

Conquering Anemia in Haiti Using Local Foods



Hannah Maxbauer | Amy Olson Ph. D. | College of Saint Benedict-Saint John's University

Background

- Haiti is the poorest country in the Western Hemisphere, with 56% of Haitians living in extreme poverty
- 60% of Haitian children living in Port Au Prince are anemic
- Consequences of anemia are impaired learning, physical fatigue, and reduced work capacities which influence the national economy.
- Anemia rates in Haitian children are 93% higher than rates in American children



Purpose: Can anemia be reduced by making simple dietary changes to improve the quality of the Haitian diet?

Methods

- Identified Grace Village School through Kristina DeMuth, RD, CSB alum, who is working to improve their diet
 - Changing the native diet using sustainable foods to improve nutritional intake
- Obtained CSB|SJU Institution Review Board approval and permission from Healing Haiti, sponsors of Grace Village
- Analyzed blood samples of 39 participants using HemoCue Hb 201



Grace Village Typical Daily Intake

Before

Breakfast: 1-2 Cups pasta with ½ hot dog cut up and oil. 8 oz. juice

Lunch: Corn meal with beans, oil sauce and 1 oz. beef, 8 oz watermelon juice

Dinner: "Oatmeal" made with flour, milk sugar and vanilla

- 1296 Calories
- 36 g protein
- 229 g carb
- 4 mg iron
- 45 mg Vitamin C
- No whole fruits, ¼ c veggies



After

Breakfast: 2 scrambled eggs with yams, 2 oz. fish and sauce

Lunch: Black bean soup with plantains, dumplings, avocado and tomato

Snack: Peanut butter graham crackers

Dinner: Black bean and ble (wheat) burger with pineapple and ketchup

- 1240 Calories
- 56 g protein
- 166 g carb
- 12 mg iron
- 74 mg Vitamin C
- 2 c fruit, 2 ¼ c veggies



Dietary Changes-

- ↑ amount of plant based protein in diet
- Tripled dietary iron intake
- ↑ Vitamin C intake: iron absorption from plants is enhanced by consumption with vitamin C and small amounts of heme iron at each meal

Results

Rates of Anemia

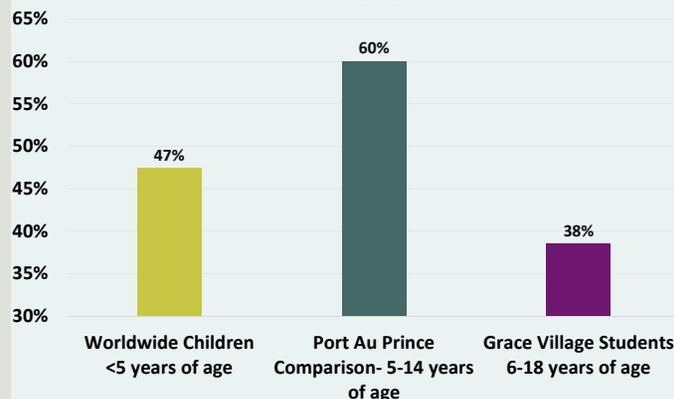


Table 1: Grace Village Student Data

Age Group	Number	Percent Anemic	Anemia Cutoff mg/dl	Average Hemoglobin	Average Weight (lbs)	Average Height (In)	Average BMI
Children							
5-8	9	56%	11.5	11.3	57	51	15
8-12	6	66%	11.9	11.6	59	51	16
Females							
12-15	6	0%	11.8	13.0	98	61	18
Males							
12-15	8	38%	12.5	12.4	90	61	16
Females							
>15	4	25%	12	12.9	100	59	20

Conclusions

- Grace Village anemia rates were 36% lower than comparable children in Port Au Prince and 18% lower than global anemia rates
- Rather than using iron supplements, diet was improved by incorporating local sustainable foods
- Diet changes were achieved without increasing school food costs making this realistic and feasible
- 38% with anemia is still higher than desirable
- Higher anemia rates in children 5-12 influenced by the recent arrival of 4 children who were malnourished
- A limitation of this study is that no previous hemoglobin values were available for direct comparison, and some children had lived in Grace Village less than 3 months.
- These diet changes go against traditional Haitian food patterns and were not consistently followed initially; successful implementation requires regular education and positive reinforcement of staff



Acknowledgements

Thank you to Kristina DeMuth for her support throughout all stages of this project, it would not have been possible without her. For more information on her mission work in Haiti, check out <http://for-i-was-hungry.blogspot.com>. Thanks to Ally Potts for her help with data collection, and to Kelsie Larson, Kristina Burk, and my parents for their continued support.