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Effects of maternal micronutrient supplementation on fetal loss and infant mortality: a cluster-randomized trial in Nepal.

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BACKGROUND: We previously reported that maternal micronutrient supplementation in rural Nepal decreased low birth weight by approximately 15%. OBJECTIVE: We examined the effect of daily maternal micronutrient supplementation on fetal loss and infant mortality. DESIGN: The study was a double-blind, cluster-randomized, controlled trial among 4926 pregnant women and their 4130 infants in rural Nepal. In addition to vitamin A (1000 microg retinol equivalents), the intervention groups received either folic acid (FA; 400 microg), FA + iron (60 mg), FA + iron + zinc (30 mg), or multiple micronutrients (MNs; the foregoing plus 10 microg vitamin D, 10 mg vitamin E, 1.6 mg thiamine, 1.8 mg riboflavin, 2.2 mg vitamin B-6, 2.6 microg vitamin B-12, 100 mg vitamin C, 64 microg vitamin K, 20 mg niacin, 2 mg Cu, and 100 mg Mg). The control group received vitamin A only. RESULTS: None of the supplements reduced fetal loss. Compared with control infants, infants whose mothers received FA alone or with iron or iron + zinc had a consistent pattern of 15-20% lower 3-mo mortality; this pattern was not observed with MNs. The effect on mortality was restricted to preterm infants, among whom the

relative risks (RRs) were 0.36 (95% CI: 0.18, 0.75) for FA, 0.53 (0.30, 0.92) for FA + iron, 0.77 (0.45, 1.32) for FA + iron + zinc, and 0.70 (0.41, 1.17) for MNs. Among term infants, the RR for mortality was close to 1 for all supplements except MNs (RR: 1.74; 95% CI: 1.00, 3.04). CONCLUSIONS: Maternal micronutrient supplementation failed to reduce overall fetal loss or early infant mortality. Among preterm infants, FA alone or with iron reduced mortality in the first 3 mo of life. MNs may increase mortality risk among term infants, but this effect needs further evaluation.