

Prenatal micronutrient, food supplementation intervention in Bangladesh decreases child death rate

May 15 2012



Photographer: Asem Ansari

Pregnant women in poor communities in Bangladesh who received multiple micronutrients, including iron and folic acid combined with early food supplementation, had substantially improved survival of their newborns, compared to women in a standard program that included usual food supplementation, according to a study in the May 16 issue of *JAMA*, a theme issue on Global Health.

"Maternal and child [undernutrition](#) is estimated to be the underlying cause of 3.5 million annual deaths and 35 percent of the total disease burden in children younger than 5 years. The potential long-term

consequences of nutritional imbalance or insult in fetal or early life also include [cognitive impairment](#) and [chronic diseases](#) in adulthood. Effective [child nutrition](#) interventions are available to reduce stunting, prevent consequences of micronutrient deficiencies, and improve survival. The knowledge base is weaker regarding prenatal nutrition interventions of benefit for mother and offspring," according to background information in the article. "The proportion of malnourished mothers and children remains high in many areas of the world, especially in South Asia, where more than one-quarter of newborns have a low weight."

Lars Ake Persson, M.D., Ph.D., of Uppsala University, Uppsala, Sweden, and colleagues conducted a study (the MINIMat trial) to examine whether a prenatal multiple micronutrient supplementation (MMS), as well as an early invitation to a daily food supplementation, would increase maternal hemoglobin level at 30 weeks' gestation, [birth weight](#), and infant survival, and that a combination of these interventions (early invitation with MMS) would further improve these outcomes. The [randomized trial](#), conducted in Matlab, Bangladesh, included 4,436 pregnant women who were recruited between November 2001 and October 2003, with follow-up until June 2009. One-third of the women were illiterate and one-fifth experienced occasional or constant deficit in their perceived income-expenditure status.

Participants were randomized into 6 groups; a double-masked supplementation with capsules of 30 mg of iron and 400 µg of folic acid, 60 mg of iron and 400 µg of folic acid, or MMS containing a daily allowance of 15 micronutrients, including 30 mg of iron and 400 µg of folic acid, was combined with food supplementation randomized to either early invitation (9 weeks' gestation) or usual invitation (20 weeks' gestation).

There were 3,625 live births out of 4,436 pregnancies. The average birth

weight among 3,267 single-birth infants was 2,694 grams (5.9 lbs.). Overall, 31 percent of newborns weighed less than 2,500 g (5.5 lbs.). There was no significant difference in birth weight among treatment groups, and no main-effect differences between food groups or among micronutrient groups. The researchers found that infants in the early invitation with MMS group had a lower risk of death, with a mortality rate of 16.8 per 1,000 live births vs. 44.1 per 1,000 live births for usual invitation with 60 mg of iron and 400 µg of folic acid. The early invitation with MMS group had an under 5-year mortality rate of 18 per 1,000 live births (54 per 1,000 live births for usual invitation with 60 mg of iron and 400 µg of folic acid). Usual care invitation with MMS had the highest infant mortality rate (47.1 per 1,000 [live births](#)).

Adjusted maternal hemoglobin level at 30 weeks' gestation was 115.0 g/L, with no significant differences among micronutrient groups. Women in the early invitation group had a small (0.9 g/L) but statistically significant lower [hemoglobin level](#) concentration than those in the usual invitation group.

"Scientists and policymakers have recommended replacing the current iron-folic acid supplements with MMS in the package of health and nutrition interventions delivered to pregnant women to improve size at birth and child growth and development. Other studies have questioned this view based on the limited size of the effect on birth weight and the absence of positive effect on fetal and neonatal survival. The MINIMat trial provides evidence that mortality of the offspring was reduced if multiple micronutrients were combined with a balanced protein-energy supplementation that began early in pregnancy," the researchers conclude.

In an accompanying editorial, Parul Christian, Dr.P.H., M.Sc., and Robert E. Black, M.D., M.P.H., of the Johns Hopkins Bloomberg School of Public Health, Baltimore, write that results from one country, such as

in this study, "may not be applicable in other settings for a number of reasons, including variable maternal prepregnancy status, levels of macronutrient and micronutrient deficiencies, and antenatal [before birth] and delivery care availability."

"Several nutrition programs in Asia and Africa have long targeted pregnant and lactating women in large-scale food supplementation programs, such as the one ongoing in Bangladesh when this trial was conducted. Coverage rates in these programs are known to be generally low and women are normally identified late in pregnancy. Further research on the timing of nutritional interventions including prior to and early and late in pregnancy is needed to examine their efficacy and safety both for survival and other long-term developmental consequences."

More information: *JAMA*. 2012;307[19]:2050-2059.
JAMA. 2012;307[19]:2094-2096.

Provided by JAMA and Archives Journals

Citation: Prenatal micronutrient, food supplementation intervention in Bangladesh decreases child death rate (2012, May 15) retrieved 26 April 2024 from <https://medicalxpress.com/news/2012-05-prenatal-micronutrient-food-supplementation-intervention.html>

| |
|--|
| <p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p> |
|--|