EVIDENCE SUPPORTING THE USE OF PLUMPY'MUM™

Huybregts L. et al. "Prenatal food supplementation fortified with multiple micronutrients increases birth length: a randomized controlled trial in rural Burkina Faso" AJCN (2009); 90: 1593-600.

OBJECTIVES: Prenatal multiple micronutrient (MMN) or balanced energy and protein supplementation has a limited effect on birth size of the offspring. The objective was to determine whether a prenatal MMN-fortified food supplement (FFS) improves anthropometric measures at birth compared with supplementation with an MMN pill alone.

CONCLUSION: The provision of FFS to pregnant women resulted in higher birth length than did MMN supplementation. For women with a suboptimal prepregnancy nutritional status, MMN supplementation should be complemented with a balanced energy and protein supplement to produce a clinical effect on birth size.

Toe L. et al. "Seasonality Modifies the Effect of a Lipid-Based Nutrient Supplement for Pregnant Rural Women on Birth Length" J Nutr. (2015).

OBJECTIVES: Maternal nutritional status is a major determinant of low birth weight and fluctuates across seasons. Seasonality may influence the outcome of prenatal nutrition interventions that aim to enhance fetal growth. This study investigated seasonal modifications of the efficacy of a randomized controlled prenatal nutrition intervention trial in pregnant women to improve fetal growth in rural Burkina Faso.

CONCLUSION: The climatologic and agricultural seasonal patterns in Burkina Faso affect the efficacy of prenatal LNSs on birth length. In this context, prenatal MMN supplementation programs should be complemented by energy supplementation during the annual rain season to promote fetal growth

Kusin JA. et al. "Energy supplementation during pregnancy and postnatal growth." Lancet (1992); 340: 623-6.

OBJECTIVES: In a controlled randomised trial in Madura, East Java, pregnant women received a high (HE) or low (LE) energy supplement that provided 1950 kJ (465 kcal) or 218 kJ (52 kcal), respectively, in the last trimester of pregnancy. The effect of this intervention on the children's growth was assessed longitudinally for the first 5 years of life.

CONCLUSION: Up to the age of 24 months, HE children were significantly heavier than LE children (p less than 0.05). HE children were also taller throughout the first 5 years (p less than 0.005 from

15 to 48 months, p less than 0.05 at both 3-12 and 60 months). Weight-for-height by age was similar in both groups, but stunting (height-for-age) was less prevalent in HE children. In a community characterised by chronic energy deficiency among women of reproductive age, energy supplementation of women for the last 90 days of pregnancy was effective in the promotion of postnatal growth and reduction in malnutrition of preschool children.

Imdad A. et Bhutta Z. "Effect of balanced protein energy supplementation during pregnancy on birth outcomes." BMC Public Health (2011); 11 Suppl 3: S17. OBJECTIVES:

OBJECTIVES: The nutritional status of the mother prior to and during pregnancy plays a vital role in fetal growth and development, and maternal undernourishment may lead to adverse perinatal outcomes including intrauterine growth restriction (IUGR). Several macronutrient interventions had been proposed for adequate protein and energy supplementation during pregnancy. The objective of this paper was to review the effect of balanced protein energy supplementation during pregnancy on birth outcomes. This paper is a part of a series of reviews undertaken for getting estimates of effectiveness of an intervention for input to Lives Saved Tool (LiST) model.

CONCLUSION: Providing pregnant females with balanced protein energy supplementation leads to reduction in risk of small for gestational age infants, especially among undernourished pregnant women. Given these findings, we can recommend balanced protein energy supplementation as an intervention among undernourished women for inclusion in the LiST model with a point estimate of 31% [95% CI 15% to 44%] reduction in IUGR.

Haider BA. et al. "Effect of multiple micronutrient supplementation during pregnancy on maternal and birth outcomes." BMC Public Health (2011); 11 Suppl 3: S19.

OBJECTIVES: Given the widespread prevalence of micronutrient deficiencies in developing countries, supplementation with multiplemicronutrients rather than iron-folate alone, could be of potential benefit to the mother and the fetus. These benefits could relate to prevention of maternal complications and reduction in other adverse pregnancy outcomes such as small-for-gestational age (SGA) births, low birth weight, stillbirths, perinatal and neonatal mortality. This review evaluates the evidence of the impact of multiple micronutrient supplements during pregnancy, in comparison with standard iron-folate supplements, on specific maternal and pregnancy outcomes of relevance to the Lives Saved Tool (LiST).

CONCLUSION: This review provides evidence of a significant benefit of MMN supplementation during pregnancy on reducing SGA births as compared to iron-folate, with no significant increase in the risk of neonatal mortality in populations where skilled birth care is available and majority of births take place in facilities. Given comparability of impacts on maternal anemia, the decision to replace iron-folate with multiple micronutrientsduring pregnancy may be taken in the context of available services in health systems and birth outcomes monitored.

Kawai K. et al. "Maternal multiple micronutrient supplementation and pregnancy outcomes in developing countries: meta-analysis and meta-regression" Bull World Health Organ (2011); 89: 402–411B.

OBJECTIVES: To systematically review randomized controlled trials comparing the effect of supplementation with multiple micronutrients versus iron and folic acid on pregnancy outcomes in developing countries.

CONCLUSION: Maternal education or gestational age at initiation of supplementation may have contributed to the observed heterogeneous effects on perinatal mortality. The safety, efficacy and effective delivery of maternal micronutrient supplementation require further research.

Yang Z et al. “Review of fortified food and beverage products for pregnant and lactating women and their impact on nutritional status.” Matern Child Nutr. (2011); 7 Suppl. 3: 19–43.

CONCLUSION: Studies show that use of micronutrient fortified supplementary foods, especially those containing milk and/or essential fatty acids during pregnancy, increase mean birth weight by around 60-73 g. A few studies have also shown that fortified supplementary foods have impacts on increasing birth length and reducing preterm delivery. Fortified food supplements containing milk and essential fatty acids offer benefits to improving maternal status and pregnancy outcome.

Roberfroid D. et al. “Prenatal Micronutrient Supplements Cumulatively Increase Fetal Growth.” J Nutr. (2012); 142: 548-54.

OBJECTIVES: Prenatal multiple micronutrients (UNIMMAP) improve fetal growth only moderately compared to iron and folic acid alone (IFA). Whether this is due to insufficient amounts of UNIMMAP or to IFA being in reality an active control is unknown. We assessed the association between cumulativemicronutrient intake (CMI) and fetal growth by secondary analysis of a randomized controlled trial in Burkina Faso where tablet intake was directly observed.

CONCLUSION: In conclusion, for both IFA and UNIMMAP, the effect onfetal growth is cumulative. The supplementation should therefore begin as early as possible in pregnancy, even if the growth increment per CMI is higher in late than in early pregnancy. Women with a low BMI should also receive extra energy.