BIOGRAPHICAL SKETCH

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NAME: Islam, Md Ridwan

POSITION TITLE: Assistant Scientist, Nutrition Research Division, International Centre for Diarrhoeal Disease Research, Bangladesh

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Holy Family Red Crescent Medical College, University of Dhaka, Bangladesh	MBBS	May 2013	Bachelor of Medicine & Bachelor of Surgery
North South University, Dhaka, Bangladesh	MPH	Aug 2021	Epidemiology

A. Personal Statement

I have been working in the clinical management of children suffering from malnutrition, diarrheal diseases, and infectious illnesses for the last 08 years at icddr,b. Along with providing treatment to patients I am actively involved in research and published multiple papers in international peer-reviewed journals as the primary and co-author. I worked in the SYNERGIE trial actively, which investigated the role of probiotic and prebiotic intervention in nutritional recovery among young infants. I was the receiver of the Rainy Day Young Investigator's award from icddr,b, and successfully completed the project as the Principal Investigator. Later on, we published two important articles from this project which had an impact on a policy level (FNB, 2022; PHN, 2022). I was the Co-Investigator of a randomized controlled trial that evaluated the effect of L-carnitine on children with severe acute malnutrition. I am also serving as a Bangladesh site investigator of the Gates Medical Research Institute funded project 'CONSTELLATION Study' that hailed from the results of the SYNERGIE trial, which I also was part of. I have worked closely with the National Nutrition Services, the Institute of Public Health Nutrition, and the Directorate General of Drug Administration on several occasions. My current research focus is on using the knowledge of gut microbiota to develop new and better treatments for malnutrition and diarrheal diseases.

B. Positions, Scientific Appointments, and Honors

Position and Employment

2024 – present	Assistant Scientist, Nutrition Research Division, icddr,b
2022 – 2024	Research Investigator, Nutrition Research Division, icddr,b
2019 – 2022	Study Physician, Nutrition and Clinical Services Division, icddr,b
2018 – 2019	Project Research Physician, Nutrition and Clinical Services Division, icddr,b
2016 – 2018	Clinical Fellow, Dhaka Hospital, icddr,b
2015	Honorary Medical Officer, Dhaka Medical College Hospital, Dhaka

Honors

2020	Rainy Day Young Investigator's Award, icddr,b

C. Contributions to Science

1. Conducted randomized trials of treatments for children with diarrhea and malnutrition.

In a study of probiotics, we demonstrated that the engraftment of *Bifidobacterium infantis* in the intestine of malnourished young infants with or without prebiotic supplements increased fecal *B. infantis* abundance in infants with SAM, although levels were still 10- to 100-fold lower than in untreated healthy controls. EVC001 treatment promoted weight gain that was associated with reduced intestinal inflammation markers in infants with SAM.

a. Barratt MJ, Nuzhat S, Ahsan K, Frese SA, Arzamasov AA, Sarker SA, Islam MM, Palit P, **Islam MR**, Hibberd MC, Nakshatri S. Bifidobacterium infantis treatment promotes weight gain in Bangladeshi infants with severe acute malnutrition. Science Translational Medicine. 2022 Apr 13;14(640):eabk1107.
b. Nuzhat S, Hasan ST, Palit P, **Islam MR**, Mahfuz M, Islam MM, Alam MA, Flannery RL, Kyle DJ, Sarker SA, Ahmed T. Effects of probiotic and synbiotic supplementation on ponderal and linear growth in severely malnourished young infants in a randomized clinical trial. Scientific Reports. 2023 Feb 1;13(1):1845.

2. Characterized antibiotic use in infants with diarrhea.

We described the excessive frequency of antibiotic use among infants with diarrhea. This work highlights the need for improvements in antibiotic treatment practices, as most diarrhoeal disease demands fluid replacement and zinc therapy.

a. **Islam MR**, Nuzhat S, Fahim SM, Palit P, Flannery RL, Kyle DJ, Mahfuz M, Islam MM, Sarker SA, Ahmed T. Antibiotic exposure among young infants suffering from diarrhoea in Bangladesh. Journal of Paediatrics and Child Health. 2021 Mar;57(3):395-402.

3. Identified gaps in the facility-based treatment of children suffering from severe acute malnutrition.

We have conducted a qualitative study in six different government hospitals in Bangladesh to identify potential gaps in the facility-based management of children suffering from severe acute malnutrition. We also discovered barriers to the management of SAM in hospitals and how ready are the facilities to properly treat this vulnerable group of children.

a. **Islam MR**, Fahim SM, Rasul MG, Raihan MJ, Ali NM, Bulbul MM, Ahmed T. Health care providers' knowledge, attitude, and practice regarding facility-based management of children with severe acute malnutrition in Bangladesh. Food and Nutrition Bulletin. 2022 Dec;43(4):465-78.
b. Fahim SM, **Islam MR**, Rasul MG, Raihan MJ, Ali NM, Bulbul MM, Ahmed T. A qualitative assessment of facility readiness and barriers to the facility-based management of childhood severe acute malnutrition in the public healthcare settings in Bangladesh. Public Health Nutrition. 2022 Nov;25(11):2971-82.

4. Proved children suffering from severe wasting are as vulnerable as children suffering from severe underweight

A statistical analysis from a large dataset from Dhaka Hospital proved that the inpatient morbidity and mortality of severely wasted children are similar to the children suffering from severe underweight condition. As children with severe underweight do not have a specific WHO-based management guideline, this paper will establish enough evidence that guidelines designed for children with SAM can be used for children who are suffering from severe underweight condition.

a. **Islam MR**, Nuzhat S, Alam J, Huq S, Chisti MJ, Ahmed T. Inpatient Morbidity and Mortality of Severely Underweight Children Was Comparable to That of Severely Wasted Children in Dhaka, Bangladesh. The American Journal of Tropical Medicine and Hygiene. 2023 Aug 14:tpmd230137-.

5. Evaluated the role of L-carnitine on the rate of weight gain in children with severe acute malnutrition

A prospective, double-blind, placebo-controlled, randomized clinical trial was conducted at the Nutritional Rehabilitation Unit (NRU) of Dhaka Hospital, icddr,b among 9-24 months old children suffering from severe acute malnutrition. Although our study findings suggest that L-carnitine bears no additional effect on SAM, we

recommend clinical trials with a longer duration of supplementation, possibly with other combinations of interventions, to investigate further into this topic of interest.

a. Alam J, **Islam MR**, Fahim SM, Gazi MA, Ahmed T. Role of L-Carnitine supplementation on rate of weight gain and biomarkers of Environmental Enteric Dysfunction in children with severe acute malnutrition: A protocol for a double-blinded randomized controlled trial. Plos one. 2022 Sep 30;17(9):e0275291.
b. Alam J, Fahim SM, **Islam MR**, Alam MA, Gazi MA, Ahmed T. Effects of L-Carnitine Supplementation on the Rate of Weight Gain and Biomarkers of Environmental Enteric Dysfunction in Children with Severe Acute Malnutrition: A Double-Blind Randomized Controlled Clinical Trial. The Journal of Nutrition. 2024 Feb 6.

6. **Different publications related to malnutrition and infectious disease**

I have published several other manuscripts as one of the co-authors that have contributed significantly to the field of research related to childhood malnutrition, pediatric disease and infectious disease.

a. Nuzhat S, Shahunja KM, Shahid AS, Khan SH, Islam SB, **Islam MR**, Ahmed T, Chisti MJ, Hossain MI, Faruque AS. Diarrhoeal children with concurrent severe wasting and stunting compared to severe wasting or severe stunting. Tropical Medicine & International Health. 2020 Aug;25(8):928-35.
b. Palit P, Nuzhat S, Khan SS, Gazi MA, **Islam MR**, Islam MO, Mahfuz M, Liu J, Houpt ER, Haque R, Ahmed T. Use of TaqMan array cards to investigate the aetiological agents of diarrhoea among young infants with severe acute malnutrition. Tropical Medicine & International Health. 2021 Dec;26(12):1659-67.
c. Palit P, Gazi MA, Das S, Hasan MM, Noor Z, Ferdous J, Alam MA, Nuzhat S, **Islam MR**, Mahfuz M, Haque R. Exploratory Analysis of Selected Components of the mTOR Pathway Reveals Potentially Crucial Associations with Childhood Malnutrition. Nutrients. 2022 Apr 12;14(8):1612.
d. Nuzhat S, Palit P, Mahfuz M, **Islam MR**, Hasan ST, Islam MM, Sarker SA, Kyle DJ, Flannery RL, Vinjamuri A, Lebrilla CB. Association of human milk oligosaccharides and nutritional status of young infants among Bangladeshi mother–infant dyads. Scientific reports. 2022 Jun 8;12(1):9456.
e. Nuzhat S, Abdullah F, **Islam MR**, Alam B, Khan AI, Chisti MJ, Ahmed T. Protection of staff and families during COVID-19 pandemic: experience from a research institute in Bangladesh. The Lancet Regional Health-Southeast Asia. 2024 Mar 1;22.

D. Research Support

Donor: Rainy Day Young Investigator's Award, icddr,b **Duration:** 2020-2021 **Role: PI**
Title: Assessment of healthcare providers' knowledge, attitude, and practice regarding facility-based management of severe acute malnutrition (SAM) in children under five years-of-age: a qualitative study of the secondary and tertiary government healthcare facilities in two administrative divisions of Bangladesh
Description: A qualitative study that investigated the potential gaps in the implementation of facility-based management guidelines in children suffering from severe acute malnutrition.

Donor: Gates Medical Research Institute **Duration:** 2023-2025 **Role: Co-PI**
Title: A Phase 3, randomized, double-blind, placebo-controlled study to evaluate the effect of Bi-26 (strain of *Bifidobacterium longum, B. infantis*) supplementation versus placebo on weight gain in underweight infants.
Description: A multi-country study will be conducted in Bangladesh, Pakistan, Tanzania, and Kenya. The study will evaluate the role of *Bifidobacterium longum, B. infantis,* on the rate of weight gain and change in WAZ score in underweight infants.

Donor: Rainy Day Young Investigator's Award, icddr,b **Duration:** 2021-2022 **Role: Co-I**
Title: Role of L-Carnitine supplementation on rate of weight gain and biomarkers of Environmental Enteric Dysfunction (EED) in children with severe acute malnutrition
Description: The study investigated the role of L-carnitine supplementation on the rate of weight gain, duration of hospital stays and EED biomarkers among children with severe acute malnutrition