

ORL-F&HN-16**Investigating the Role of Drinking Water, Dietary Iron, and Fish Powder in Meeting Daily Requirements and Their Impact on Adolescents' Anemia Status in Bangladesh**

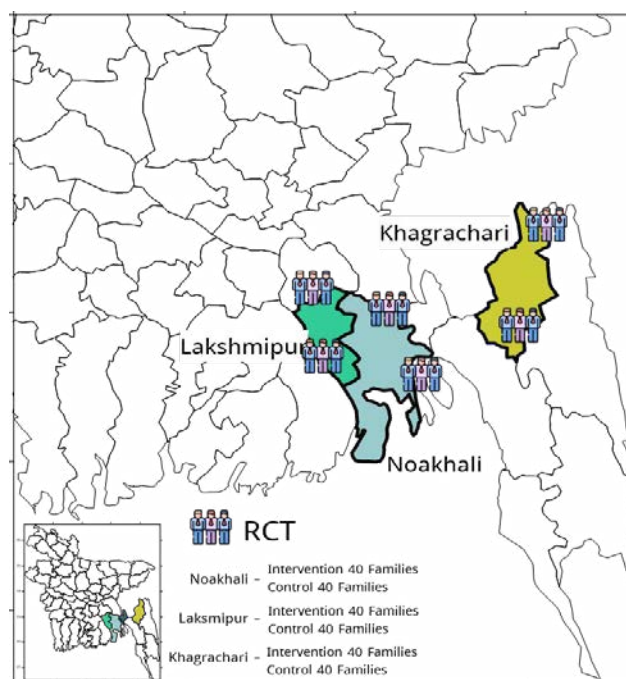
Md Rezaul Karim, Md Shahedul Islam*, Sabuktagin Rahman, and Abdullah-Al Mamun

Department of Food Technology and Nutrition Science
 Noakhali Science and Technology University
 Noakhali-3814, Bangladesh
 shahed.ftns.nstu@gmail.com

Groundwater iron is a significant source of absorbable iron for humans, potentially improving the iron and hemoglobin status of Bangladeshi populations. The study investigates the correlation between water iron, iron status, and hemoglobin levels in the body and highlights the significance of dietary supplements like fish powder in enhancing iron intake.

In a 120-day experiment, 240 individuals from three agroecologies fisheries (Lakshmipur), aquaculture (Noakhali), and hill tract areas (Khagrachari) received 40 g of dried Chapila (*Gudusia chapra*) fish powder. After the intervention, biochemical markers like ferritin, iron, and hemoglobin were used to compare changes between the intervention and control groups, and between the start line and the end line, for 240. Additionally, the 24H recall approach was used to analyze the dietary patterns of the families at the start and end to assess the contribution of ready-to-use food items (RUFs) to daily dietary consumption and their potential relationship to the RDA.

The control group consumed 14.7 mg, 11.2 mg, and 8.4 mg of iron daily, whereas, after the intervention, daily intake increased to 15.1 mg, 14.7 mg, and 14 mg across study locations. Before taking fish powder ferritin in the aquaculture site, the iron hemoglobin level was 41.30 mg/dl, 15.97 mol/L, and 12.77 g/dl. After taking fish powder, ferritin, iron, and hemoglobin levels in the blood were 44.27 mg/dl, 17.82 $\mu\text{mol/L}$, and 13.05 g/dl, respectively. In the fisheries site before taking fish powder ferritin, the iron hemoglobin level was 33.10 mg/dl, 17.82 $\mu\text{mol/L}$, and 13.05 g/dl. After taking fish powder, the levels of ferritin, iron, and hemoglobin in the blood were 37.48 mg/dl, 11.55 $\mu\text{mol/L}$, and 13.19 g/dl, respectively. In the hilly tract site before taking fish powder ferritin, the iron hemoglobin level in the blood was 45.47 mg/dl, 12.68 mol/L, and 12.80g/dl. After taking fish powder, the levels of ferritin, iron, and hemoglobin in the blood were 50.70 mg/dl, 13.55 $\mu\text{mol/L}$, and 12.99 g/dl, respectively. The average iron concentration in the water in the three study locations that made up the intervention group was 2 mg in the fisheries site, 1 mg in the hilly tract, and 5.5 mg in the aquaculture site.



The study highlights the importance of groundwater iron in boosting adolescents' iron levels and preventing anemia. It also highlights the value of dietary iron supplements, like ready-to-use food items like fish, in improving food quality and meeting daily iron requirements.