InDEX series

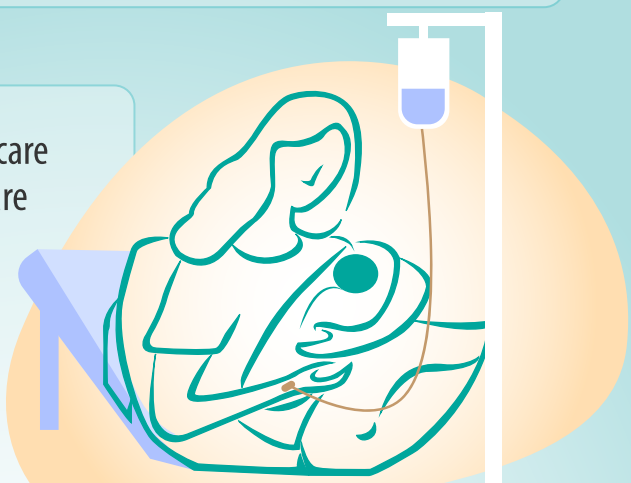
Effects Of Urbanization On Infant Gut Microbiota

During infancy, the process of gut microbiota establishment is influenced by several environmental factors, nutrition, mode of delivery and medication use, having the potential to be a chief determinant of life-long health. The infant gut microbiome is also said to be a "microbial organ" persuading the host's well-being.[1, 2, 3]

Nutrition

- Different modes of feeding during early life can have different effects on gut microbiota.
- Breastfeeding exposes infants to various microbial communities and biological components which are vital for the development of the infant gut microbiota and immune system.
- Workforce obligations, cultural beliefs, nutrition education and stigmatization of breastfeeding are factors associated with urbanization that contribute to the early cessation of breastfeeding which can impact the gut microbiota negatively
- Urbanization also affects the maternal diet and diet in the early years of life which influences the gut microbiota composition significantly

- Urbanization contributes to C-section overuse due to healthcare infrastructure, better socioeconomic status, type of healthcare facility (private or public) and physician practices.
- Infants delivered by C-section have a relatively low initial abundance of Bacteroidetes (due to inefficient colonization of the gut) while the gut of vaginally delivered infants have Bifidobacterium, Escherichia, Bacteroides, and Parabacteroidesspecies which have protective functions.



Delivery mode

Medication use

- Medical practices and behaviors, like overuse or misuse of antibiotics and traditional and complementary medication use, may result in early-life medication exposure.
- Use of antibiotics in childhood is associated with less diverse gut microbiota, a reduction in Clostridiales and an increase in antibiotic-resistant bacteria.
- The positive effects imparted by long term breastfeeding on the infant gut microbiota and childhood BMI is reduced by exposure to antibiotics in early life.

The relationship between urbanization and infant gut microbiota development is apparent and calls for development of medical and social approaches to prevent the cause of dysbiosis and to support maternal and infant health.

References:
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3. Brushett S, Sinha T, Reijneveld SA, et.al. The Effects of Urbanization on the Infant Gut Microbiota and Health Outcomes. Front Pediatr. 2020;8:408. Published 2020 Jul 29. doi:10.3389/fped.2020.00408.