be helpful to prevent COVID-19 severe complications and reduce the duration of hospitalization. COVID-19 in pregnant women can result in higher serum copper levels in first and third trimesters. In this regard, a diminished Zn/Cu ratio would be predicted in pregnant women with COVID-19. Serum magnesium level has been significantly enhanced in COVID-19 patients during pregnancy. Also, it has been reported that higher serum magnesium level during COVID-19 was associated with worsen outcome and more complications.

So, according to our clinical practice and previous researches administration of these essential micronutrients including zinc, selenium, and iron and vitamins including vitamin A, B8, C, D, and E with optimum recommended dietary allowances (RDAs) during pregnancy would be promising and suggestive to improve maternal/neonatal complications during COVID-19 infection due to the enhanced immunity system against viral infection and COVID-19 pneumonia [4-6].

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