Acceptability and Utilization of a Medium-Quantity Lipid-Based Nutrient Supplement Formulated for Pregnant Women in Rural Niger
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1. BACKGROUND
- Sub-optimal dietary intake during pregnancy can contribute to adverse pregnancy outcomes and poor child development1,2.
- Iron-fothic acid (IFA) is recommended during pregnancy. Evidence suggests that multiple micronutrients (MMN) with energy and protein may better improve birth outcomes3,4.
- Lipid-based nutrient supplements (LNS), a nutritional product with both energy and micronutrients, are a promising new strategy to meet nutritional needs in pregnancy5.
- While evidence suggests that a 20-g LNS formulation was acceptable to pregnant women in Malawi and Ghana7,8, no study has yet assessed acceptability and utilization of a 40-g LNS formulation among pregnant women.

2. OBJECTIVE
- To assess acceptability and utilization of a 40-g LNS (EPI-E) formulation among pregnant women in rural Niger.

3. HYPOTHESIS
- EPI-E will be both acceptable and appropriately utilized among pregnant women in this setting.

4. MATERIALS & METHODS

4.1 Parent Trial
- This study is part of a nutrition-immunogenicity sub-study to test whether daily prenatal supplementation with LNS or MMN, compared to IFA, improves immune response to 3 doses of oral rotavirus vaccine.

4.2 EPI-E Formulation
- Developed with Nutriset SAS (Malaunay, France) to meet nutritional needs of pregnant women in Niger.
- 40-g dose with nearly 2 times the RDA of micronutrients for pregnant women.

4.3 Recruitment & Inclusion Criteria
- Recruitment occurred in Madarounfa, Niger at one health center in June (Ramadan) and September (non-Ramadan) 2014 among women presenting for routine antenatal care.
- Inclusion criteria: ≥18 years of age and pregnant.
- Exclusion criteria: intolerance to milk/peanuts; clinical status requiring inpatient referral.

4.4 Design & Procedures
- Data collection occurred at two time points: June (Ramadan) and September (non-Ramadan) using a two-part, multi-methods design with 26 – 28 women.
- Part I included two 50-g test meals at the health center (10-g EpiE + 40-g maize porridge).
- Part II included a 14-day home trial where women were given a two-week supply of Epi-E for home use.
- Open- and close-ended questions assessed organoleptic properties, acceptability, utilization, and willingness to pay.

5. RESULTS

5.1 Participant Characteristics (Table 1)
- Mean (SD) age was 29.5 (7.5) years in June (Ramadan) and 27.9 (7.9) in September (non-Ramadan).
- Mean >5.0 previous pregnancies in both time periods.
- Few illness episodes reported in 24 hours before any test meal.
- All participants reported normal appetites before meals.
- No. of participants, (n)

5.2 Test Meal Results (Table 2)
- Very high acceptability with no important variation between periods (Ramadan vs non-Ramadan).
- ≥90% of the 50-g test meal consumed in under two minutes.
- Mean >5.0 previous pregnancies in both time periods.

5.3 Home-Feeding Trial Results (Tables 3 – 4)
- Only two reported side effects (fever, change in urine color).
- No sachet went unused; none was traded/sold.
- Preference for consumption directly from sachet rather than as a mixture, due to “convenience” and “flavor.”
- During Ramadan, Epi-E was eaten in morning and evening, whereas consumed in morning or midday during Ramadan.
- All women reported positive feelings toward Epi-E, claiming “have begun to feel energy” and “gained strength.”
- Nearly all women said they would purchase Epi-E if sold and would be willing to pay more for it than for both their prescribed micronutrient and for their favorite snack food.

6. CONCLUSIONS
- First study to assess acceptability and utilization of a 40-g LNS formulation among pregnant women in Niger.
- Despite its novel formulation with nearly 2 times the micronutrient profile, acceptability was high.
- Given the positive results, Epi-E has been introduced in a larger ongoing clinical effectiveness trial.

7. ACKNOWLEDGEMENTS
- We would like to acknowledge and extend our gratitude to Kathryn G. Dewey and Mary Arimond for sharing their materials and procedures from ILINS work in Ghana.

8. REFERENCES
- 8. Table 1. Baseline characteristics and health of participants by day of test meal.

Table 2. Consumption behaviors and attitudes toward Epi-E from test meal.

Table 3. Participant perceptions after 2-week home trial.

Table 4. Baseline characteristics and health of participants by day of test meal.

*This was measured on a day that was not associated with a test meal.