

Microbiome

The microbiome can be defined as consisting of a community of microorganisms like fungi, bacteria, protozoa, viruses and archaea that coexist simultaneously on the inside and outside of the human body. The microbiome in the human gastrointestinal system (GI tract) comprises trillions of assorted bacteria, protozoa and viruses. Pathogenic and commensal bacteria all coexist in this microbiome. It is estimated that there are over 1,000 species of bacteria in our GI tract.

While it was well known that the human body is inhabited by various organisms, in the past they were loosely referred to as the 'flora and fauna' of various systems. This terminology has changed and is now referred to as the human microbiome. This community of bacteria, protozoa, viruses and helminths coexist with each other in the same system that they inhabit in a spirit of détente. These regulate our health in many ways. They affect our digestion, immune system, brain, and the nutrition that we ingest. These in turn affect our health.

These groups of microorganisms are not static and coexist in a dynamic manner and undergo changes that fluctuate in response to various stimuli. These can be in the form of exercise, diet and medication, diabetes, alcohol and various foods and their artificial additives.

The microbiome is responsible for homeostasis of the mechanisms that occur in the human body. Sites where the human microbiome exists in the human body are the nose, oral cavity, the gastrointestinal system, the skin and the vagina. The highest concentration of the microbiome in the human lies in the cecum.

More and more studies demonstrate how the microbiome is closely linked to our health. They modify our immune response, help in digestion, maintain host nutrient metabolism and are responsible for structural integrity and maintenance of the GI tract mucosal barrier. These are some of the many functions of the microbiome.

Infections, diet, exercise comorbidities like diabetes, and antibiotics affect the microbiome. It can be seen that our functionality is decided by the state and wellness of our microbiomes. Fermented foods like yogurt and cheese boost our microbiomes.

For the otolaryngologist the microbiome exists in the cavities of the ears, nose and throat. We see this when treating infections of the ear, nose, throat and neck. For example, the external ear in most people is disease-free, even though the external ear canal is filled with various bacteria. Yet no infections are caused because the organisms that occupy it are in a state of coexistence. When that equilibrium is disturbed, diseases start to form. When the microbiome that has been responsible for the equilibrium has been disturbed, pathogens overpower the commensals and problems ensue. Disorders of the microbiome are linked to cancers, Alzheimer's disease, allergies and numerous illnesses.

Consideration of the microbiome when treating patients is now gaining relevancy and must feature in our treatment of patients by giving the microbiome due consideration and respect.

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