

Intestinal Dysbiosis and Neuropsychiatric Disorders: A Narrative Review Regarding Inflammatory and Neurochemical Mechanisms of the Gut-Brain Axis

Matheus Evaristo Coércio

Matheus Evaristo Coércio¹ Adriana Cristina Evaristo Coércio ¹ Maria Eduarda Cardoso Torres ²
Olivia Costa Marques ³ Natalia Buturi de Andrade ⁴ Jefferson Aparecido Dias².

RESUMO

Introduction: The intestinal microbiota constitutes a complex ecosystem composed of numerous microorganisms whose composition can be influenced by environmental, dietary and physiological factors. Recent studies demonstrate the existence of the microbiota-gut-brain axis, which has been associated with alterations in the microbiota and the development of central nervous system disorders. **Objective:** To discuss the association between intestinal dysbiosis and the development of neuropsychiatric disorders, emphasizing the inflammatory, immunological, and neurochemical mechanisms involved in the microbiota-gut-brain axis. **Methods:** This study consists of a narrative literature review. The search was conducted using articles indexed in PubMed published from 2019 to 2023. The search strategy included the following descriptors: "gut microbiota", "gut-brain axis", "intestinal dysbiosis", "neuroinflammation" and "neuropsychiatric disorders" combined using Boolean operators AND and OR. Original articles, clinical studies and review articles published were included. Hence, studies that did not focus on the relationship between gut microbiota alterations and neurological or psychiatric conditions were excluded. A total of six articles were included in the final analysis. **Results:** Gut-brain communication occurs through endocrine, immune and neural pathways responsible for the regulation of normal brain development. These pathways are highly sensitive to external factors and may undergo alterations that result in conditions that affect brain functioning and behavior. In this context, dysregulated activation of the hypothalamic-pituitary-adrenal system plays a central role by promoting dysbiosis through increased intestinal permeability and blood- brain barrier permeability, a systemic inflammatory response, and direct changes in intestinal microbiota composition. This process is a consequence that contributes to neuroinflammation and alterations in neurotransmission, mechanisms associated with the manifestations of neuropsychiatric disorders, including major depressive disorder, schizophrenia, bipolar disorder, autism spectrum disorder, and attention-deficit hyperactivity disorder. **Conclusion:** Intestinal microbiota imbalance is strongly involved in the pathophysiology of mental disorders by means of neuroinflammation and alterations in neurotransmission. Therefore, understanding gut-brain communication becomes essential for the development of new effective diagnostic and therapeutic approaches.

Palavras-chave: Intestinal Microbiota Gut-brain Axis Neuropsychiatric Disorders Hypothalamic-pituitary-adrenal System.