

Effects of Dried Fish Powder on Nutritional Outcomes in Adolescent Females in Bangladesh: A Randomized Controlled Trial



Email: mamun_au22@yahoo.com

Abdullah-Al Mamun^{a*}, Shuva Bhowmik^{a, b}, Md. Shahid Sarwar^{a, c}

Md. Monirul Islam^d, Md Shahedul Islam^a Shakuntala H. Thilsted^e, David C. Little^f

^aNoakhali Science and Technology University, Bangladesh; ^bUniversity of Otago, New Zealand, ^cThe State University of New Jersey, USA;

^dBangladesh Agricultural Research Council; ^eWorldFish, Malaysia; ^fUniversity of Stirling, UK



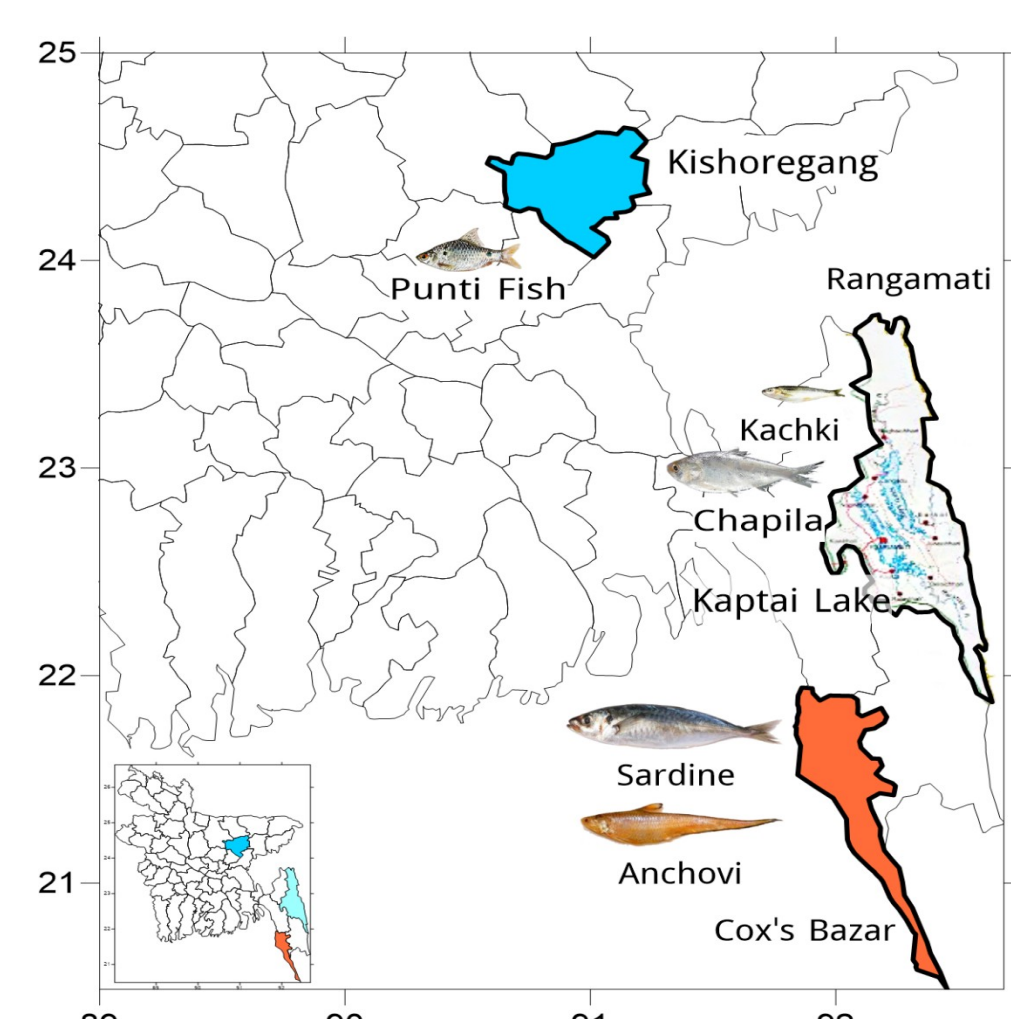
Motivation

Adolescence (10-19 years) the period of growth spurts required appropriate food intake. However, inequality at intra-household food allocation (IHFA) many adolescents cannot meet dietary requirements. Ready to use food products (RUFPs) like fish powder can minimize such disparity and provide necessary nutrition. The purpose of this study attempt was to investigate the effectiveness of a ready-to-use dried fish powder in enhancing the nutritional status of adolescent females (ADOF) in three different agro-ecologies in Bangladesh.

Methods:

Fish species selection: Dried chapila fish (*Gudusia chapra*) among five used for powder preparation. Fish were selected based on **availability**, **affordability** and **nutrition**.

Fig.1 Five small indigenous fish species (SIS) low-priced nutritious fish were collected from different agro-ecologies of Bangladesh for powder preparation



Sample size and sites:

- Total 240 households (HH) 3 sites 6 communities
- and 40 in each point
- 24h recall methods in each HH
- 16 weeks regular fish powder supply
- 40g per HH member and Token money to HH
- Day to day monitoring
- End line anthropometric and biomarker data collection

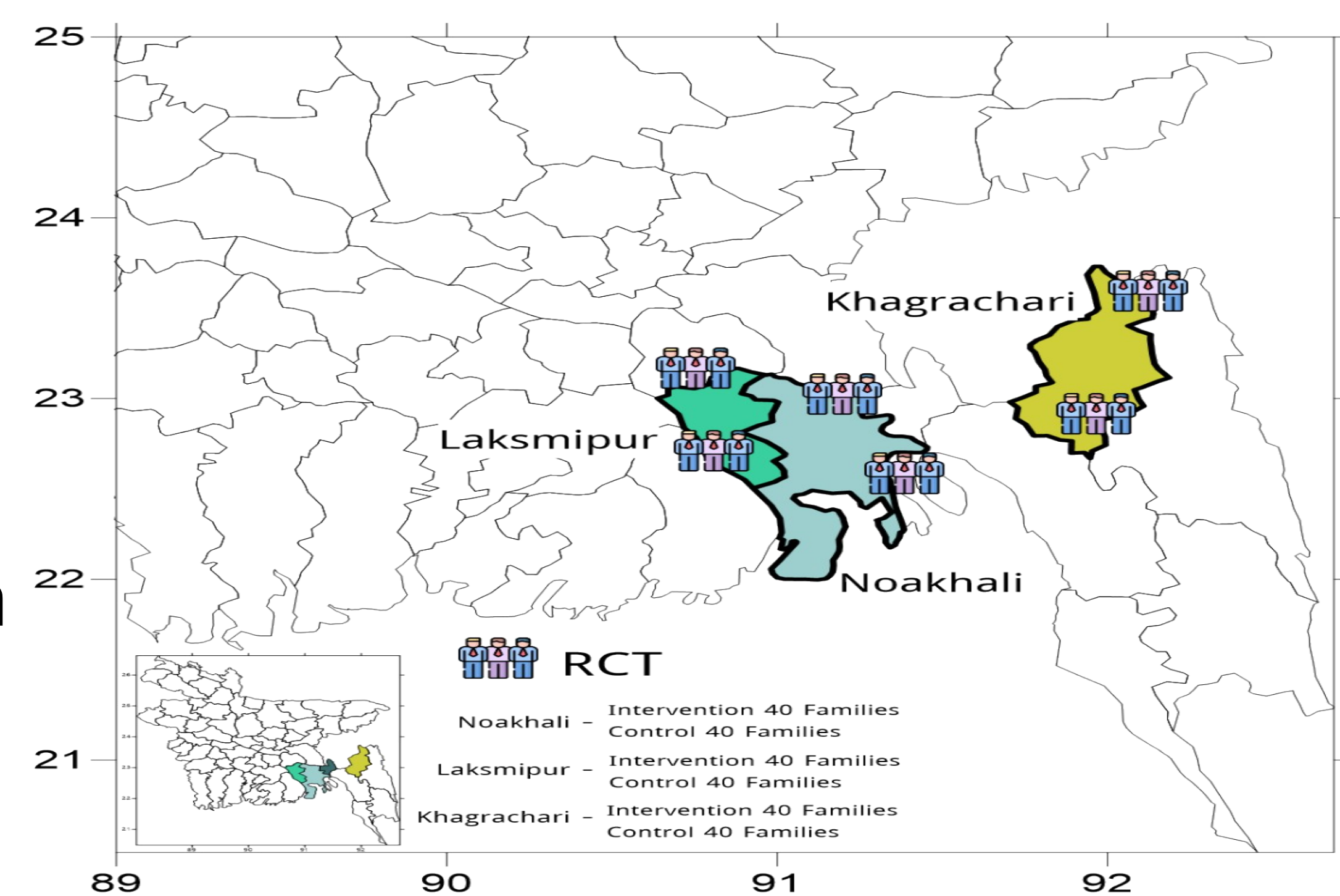


Fig. 2. RCT sites (Laksmipur-fisheries site, Noakhali-Aquaculture site and Khagrachari-hilly site)

Anthropometric and biomarkers data collection both at base and end line from 240 ADOF.

- | | |
|-----------------------|-------------------|
| Anthropometric | Biomarkers |
| ☐ Age | ❖ Vitamin A |
| ☐ Height | ❖ Vitamin B12 |
| ☐ Weight | ❖ Iron |
| ☐ BMI | ❖ CRP |
| ☐ MUAC | ❖ Calcium |
| | ❖ Ferritin |
| | ❖ Haemoglobin |
| | ❖ Glucose level |
| | ❖ Glucose level |



Adolescent girls – recipe leaflet and fish powder based food

Results :

Based on the regular monitoring data, it was observed that adolescent females (ADOF) in the intervention group consistently consumed ready-to-use food items (RUFPs) that were prepared using conventional recipes at the household level for at least five days per week.

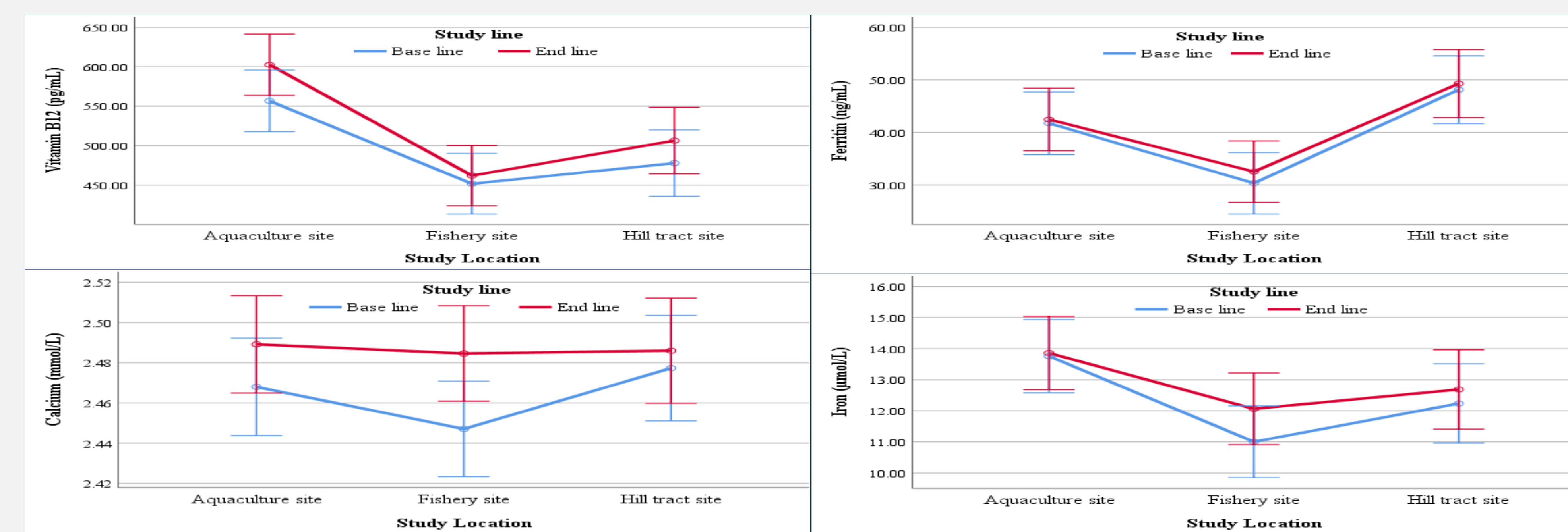


Fig 3: Clock-wise Ferritin, iron, Ca and Vitamin B12 of ADOF

- A total of 36 distinct recipes were utilized and/or integrated with fish powder at the household (HH) level, with a consumption frequency exceeding 90%, throughout the intervention sites for a period of 16 weeks.
- Approximately 90% of the respondents provided good feedback regarding the overall color, smell, and taste of fish powder in local cuisines.
- Daily 8 g dried fish powder can provide 23% and 34% of RNI of iron and Ca of adolescent female.

Conclusion:

The incorporation of fish powder into local diets has the potential to improve the nutritional security of adolescent females. Additionally, it was shown that the majority of respondents expressed a positive acceptance towards this dietary intervention.

Future goals: Food aid in conflict-affected regions (Rohingya refugee camp). The provision of meals in educational institutions (School meal), as well as the incorporation of vulnerable populations into the feeding programs, such as the Vulnerable Group Feeding (VGF) initiative.

Funding: Program Based Research Grant (PBRG), National Agricultural Technology Program-Phase II Project, Bangladesh Agricultural Research Council, Bangladesh

