

Grandi Byen—Integrated Responsive Parenting, Nutrition, and Hygiene for Child Growth and Development: Protocol for a Randomized Controlled Trial

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Objectives: *Grandi Byen*—to *grow well* in Haitian Creole—tests the effectiveness of a multicomponent intervention encompassing nutrition, responsive parenting, and WASH (water, sanitation and hygiene) during the complementary feeding period on child growth and neurobehavioral development.

Methods: This study is a three-arm, longitudinal randomized controlled trial. Mothers/caregiver and their infants (ages 6–8 months at baseline) living in Cap-Haitien, Haiti (N = 600 dyads) will be randomly and equally assigned into the following groups: 1) standard well-baby care (control); 2) nutrition intervention (one egg per day for 6 months); and 3) multicomponent *Grandi Byen* intervention (one egg per day

for 6 months + 12-week psychoeducational intervention on responsive parenting, nutrition, and WASH practices).

Results: Primary outcomes for this study are child growth (length-for-age-, weight-for-age-, and weight-for-length Z scores) and development (cognitive, language, motor, and social-emotional). Secondary outcomes that are hypothesized as mediators to the primary outcomes are child health (bone maturation, brain growth, diarrheal morbidity and allergies, dietary intake, nutrient biomarkers) and parent-specific outcomes (responsive parenting and parental mental health). Targeted genomics will also highlight potential interactions between host genetics, enteric pathogens, gut microbiota, and overall child development. Findings will demonstrate the reproducibility and feasibility of egg-based interventions, while testing their impact on reducing child stunting and suboptimal development. Additionally, the multicomponent intervention will demonstrate whether stimulating care and WASH education induces any incremental benefits on child nutrition and developmental outcomes.

Conclusions: This project shifts from the norm of single-component nutrition interventions (e.g., single nutrient supplements and other food-based interventions) in child health research. The *Grandi Byen* concept approaches child well-being holistically by addressing poor child growth and development through nutrition along with proximal environmental and psychosocial determinants of child development.

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