

CHRD 2024: Abstract Submission Form

Presenter Name

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Presenter Status

Masters Student

Role in the project

Analyze Data

Write Abstract

Research Category

Basic Science

Title

Human milk macronutrient and bioactive protein variation across IMiC study populations

Background

Human milk (HM) is dynamic and adaptive, yet the determinants of this variation are not fully understood.

Objective

We hypothesized that an infant's age, sex, birth location, and maternal BMI are associated with the macronutrient and bioactive protein content of HM and investigated these relationships using data from the International Human Milk Composition (IMiC) Consortium.

Methods

Selected HM component data (macronutrients: carbohydrates, fat, protein, calories; bioactive proteins: calprotectin, IgA, leptin) were analyzed among IMiC mother-infant dyads from the CHILD cohort study (Canada, n=332) and three randomized-intervention studies (control participants: MISAME, Burkina Faso, n=75; VITAL, Pakistan, n=50; ELICIT, Tanzania, n=99). Linear regression, Kruskal-Wallis, Dunn's, and t-tests were used to compare mature milk composition between demographic groups. Paired t-tests were used to evaluate the nutrient change of milk from each dyad at different sampling times.

Results

We found significant differences in all HM components between birth locations ($p < 0.05$); however, these associations may be confounded by infant age because timepoints differed between studies. HM protein was 0.021 percentage points lower [95%CI -0.027, -0.020] per additional week of lactation, and was the only component that differed by infant sex ($p < 0.05$, female:0.92%, male:0.87%). HM leptin was 57% higher for every 1kg/m² increase in maternal BMI (95%CI 49.3%, 72.3%). Other HM components were not consistently associated with infant age, sex or maternal BMI.

Conclusion

This analysis emphasizes the challenges of working with geographically diverse samples amongst cohorts using non-harmonized study designs. We show lactation stage, maternal BMI, and infant sex contribute to some HM variation. This research would benefit from multivariate statistical modeling and highlights the need for consistent data and sample collection time points.

Do you have a table/figure to upload?

No

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