Empowering Mothers

New Insights into Multiple Micronutrient Supplementation During Pregnancy

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Micronutrients in Pregnancy

Micronutrients (vitamins and minerals) are essential nutrients required in tiny amounts for healthy growth, disease prevention, and wellbeing across all life stages. They have a particularly significant role during pregnancy. Two in every three women of reproductive age in low- and middle-income countries (LMICs) are already deficient in several key micronutrients,[1] and the problem is likely even more severe among pregnant women. The daily requirements of vitamins and minerals during pregnancy increase by as much as 50%.[2] For example, a non-pregnant woman needs 150 µg of iodine, but a pregnant woman needs 220 µg (+47%) of this nutrient.

During pregnancy, prenatal multiple micronutrient supplements (MMS) are provided to pregnant women to prevent micronutrient deficiencies and ensure healthier pregnancy outcomes. Since 2021, MMS have been included in the World Health Organization (WHO) List of Essential Medicines (EML), based on their efficacy, safety, and cost-effectiveness, as they are considered essential from a public health perspective. Countries around the world are at various stages of introducing and providing MMS to pregnant women.

Powering Maternal Health

Benefits of MMS compared to iron-folic acid supplements (IFAS)

For pregnant women, MMS have been shown to improve maternal nutrition status, in comparison to IFAS, and play an important role in reducing maternal micronutrient deficiencies (such as in vitamins A, B2, B6, B12, D, folate, and zinc).[3,4] Consuming MMS resulted in adequate weight gain during pregnancy, without increasing the risk of excessive gestational weight gain.[5]

Optimizing Birth Outcomes and Infant Health

Does taking MMS during pregnancy improve birth outcomes?

Studies combining data from over 20 years of research[6,7] show that taking MMS lowers the risk of having a low birthweight (LBW) baby, delivering prematurely, or experiencing a stillbirth, more effectively than taking IFAS alone.

These benefits are even more pronounced among anemic and underweight pregnant women, those who begin supplementation earlier, and those with higher adherence.[7] Similar positive birth outcomes have been observed among adolescent pregnant girls in LMICs, with fewer babies born too small or too soon (Figure 1).[8]

In addition, MMS has also been proven to reduce the risk of giving birth to small vulnerable newborns, particularly the types with the greatest mortality risk.[9]

Recent findings also show that higher MMS adherence (> 90%) and taking a greater number of tablets is generally associated with more positive birth outcomes, reinforcing the need to start supplementation as early as possible in pregnancy.[10]

Does taking MMS during pregnancy benefit infant growth?

Research also shows that MMS improves size at birth and subsequent infant growth through 6 to 12 months of age.[11] Compared to antenatal IFAS, MMS results in greater infant weight and length from birth to 6 months, greater head circumference from birth to 12 months, and greater mid-upper arm circumference (MUAC) from birth to 3 months.

MMS also reduces the risk of undernutrition in early infancy. From birth to 3 months of age, babies whose mothers take MMS have a lower risk of stunting (being too short for their age), underweight (weighing too little for their age), having a small head circumference, and a low MUAC. In addition, MMS reduces the risk of wasting at birth (being too thin for their length).

Figure 1: Benefits of MMS on Birth Outcomes Over and Above IFAS Alone

The **12%** risk reduction in LBW, observed with MMS, has the potential to benefit **2.2 million** infants in LMICs every year. The benefits are even greater in pregnant women with anemia and pregnant adolescent girls.

RISK REDUCTION

Pregnant Women	Pregnant Women with Anemia	Pregnant Adolescent Girls
8% in stillbirths	**19%** in LBW	**19%** in LBW
2% - 9% in small for gestational age (SGA) births	**29%** in infant mortality	**14%** in SGA births
6% - 8% in preterm births	**16%** in preterm births	**14%** in preterm births
13% - 19% in very preterm births		
12% - 14% in LBW		

Safety of MMS

The United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) is the most commonly used formulation of MMS. It is carefully formulated to provide just the right amounts of 15 essential micronutrients recommended for a healthy pregnancy. The recommended dietary allowance (RDA) of the micronutrients in MMS is safe for both the mother and baby. Even when consumed daily alongside a regular balanced diet, which can be challenging to maintain in resource-poor settings, there are no negative effects of getting greater amounts of vitamins and minerals.[12] MMS is a safe and beneficial addition to regular prenatal care.

The United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAP) for MMS is carefully formulated to provide just the right amounts of 15 essential micronutrients recommended for a healthy pregnancy.

Iron Content of UNIMMAP MMS (30 mg) vs. IFAS (60 mg)

Questions have been raised about whether UNIMMAP MMS with 30 mg of iron is sufficient to prevent maternal anemia, compared to some IFAS formulations with 60 mg of iron. Thirty mg of iron covers the RDA of iron during pregnancy, and recent research shows that MMS with 30 mg of iron during pregnancy is comparable to IFA with 60 mg of iron in terms of preventing maternal anemia and deaths during the neonatal period.[13,14] This may be due to the presence of other micronutrients, especially vitamins A, B2, and C that enhance iron absorption and/or utilization compared to IFAS, and because MMS help prevent other nutritional causes of anemia, such as deficiencies in vitamin A, B12, and folic acid. MMS is positioned for preventing anemia, alongside other WHO-recommended context-specific preventive measures.

If a woman develops anemia, additional iron should be provided while continuing daily MMS throughout pregnancy. Interim guidance by the MMS Technical Advisory Group (TAG) explains how this can be achieved with different combinations of supplements.[15]

MMS: One of the Best Bets for Development

Research shows that MMS offers tremendous value compared to IFAS alone. Despite a slightly higher cost due to the additional micronutrients, MMS is a smart investment. A bottle of 180 tablets of UNIMMAP MMS costs as little as $2.5 per pregnancy.[16] It is highly cost-effective and leads to better health outcomes for both mothers and their babies, including long-term human capital gains.

MMS offers a remarkable return of over $37 for every dollar invested.

If MMS were provided to 90% of pregnant women, it could result in an extra 5 million school years for children, leading to an estimated annual increase of approximately $18 billion in lifetime income.[17] The 2023 Copenhagen Consensus Nutrition Report also identified MMS as one of the best investments for development, offering a remarkable return of over $37 for every dollar spent. When it comes to improving health and securing brighter futures, MMS is a clear winner.[18]

Links to Useful Resources

- Nutrition International Cost-Benefit Tool
- Healthy Mothers Healthy Babies Knowledge Hub
- Focusing on Multiple Micronutrient Supplements in Pregnancy: Second Edition - Sight and Life Special Report
- UNICEF's Improving Maternal Nutrition Acceleration Plan
- Interim Guidance for Concurrent Antenatal Multiple Micronutrient Supplementation and Anemia Treatment in Pregnant Women

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Scan for Translations

About HMHB

The Healthy Mothers Healthy Babies Consortium (HMHB), hosted by the **Micronutrient Forum,** is a growing collective of over 400 individuals and organizations dedicated to improving maternal nutrition. We work collaboratively to advance evidence-based interventions such as multiple micronutrient supplementation (MMS) and balanced energy and protein (BEP) dietary supplementation during pregnancy in low- and middle-income countries. HMHB also convenes Technical Advisory Groups (TAGs) on **MMS** and **BEP**, bringing together experts in nutrition, maternal health, and public health to interpret evidence, identify knowledge gaps, and provide guidance to governments, NGOs, and partners.

Visit our website for the latest knowledge, evidence, guidance, and tools on maternal nutrition. Explore the World Map on MMS, Knowledge Hub, Advocacy Resource Center, Women's Voices short films, and Knowledge Byte videos. Join us in powering women's nutrition for promising futures. Become a member.

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