GUT MICROBIOTA OF FILIPINO INFANTS (2 - 4 MONTHS OLD): PROFILES BY MODE OF DELIVERY AND MODE OF MILK FEEDING

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Background:
Birth process and infant milk feeding are major drivers in the establishment of the infant intestinal microbiota, of which their influence on the gastrointestinal function are often associated to the maturation of host’s immune system and overall health later in life.

Objective:
This study determined the variations in the gut microbial profiles of healthy Filipino infants, 2 to 4 months old, based on their mode of delivery and infant milk feeding.

Materials and Methods:
Stool samples from 60 healthy Filipino infants aged 2 to 4 months were obtained and stratified into six groups based on their mode of delivery (spontaneous vaginal and C-section) and infant milk feeding (breast milk, formula milk and mixed feeding). The gut microbial diversity and composition were assessed through amplification of V3-V4 hypervariable region of the bacterial 16S rRNA gene.

Results and Findings:
Results showed minimal variations in the alpha and beta diversities of the Filipino infant gut microbiota at 2 to 4 months old based on mode of delivery and mode of milk feeding. Compositional analysis of the classified taxa showed similar profiles of cesarean-delivered breast-fed with all vaginal-delivered infants regardless of infant milk feeding, rather than with the cesarean-delivered infants that were formula-fed and mixed-fed. Significant difference was also observed in the number of core taxa present (100% prevalence threshold) in the gut of infants, where cesarean-delivered infants that were formula-fed had the most diverse core taxa while vaginal-delivered formula-fed infants had the least core taxa.

Conclusion:
The results highlighted the collective, rather than independent, impact of mode of delivery and milk feeding type on the microbial colonization of the infant gut, wherein the gut microbiota of cesarean-delivered infants can still be modulated with breastfeeding. This can contribute to our current knowledge on modulations of early gut microbiota between the age of 2 to 4-month old towards positive child growth and development. As we have sampled the infants at one time-point only, it is recommended to perform a longitudinal study with multiple sampling points to predict the overall microbial diversity of the highly unstable infant gut microbiota during the age of 2 to 4-month old.