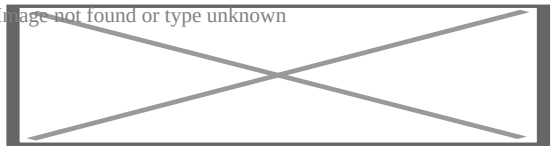
Psychoneuroimmunology

Description

Psychoneuroimmunology (PNI), also referred to as psychoendoneuroimmunology (PENI) or psychoneuroendocrinoimmunology (PNEI), is the study of the interaction between psychological processes and the nervous and immune systems of the human body. It is a subfield of psychosomatic medicine. PNI takes an interdisciplinary approach, incorporating psychology, neuroscience, immunology, physiology, genetics, pharmacology, molecular biology, psychiatry, behavioral medicine, infectious diseases, endocrinology, and rheumatology.

The main interests of PNI are the interactions between the nervous and immune systems and the relationships between mental processes and health. PNI studies, among other things, the physiological functioning of the neuroimmune system in health and disease; disorders of the neuroimmune system (autoimmune diseases; hypersensitivities; immune deficiency); and the physical, chemical and physiological characteristics of the components of the neuroimmune system in vitro, in situ, and in vivo.

It is now clear that the cellular and molecular processes that make up our ‘immune system’ are also crucial to normal brain development and play a role in the pathoaetiology of many mental and physical disorders.



Troyer, E. A., Kohn, J. N., & Hong, S.. (2020). Are we facing a crashing wave of neuropsychiatric sequelae of COVID-19? Neuropsychiatric symptoms and potential immunologic mechanisms. Brain, Behavior, and Immunity, 87, 34–39.

Plain numerical DOI: 10.1016/j.bbi.2020.04.027
DOI URL
directSciHub download

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“The coronavirus disease 19 (covid-19) pandemic is a significant psychological stressor in addition to its tremendous impact on every facet of individuals’ lives and organizations in virtually all social and economic sectors worldwide. fear of illness and uncertainty about the future precipitate anxiety- and stress-related disorders, and several groups have rightfully called for the creation and dissemination of robust mental health screening and treatment programs for the general public and front-line healthcare workers. however, in addition to pandemic-associated psychological distress, the direct effects of the virus itself (several acute respiratory syndrome coronavirus; sars-cov-2), and the subsequent host immunologic response, on the human central nervous system (cns) and related outcomes are unknown. we discuss currently available evidence of covid-19 related neuropsychiatric sequelae while drawing parallels to past viral pandemic-related outcomes. past pandemics have demonstrated that

diverse types of neuropsychiatric symptoms, such as encephalopathy, mood changes, psychosis, neuromuscular dysfunction, or demyelinating processes, may accompany acute viral infection, or may follow infection by weeks, months, or longer in recovered patients. the potential mechanisms are also discussed, including viral and immunological underpinnings. therefore, prospective neuropsychiatric monitoring of individuals exposed to sars-cov-2 at various points in the life course, as well as their neuroimmune status, are needed to fully understand the long-term impact of covid-19, and to establish a framework for integrating psychoneuroimmunology into epidemiologic studies of pandemics."
Hamilton-West, K.. (2011). Psychobiological Processes in Health and Illness. Psychobiological Processes in Health and Illness. 1 Oliver's Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd

Plain numerical DOI: 10.4135/9781446251324
DOI URL
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"Psychobiological processes in health and illness is an accessible and engaging introduction to the interrelationships between mind and body across a broad range of topics including infectious illness, autoimmunity, cancer and pain. taking a biopsychosocial approach, it brings together research from a number of disciplines including health psychology, psychoneuroimmunology and behavioral genetics. the textbook presents established theoretical models relevant to psychobiological processes in health and illness, as well as recent developments in systems, technologies and intervention methods."
Mravec, B., Tibensky, M., & Horvathova, L.. (2020). Stress and cancer. Part II: Therapeutic implications for oncology. Journal of Neuroimmunology, 346, 577312.

Plain numerical DOI: 10.1016/j.jneuroim.2020.577312
DOI URL
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"Accumulated evidence has confirmed the ability of stress to promote the induction and progression of cancer (for review see stress and cancer. part i: mechanisms mediating the effect of stressors on cancer). in support of this, data from clinical trials utilizing approaches that reduce stress-related signaling have shown prolonged survival of cancer patients. therefore, the question has arisen as to how we can utilize this knowledge in the daily treatment of cancer patients. the main aim of this review is to critically analyze data from studies utilizing psychotherapy or treatment by ?-blockers on the survival of cancer patients. because these approaches, especially treatment by ?-blockers, have been routinely used in clinical practice for decades in the treatment of non-cancer patients, their wider introduction into oncology might be realized in the near future."
Pahlevi, R., Putra, S. T., & Sriyono, S.. (2017). Psychoneuroimmunology Approach to Improve Recovery Motivation, Decrease Cortisol and Blood Glucose of DM Type 2 Patients with Dhikr Therapy. Jurnal Ners, 12(1), 60–65.

Plain numerical DOI: 10.20473/jn.v12i1.2315
DOI URL
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“Introduction: blood glucose levels are controlled when the management of diabetes success. positive perception of the strength of the spiritual aspect will improve the motivation of patients with type 2 diabetes to control it. the purpose of this study was to determine the effect of dhikr based on psychoneuroimmunology (pni) on blood glucose levels of patients with type 2 diabetes.methods: this study used quasi-experiment with pre-test and post-test control group design. samples were taken from the population of patients with type 2 diabetes who were hospitalized in the internal medicine rumkital dr. ramelan surabaya with purposive sampling techniques. data taken include the general characteristics of respondents, cures motivation, cortisol levels and fasting blood glucose levels. collecting data using questionnaires and laboratory test, then analyzed using paired t-test and independent t-test, with ? value <0.05.results: statistical test showed that the motivation to recover increased (p = 0.001), cortisol levels fall (p = 0.058) and a drop in blood glucose levels (p = 0.028) after administration of dhikr therapy in patients with diabetes mellitus type 2. there was a significant difference in increased of recovery motivation between patient conduct zikr therapy and patient cared (p = 0,000).conclusion: dhikr therapy increases the motivation of patients with type 2 diabetes by strengthening awareness and spirituality belief in allah make positive stress perception. positive stress perception will affect the stress response and improved regulation of blood glucose through the hpa axis to suppress the secretion of crh, acth, and cortisol.”
Mathews, H. L., & Janusek, L. W.. (2011). Epigenetics and psychoneuroimmunology: Mechanisms and models. Brain, Behavior, and Immunity, 25(1), 25–39.

Plain numerical DOI: 10.1016/j.bbi.2010.08.009
DOI URL
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“In this introduction to the named series ‘epigenetics, brain, behavior, and immunity’ an overview of epigenetics is provided with a consideration of the nature of epigenetic regulation including dna methylation, histone modification and chromatin re-modeling. illustrative examples of recent scientific developments are highlighted to demonstrate the influence of epigenetics in areas of research relevant to those who investigate phenomena within the scientific discipline of psychoneuroimmunology. these examples are presented in order to provide a perspective on how epigenetic analysis will add insight into the molecular processes that connect the brain with behavior, neuroendocrine responsivity and immune outcome. © 2010 elsevier inc.”
Labanski, A., Langhorst, J., Engler, H., & Elsenbruch, S.. (2020). Stress and the brain-gut axis in functional and chronic-inflammatory gastrointestinal diseases: A transdisciplinary challenge. Psychoneuroendocrinology, 111, 104501.

Plain numerical DOI: 10.1016/j.psyneuen.2019.104501

DOI URL
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“The broad role of stress in the brain-gut axis is widely acknowledged, with implications for multiple prevalent health conditions that are characterized by chronic gastrointestinal symptoms. these include the functional gastrointestinal disorders (fgid), such as irritable bowel syndrome and functional dyspepsia, as well as inflammatory bowel diseases (ibd) like ulcerative colitis and crohn’s disease. although the afferent and efferent pathways linking the gut and the brain are modulated by stress, the fields of neurogastroenterology and psychoneuroendocrinology (pne)/ psychoneuroimmunology (pni) remain only loosely connected. we aim to contribute to bringing these fields closer together by drawing attention to a fascinating, evolving research area, targeting an audience with a strong interest in the role of stress in health and disease. to this end, this review introduces the concept of the brain-gut axis and its major pathways, and provides a brief introduction to epidemiological and clinical aspects of fgids and ibd. from an interdisciplinary pne/pni perspective, we then detail current knowledge regarding the role of chronic and acute stress in the pathophysiology of fgid and ibd. we provide an overview of evidence regarding non-pharmacological treatment approaches that target central or peripheral stress mechanisms, and conclude with future directions, particularly those arising from recent advances in the neurosciences and discoveries surrounding the gut microbiota.”
Leckman, J. F.. (2014). Commentary: What does immunology have to do with brain development and psychopathology? – A commentary on O’Connor et al. (2014). Journal of Child Psychology and Psychiatry and Allied Disciplines

Plain numerical DOI: 10.1111/jcpp.12259
DOI URL
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“In the past, we have typically regarded the ‘immune system’ as a complex set of cellular and molecular processes that protect us against pathogens, from viruses to parasitic worms. it is now clear that the cellular and molecular processes that make up our ‘immune system’ are also crucial to normal brain development and play a role in the pathoaetiology of many mental and physical disorders. in their annual research review, o’connor, moynihan and caserta (2014) provide a useful introduction to this emerging area of science that is highly relevant to our field and is a natural outgrowth of their earlier and ongoing work in psychoneuroimmunology. however, their review goes well beyond these seminal findings. while work in developmental psychoneuroimmunology engenders a good deal of excitement among academic researchers, the ‘promise’ of the field clearly remains greater than the ‘deliverables’, in terms of any direct effect on patient care. this commentary looks at the implication of these findings for clinical practice and where future research efforts should be expended. © 2014 the author. journal of child psychology and psychiatry. © 2014 association for child and adolescent mental health.”
Segerstrom, S. C., Glover, D. A., Craske, M. G., & Fahey, J. L.. (1999). Worry Affects the Immune Response to Phobic Fear. Brain, Behavior, and Immunity, 13(2), 80–92.

Plain numerical DOI: 10.1006/brbi.1998.0544
DOI URL
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“Worry, the cognitive enumeration and anticipation of potential future negative events, is associated with autonomic dysregulation, which may in turn have implications for the immune system. people endorsing high (n = 7) and normal levels of trait worry (n = 8) were briefly exposed to a phobic stimulus and the autonomic and immune responses and recovery were assessed. a time-matched control group (n = 6) was not exposed to any stimulus. both worry groups showed increased heart rate and skin conductance in response to phobic fear. however, only the normal worry group showed a concomitant increase in natural killer cells in peripheral blood. patterns of change during the follow-up period suggested that phobic fear had disrupted a normal circadian increase in natural killer cells. adrenergic and hypothalamus-pituitary-adrenal mechanisms may be responsible for the differences between high and normal worry groups in their natural killer cell response to and recovery from phobic fear.”
Aziez Chettoum, Kamilia Guedri, Zouhir Djerrou, Rachid Mosbah, Latifa Khattabi, Abir Boumaaza, & Wissam Benferdi. (2020). Distribution of leukocyte subpopulation among students threatened by failure . International Journal of Research in Pharmaceutical Sciences, 11(3), 3807–3812.

Plain numerical DOI: 10.26452/ijrps.v11i3.2553
DOI URL
directSciHub download

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“Psychoneuroimmunology or the study of the relationships between the brain and the immune system is an area of research that has experienced significant development over the decade. stress does not appear without consequences on the state of health, the role of fears, emotions and significant constraints in the appearance of organic and mental diseases. in this research, we studied the effect of stress and anxiety during exams at the end of the academic year (2018/2019) on the distribution of leukocyte subpopulations and the immune system, questionnaires has been completed by student volunteers, to estimate the anxio-depressive comorbidities through the (hads) test during and outside exams, and in the same time we asked them for a blood sample the next morning day to carry out some biological assays (cbc). we also found that stress during exams caused a change in the distribution of different types of white blood cells, a total decrease in white blood cell counts with neutropenia and lymphopenia were found in students during exams compared to controls, and an increase in monocyte and other types of polymorphonuclear levels in students during exams compared to controls. other tests measuring the effects of stress on specific functions of the immune system can be used.”

Category

1. Covid
2. Neuropolitics
3. Neuroscience
4. Psychiatry

5. Psychopolitics

Date Created
28. November 2022
Author
web45