

- Bangladesh, increasing the risk of malnutrition due to the financial crisis. *J Nutr* 2010;140:182S–8S.
5. Helen Keller International (HKI), Institute of Public Health Nutrition (IPHN). Bangladesh in facts and figures: 2004 annual report of the Nutritional Surveillance Project. Dhaka, Bangladesh: HKI and IPHN; 2005.
  6. National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. Bangladesh Demographic and Health Survey 2011. Dhaka and Calverton, MD: NIPORT, Mitra and Associates, and ICF International; 2013.
  7. Hinnouho GM, Barffour MA, Wessells KR, Brown KH, Kounnavong S, Chanthavong B, Ratsavong K, Kewcharoenwong C, Hess SY. Comparison of haemoglobin assessments by HemoCue and two automated haematology analysers in young Laotian children. *J Clin Pathol* 2018;71:532–8.
  8. Sharman A. Anemia Testing in Population-Based Surveys: General Information and Guidelines for Country Monitors and Program Managers. Calverton, MD: ORC Macro; 2000.
  9. Merrill RD, Shamim AA, Ali H, Jahan N, Labrique AB, Schulze K, Christian P, West KP Jr. Iron status of women is associated with the iron concentration of potable groundwater in rural Bangladesh. *J Nutr* 2011;141:944–9.
  10. Wendt AS, Waid JL, Gabrysch S. Iron content in groundwater associated with anemia among children 6–37 months in rural Bangladesh. *FASEB J* 2017;31(1\_Supplement):786.7.
  11. British Geological Survey (BGS) and Department for Public Health Engineering, Government of the People's Republic of Bangladesh. Arsenic Contamination of Groundwater in Bangladesh. BGS Technical Report WC/00/19. DG Kinniburgh, PL Smedley, editors. Keyworth: BGS; 2001.

doi: <https://doi.org/10.1093/ajcn/nqz052>.

## Reply to S Rahman and S Ireen

Dear Editor:

We thank Rahman and Ireen for their interest in our recent publication (1). Indeed, we had been surprised to find that the prevalence of anemia was lower than expected in this study site in Bangladesh (2). The control group prevalence in our study was 17.4%, just more than half the 33% prevalence reported in the National Micronutrient Status Survey published in 2013 (3) and substantially lower than the 48.8% prevalence that we found in Kenya (2). We agree with the sentiment in the letter that groundwater iron concentrations are an important contributor to population iron status in Bangladesh, but we are not convinced that this is the reason for the unexpectedly low prevalence of anemia in our study compared with that in other areas of Bangladesh. Because it was shown previously that iron status is correlated with groundwater iron concentration (4), we had purposefully selected an area with low groundwater iron concentrations (5). According to the Bangladesh National Hydrochemical Survey, the majority of groundwater iron concentrations should have been <2 mg/L in our study area, which we illustrated in Supplemental Figure 1. Indeed, median groundwater iron concentration measured in the study area prior to the start of the intervention trial was 0.91 mg/L (IQR: 0.36–2.01 mg/L) (6). Iron deficiency did appear to be a problem in our study area. The prevalence of iron deficiency was 41% (inflammation corrected ferritin <12 µg/L or serum soluble transferrin receptor >8.3 mg/L), which was reduced by 40–60% in the 2 nutrition intervention groups. We have struggled to explain the unexpectedly low prevalence of anemia in this area compared with that of the national survey (3), which included sampling from regions that had much higher groundwater iron concentrations. One possibility that we had considered was that our blood sampling methods differed from those used in the survey, which we erroneously stated had used

capillary blood sampling. However, Rahman and Ireen have correctly noted that we did in fact use the same method of venous blood sampling. Nevertheless, it is apparent from our study as well as from the national survey that micronutrient deficiencies are a problem in Bangladesh, regardless of the prevalence of anemia, and that the prevalence likely varies regionally. We recommend that investigators measure groundwater iron concentrations in future studies of iron or other micronutrient interventions.

The authors have not declared a conflict of interest with regard to the submitted work and all authors: read and approved the final manuscript.

Christine P Stewart  
Kathryn G Dewey  
John M Colford Jr  
Mahbub Rahman  
Stephen P Luby

From the Department of Nutrition, University of California, Davis, Davis, CA (CPS, e-mail: [cpstewart@ucdavis.edu](mailto:cpstewart@ucdavis.edu); KGD); Division of Epidemiology and Biostatistics, University of California, Berkeley, Berkeley, CA (JMC); International Center for Diarrheal Disease Research, Dhaka, Bangladesh (MR); and Division of Infectious Diseases and Geographic Medicine, Stanford University, Stanford, CA (SPL).

## References

1. Rahman S, Ireen S. Groundwater iron has the ground: low prevalence of anemia and iron deficiency anemia in Bangladesh. *Am J Clin Nutr* 2019;110(2):519–20.
2. Stewart CP, Dewey KG, Lin A, Pickering AJ, Byrd KA, Jannat K, Ali S, Rao G, Dentz HN, Kiprotich M, et al. Effects of lipid-based nutrient supplements and infant and young child feeding counseling with or without improved water, sanitation, and hygiene (WASH) on anemia and micronutrient status: results from 2 cluster-randomized trials in Kenya and Bangladesh. *Am J Clin Nutr* 2019;109(1):148–64.
3. ICDDRDB, UNICEF, GAIN, Institute of Public Health and Nutrition. National Micronutrient Status Survey. Dhaka, Bangladesh: Center for Nutrition and Food Security; 2013.
4. Merrill RD, Shamim AA, Ali H, Jahan N, Labrique AB, Schulze K, Christian P, West KP Jr. Iron status of women is associated with the iron concentration of potable groundwater in rural Bangladesh. *J Nutr* 2011;141(5):944–9.
5. Department of Public Health Engineering of Bangladesh and British Geological Survey. National Hydrochemical Survey. Dhaka, Bangladesh: Department of Public Health Engineering of Bangladesh and British Geological Survey; 2001.
6. Naser AM, Higgins EM, Arman S, Ercumen A, Ashraf S, Das KK, Rahman M, Luby SP, Unicomb L. Effect of groundwater iron on residual chlorine in water treated with sodium dichloroisocyanurate tablets in rural Bangladesh. *Am J Trop Med Hyg* 2018;98(4):977–83.

doi: <https://doi.org/10.1093/ajcn/nqz055>.

## Response to Editorial: Balancing the benefits of maternal nutritional interventions; time to put women first!

Dear Editor:

The editorial (1) accompanying our report of the Women First trial results (2) contained a number of factual misrepresentations. We are writing to clarify, in our view, the most important ones.