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ABSTRACT

Early life stress is known to have adverse, long lasting consequences on an infant's behavioral, emotional and cognitive development, capable of persisting into adulthood. Early life stress initially manifests as maternal prenatal psychological distress during the prenatal period in an expectant mother. Composition of the infant gut microbiota may potentially serve as one of the underlying stress-mediating mechanisms by which maternal prenatal psychological distress alters the infant's neurodevelopment. Past studies had investigated the association between maternal prenatal psychological distress and the infant gut microbiota using only the maternal saliva cortisol concentration. The aim of this thesis was to re-examine the association between maternal prenatal psychological distress and the infant gut microbiota, using instead the hair cortisol concentration, a newer and not yet widely used method. Statistical analyses were run to test whether maternal hair cortisol concentrations taken during the 24th week of pregnancy associate with the infant gut microbiota's genera, enterotype clusters, species diversity, species richness, etc., at the age of 2.5 months. Results from the statistical analyses showed that hair cortisol concentrations taken during the 24th week of pregnancy were not associated with the infant gut microbiota's enterotype clusters, and the variation in species identity & abundances within a sample – termed as alpha-diversity - at the age of 2.5 months. However, screening the infant gut microbiota composition revealed significant associations between hair cortisol concentrations and the infant gut microbiota genera; additionally, hair cortisol concentrations are perhaps associated with the infant gut microbiota's variation in species identity & abundances between samples – termed as beta-diversity.

KEYWORDS: maternal prenatal psychological distress, infant gut microbiota, hair cortisol concentration, enterotype clusters, alpha-diversity, beta-diversity