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Research Article **Published Date:- 2024-12-05**

Sexual Dimorphism in the Length of the Corpus Callosum in Cadaver

Context: Several texts and literature suggest that corpus callosum may be sexually dimorphic. Previous researchers found that the length of the corpus callosum is larger in males than in females. Reviewing various foreign literature found that the length of the corpus callosum may change in many diseases in Neurology, Neurosurgery, and Psychiatry. So, knowledge of the normal morphological difference of the length of corpus callosum between Bangladeshi males and females is essential for the diagnosis in brain imaging and treatment of those diseases.
Objective: The present study was conducted to provide data on the length of the corpus callosum of our people, which can be used to set a standard measurement for the Bangladeshi population.
Materials and methods: A cross-sectional, descriptive study was done in the Department of Anatomy, Dhaka Medical College, Dhaka, Bangladesh, from July 2009 to June 2010, based on the collection of 60 human brains (male 36 and female 24) from unclaimed dead bodies. The lengths were measured by using digital slide calipers in mm.
Results: The mean length of the corpus callosum in males and females in groups A, B, C & D (grouping in done on age difference) were 68.04 ± 0.99 and 67.03 ± 0.05 mm, 67.50 ± 0.13 and 67.02 ± 0.03 mm and 67.51 ± 0.03 and 67.02 ± 0.03 mm respectively.
Conclusion: Statistically significant differences were found between males and females in all age groups in the length of the corpus callosum.

Research Article **Published Date:- 2024-11-25**

Analysis of Psychological and Physiological Responses to Snoezelen Multisensory Stimulation

This study evaluates the effects of two months of regular snoezelen therapy on anger-hostility (AH), assessing both psychological and physiological indicators before and after the intervention. Using the Profile of Mood States (POMS-2), the research measured changes in anger-hostility levels and stress responses, comparing pre- and post-intervention data. At baseline, participants exhibited relatively high levels of anger-hostility, with psychological scores averaging 40.14 (± 2.46) and physiological scores averaging 42.25 (± 2.71), indicating significant irritability, aggression, and elevated stress responses. After two months of multisensory stimulation in a snoezelen room, participants' psychological scores decreased to 37.40 (± 2.26) and physiological scores to 39.50 (± 2.01), suggesting improvements in mood and physiological stress. The statistical analysis yielded a p - value of 0.047, indicating that the reductions were significant. These findings suggest that snoezelen therapy can be effective in reducing anger-hostility and associated physiological stress, offering a promising intervention for emotional regulation and stress management.

Review Article **Published Date:- 2024-11-12**

Adult Neurogenesis: A Review of Current Perspectives and Implications for Neuroscience Research

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Background: The study of new neuron formation in the adult brain has sparked controversy and ignited interest among scientists in recent times, these include its occurrence and location in the adult human brain, functional significance, variation in study methods, translation from animal model to human, and ethical challenges involving neural stem cell research.
Aim: To provide a comprehensive understanding of adult neurogenesis, functional significance, and challenges and explore the latest advances in the study of adult neurogenesis.
Methodology: An extensive and systematic search of electronic databases (Medline, Scopus, Web of Science) was conducted using keywords related to adult neurogenesis and techniques involved in its study.
Results: The mechanism of adult neurogenesis was found to occur in specific brain regions such as the subgranular zone of the dentate gyrus and subventricular zone of the lateral ventricle. Adult neurogenesis is vital neural plasticity, providing a potential mechanism for the brain to adapt and reorganize in response to environmental cues and experiences. Cutting-edge research and sophisticated imaging techniques, such as two-photon microscopy, MRI, optogenetic, and stem-cell-based therapies have provided deeper insight into the study of adult neurogenesis.
Conclusion: The study of neurogenesis is important for understanding nervous system development, physiology, pathology, and exploring neuroplasticity. Its advancement is challenged by some ethical concerns regarding embryonic, pluripotent stem cells, and the need for safe, and noninvasive study methods. Although recent breakthroughs in neuroimaging, microscopic techniques, and genetic tools are aiding real-time study of adult neurogenesis.

Research Article **Published Date:- 2024-09-18**

Neuroprotective Effect of 7,8-dihydroxyflavone in a Mouse Model of HIV-Associated Neurocognitive Disorder (HAND)

Treatment for HIV-associated neurocognitive disorders (HAND) remains elusive. 7,8-dihydroxyflavone (DHF), an analog of brain-derived neurotrophic factor (BDNF) and a high-affinity TrkB agonist, has been proposed as a viable therapeutic alternative to BDNF in crossing the Blood-Brain Barrier (BBB) and promoting growth, differentiation, maintenance, and survival of neurons. Here, we expand on our previous study investigating the therapeutic role of DHF on the cortical and hippocampal brain regions of the Tg26 mice, an animal model of HAND. We detected increased immunoreactivity for ion channels (SUR1, TRPM4) and the water channel aquaporin-4 (AQP4), suggesting an ionic and osmotic imbalance in the brains of Tg26 mice. Tg26 mice also exhibited loss of synaptic stability (SYN, SYP) and nicotinamide metabolism (NAMPT, SIRT1) that were associated with astrogliosis. Furthermore, Tg26 mice demonstrated increased iNOS and reduced HO-1/NRF2 expressions, implicating increased ER and oxidative stress. DHF treatment in Tg26 mice reversed these pathological changes. These data suggest crosstalk among TrkB, Akt, and related transcription factors (NF-?B, STAT3, and NRF2) as an underlying mechanism of Tg26-associated pathology in the brain. Finally, taken together with our prior study, these results further highlight a therapeutic role of DHF in promoting neuroprotection in HAND that may be applied in conjunction with current antiviral therapies.

Case Study **Published Date:- 2024-07-01**

Improvement of the Cognitive Abilities in a Chronic Generalized Anxiety Disorder and Moderate Depression Case using a Novel Integrated Approach: The Cognitome Program

Cognitive impairment has been increasingly observed among patients with anxiety disorders and major depressive disorders impacting their normal daily functioning as well as quality of life. A multitude of evidence suggests that the most affected cognitive abilities are memory, attention, perception, and executive functioning in patients with anxiety and depression. Impairment in these higher-order cognitive functions can be attributed to age, education, diet, hormonal changes, stress, and prolonged use of drugs/alcohol/ medicines. To address the issues related to cognitive impairment various non-pharmacological therapeutic modalities such as Cognitive remediation approaches viz; cognitive rehabilitation, cognitive stimulation, and cognitive training; Audio-visual entrainment; mindfulness-based interventions; and neurofeedback have come into play in recent years. It is imperative to understand that the ability to test, measure, and monitor cognitive performance along with implementing cognitive remediation approaches viz; cognitive stimulation, cognitive training, etc. across the lifespan helps in early identification, accessing treatments faster, staying healthy for longer, and improving overall quality of life. This article discusses a case study of a client suffering from generalized anxiety disorder and moderate depression who after undergoing and following a novel therapeutic approach, ‘The Cognitome Program’ has shown credible improvement in cognitive abilities, along with a prominent reduction in the symptoms of anxiety, depression, and better psychological and physical well-being. Guided by the concept of neuroplasticity and cognitive plasticity, our innovative neuroscientific holistic program- ‘The Cognitome Program’ empowers unlocking hidden cognitive potential using cutting-edge methodologies and personalized strategies.
