Opinion
Volume 8:6, 2022

Journal of Abnormal and Behavioural Psychology

ISSN: 2472-0496 Open Access

A Statistical Analysis of the Microbiome-Gut-Brain Axis and Memory loss

Souheil Obeid*

Department of Psychology, University of Macau, Macao SAR, China

Introduction

A microbiome is a community of microorganisms that forms in a specific environment, such as bacteria, viruses, fungi, and protozoa. Microbiomes are diverse and dynamic populations found in healthy human intestinal tracts, the majority of which reside in the ileum and colon. Previous research has linked changes in gut microbiota to a variety of intestinal disorders and brain function. As a result, the concept of "microbiome-gut-brain axis" has gained traction, addressing complex bidirectional interactions between the brain and the gut. For example, changes in or absence of an intestinal microbiome may cause systemic immune activation, which contributes to intestinal barrier defects, blood-brain barrier damage, neuroinflammation, and eventual brain damage and degeneration [1].

Description

Dementia is a chronic syndrome characterised by progressive cognitive decline. Dementia can impair memory, thinking, language, behaviour, and daily activities, and it is a leading cause of disability among the elderly worldwide. According to current estimates, approximately 55 million people worldwide suffer from dementia, with the figure expected to rise to 78 million by 2030 and 139 million by 2050. Furthermore, nearly 10 million new cases of dementia are diagnosed each year. Alzheimer's is the most common type of dementia, accounting for 60-80% of all cases. Other types of dementia are vascular dementia, Lewy body dementia, Parkinson's disease dementia, and frontotemporal dementia [2].

Some research has linked gut microbiota to the onset or progression of dementia. Longitudinal studies have also revealed that people with inflammatory bowel disease linked to the gut microbiome were diagnosed with dementia at a younger age on average than healthy samples. Furthermore, the microbiome-gut-brain axis has emerged as a possible diagnostic and therapeutic target in a variety of psychiatric and neurologic disorders. Similarly, changing the gut microbiota with antibiotics or probiotics can improve performance on learning and memory tests [3].

Understanding progress and trends in a specific research field is critical. Bibliometric analysis is a widely used method for identifying key characteristics of relevant publications, such as core research themes, methodologies, authors, institutions, and countries. For example, bibliometric analysis can provide data on article citations, which reflect the academic impact of publications. Furthermore, compiling keyword frequencies can assist researchers in identifying past foci and future trends on specific research topics. Bibliometric analysis also provides network maps of co-authorship and co-occurrence analysis, which reveal international collaborations and allow researchers to seek potential interdisciplinary collaborators. Previous bibliometric manuscripts investigated links between gut microbiota and Parkinson's disease, as well as the gut-brain axis and depression.

The brain-gut axis reflects bidirectional communication between the central and enteric nervous systems; as one of the main regulators of the axis, the distribution of neuroactive compounds released by microbiota around the axis may lead to cognitive function changes that contribute to dementia development. Dementia is thought to develop when gut bacteria activate immune activation through a faulty intestinal barrier, causing systemic inflammation, which disrupts the blood-brain barrier and promotes neuroinflammation, eventually leading to nerve damage and degeneration. This hypothesis is supported by evidence from a nationwide population-based cohort study, which found that irritable bowel syndrome patients have a higher risk of dementia than healthy controls [4,5].

Conclusion

In conclusion, this bibliometric analysis of the microbiome-gut-brain axis and dementia has revealed a rapid increase in the number of associated publications over the last ten years, with a sharp increase in papers published in the two most recent years highlighting the current popularity of this field. The most active institutions were Zhejiang University in China and Kyung Hee University in Korea, while the most active journals in microbiome-gut-brain axis and dementia research were the Journal of Alzheimer's Disease and Nutrients. The keywords "Alzheimer's Disease," "Parkinson Disease," "chain fatty acids," "inflammation," and "mouse model" were identified as high-frequency keywords that reflect current trends and potential future directions in this field related to populations of interest, mechanisms, and methodologies.

References

1. Claesson, Marcus J. and Paul W. O'Toole. "Evaluating the latest high-throughput molecular techniques for the exploration of microbial gut communities." Gut Microbes 1 (2010): 277-278.
2. Parker, Aimée, Sonia Fonseca and Simon R. Carding. "Gut microbes and metabolites as modulators of blood-brain barrier integrity and brain health." Gut Microbes 11 (2020): 135-157.
3. Angelucci, Francesco, Katerina Cechova, Jana Amlerova and Jakub Hort, et al. "Antibiotics, gut microbiota, and Alzheimer's disease." *J Neuroinflammation* 16 (2019): 1-10.
4. Martin, Clair R., Vadim Osadchiy, Amir Kalani and Emeran A. Mayer, et al. "The brain-gut-microbiome axis." *Cell Mol Gastroenterol Hepatol* 6 (2018): 133-148.
5. Wang, T., X. Hu, S. Liang and W. Li, et al. "Lactobacillus fermentum NS9 restores the antibiotic induced physiological and psychological abnormalities in rats." *Benef Microbes* 6 (2015): 707-717.

***Address for Correspondence:** Souheil Obeid, Department of Psychology, University of Macau, Macao SAR, China, E mail: obeidsouheil@gmail.com*

Received: 02 November, 2022, Manuscript No. abp-22-84114; **Editor Assigned:** 04 November, 2022, PreQC No. P-84114; **Reviewed:** 18 November, 2022, QC No. Q-84114; **Revised:** 23 November, 2022, Manuscript No.R-84114; **Published:** 30 November, 2022, DOI: 10.37421/2472-0496.2022.8.182

How to cite this article: Obeid, Souheil. "A Statistical Analysis of the Microbiome-Gut-Brain Axis and Memory loss." J Abnorm Psychol 8 (2022): 182.