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Dementia 2022





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Montessori – Changing Lives

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The application of Montessori methods has been used to support and enhance quality of live for elderly people, particularly those living with dementias since the 1990's. Based on the original work of Dr Maria Montessori, Montessori for Dementia and Ageing has a focus on independence, high self-esteem, choice and meaningful engagement.

Supporting memory through the use of signage, task breakdown and cue cards, wellbeing and independence is enhanced. Montessori methods results in decreases of responsive behaviours, falls, psychotropic medication, aggressive incidents and family complaints.

Research has for many years provided evidence that people living in care communities spend too much time in little or no activity and often alone. This leads to increases in unmet needs, boredom, increased depression and incidents.

A Montessori Prepared Environment provides opportunity for engagement at any time with the establishment of self – initiated activities. Staff practices support and enable independence rather than traditional aged care practices that contribute to excess disability. Living with dementia results in the disability associated with memory loss, we work around this disability and support memory loss through strategies that fill the memory gaps which can often lead to repetitive questioning or behavior. Excess Disability is not as a result of the disease but rather it results from the disuse of remaining abilities. When staff over-cares for people, disability quickly turns to excess disability.

This presentation will discuss Montessori methods for Dementia and Ageing and present research outcomes for the model. It will explain the need for a paradigm shift in attitudes towards people living with dementia and many current aged care practices.

Montessori supports the person to be the best that they can be regardless of level of physical or cognitive impairment. As a model of care Montessori is changing the face of aged care one step at a time.

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Telehealth literacy as a social determinant of health: A novel screening tool to support vulnerable patient equity

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The objective of this review is to propose the Telehealth Literacy Screening Tool (TLST) for use in older adults and support the future inclusion of telehealth literacy as an important Social Determinant of Health (SDOH). Initially a four-week outreach was performed that targeted older adults and low-health literate patients at the MedVantage Clinic (MVC) within Ochsner Health (OH) to identify common barriers to patient engagement with the OH Epic MyChart telehealth platform. Themes from those barriers directed a meta-synthetic review of the methods and ethical considerations of current, validated technological and telehealth literacy screening tools. Based on the barriers identified during our MVC patient outreach, review of telehealth literacy screening research, and evaluation of the MyChart platform and the technological resources required for its use; we developed a multidimensional questionnaire for telehealth literacy screening of older adults. The TLST is designed to identify patients in need of additional interventions for successful connection to telehealth services. This is an important step towards addressing the ethical obligation to decrease disparities in telehealth literacy for older populations and identifying telehealth literacy as a SDOH.

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Transcranial Doppler Ultrasound in stable Chronic Obstructive Pulmonary Disease

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Introduction: Cognitive impairment is highly prevalent in patients with Chronic Obstructive Pulmonary Disease (COPD) and may be a potential obstacle to the effectiveness of respiratory therapy. Patients with dementia have a pronounced disturbance in their cerebrovascular hemodynamics, such as cerebral hypoperfusion and increased downstream vascular resistance, and patients with COPD who has cognitive impairment also showed an altered cerebral perfusion.

Objective: The present study aims to assess the presence of impaired cerebrovascular hemodynamic in stable COPD by means of transcranial doppler ultrasonography.

Methods: This observational study was conducted among patients with stable COPD without known neurologic diseases. We performed Transcranial Doppler (TCD) sonography through the temporal window using a 1–5 MHz phased array ultrasound transducer with a TCD preset. Cerebrovascular hemodynamics were assessed by measuring mean flow velocities in the middle cerebral arteries (related to cerebral perfusion), resistance index (related to vascular resistance) and pulsatility index (related to vascular resistance).

Results: Twelve consecutive patients (6 male; mean age, 61, 7 years) with stable COPD were assessed. The mean blood flow velocity in middle cerebral artery were decreased in 10 patients (mean flow velocity of 42,5 cm/s). The pulsatility index in middle cerebral artery were increased in 5 patients (mean pulsatility index of 1,03) and resistance index were normal in all patients (mean resistance index of 0,6).

Conclusions: This study showed decreased cerebral perfusion but normal values of indexes of cerebral vascular resistance in stable COPD patients.

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Embodiment in the diagnostic account of Alzheimer´s Disease

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Alzheimer´s Disease is the most prevalent cause of dementia in adults over 60. The disease invites for an interesting discussion within the cognitive sciences as it involves diverse assessment procedures and a multiplicity of observations, measures, and perspectives. Traditional theories characterizing Alzheimer´s Disease have described the condition with a focus on the decline in symbolic reasoning, memory, and language skills of its sufferers. A more recent shift towards the idea of embodiment, however, may guide us to pay more attention to how memory and personality are preserved through the body and the endless ways in which an individual affects and is affected by the physical world in a continuous stream of influences. This article will argue for embodiment as an essential complement to current diagnostic accounts of Alzheimer´s Disease for firstly, to assess persons with Alzheimer´s more holistically and secondly, to better our understanding of such degenerative disorder.

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Alzheimer's neuropathology and its possible association

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Dementia is a severe public health issue that affects 47 million people in the world. The most common cause of dementia is Alzheimer's disease, a progressive and irreversible neurodegenerative disorder that affects 60% to 80% of all patients diagnosed with dementia. Alzheimer's disease is characterized by cortical and subcortical atrophy, neurofibrillary degeneration and accumulation of amyloid plaques in the brain, and it severely affects the quality of life of those who have it. The prevention of this disease involves identifying the risk factors that might activate or aggravate its neurodegenerative process. In this context, recent studies are evaluating a possible association between Alzheimer's disease and periodontitis, in the sense that the induction of a chronic inflam- matory state by the periodontal disease seems to develop or aggravate neuroinflammatory states that are typical of Alzheimer's disease. The extensive study of bibliographic contents available at the PubMed platform, which resulted from a search with the terms "Alzheimer's disease", "dementia", "systemic diseases", "periodontitis", "periodontal disease", "amyloid plaques" and "prevention", as well as the study of the books Clinical Periodontology and Implant Dentistry and Enfermedad de Alzheimer y otras Demencias, al- lowed to gather the latest information on a likely association between periodontal disease and Alzheimer's disease. Considering the high prevalence of these conditions and the significance of Alzheimer's as a Public health problem, it becomes imperative to study the modifiable risk factors associated with this serious and incurable condition.

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The pattern of Neurological Disorders; revisited prevalence data of a dedicated Neurology clinic in Sudan

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Background: The diverse modes in geographical locations, environmental factors, genetic and racial characteristics play a complex role in determining the pattern of neurological disorders worldwide. Determining the pattern of neurological disorders enables health policymakers to plan evidently for service, training, and research priorities. Few prevalence studies in neurology were conducted in Sudan.

Methods: This is a retrospective hospital-based study that reviewed the medical records of patients who attended a Dedicated Neurology Clinic (DNC) in Omdurman, the national Capital of Sudan, for 24 months, from January 2016 to January 2018. This study aimed to determine the DNC pattern of neurological disorders as representative subset prevalence in Sudan. Neurologists conducted the medical workup for diagnosis after at least two visits. All patients have ethically consented.

Results: The total number of patients was 1050. Only 749 patients (71.3%) fulfilled the inclusion criteria. The mean age was 46.5 ± 1.9, and males were 45.3%. 72% were from the Capital. The presenting symptoms were headache (16.6%), seizures (11.5%), limbs weakness (11.2%), and lower percentages for other neurological symptoms. The commonest diagnoses were Stroke 12.4%, Epilepsy 9.3%, Primary Headache 8.8%, Movement Disorders 7.3%, Peripheral Neuropathy 6%, Dementia 4% Neuro-infections 1.4%, Demyelinating Disorders 2.6%, Spinal Spondylotic Radiculopathy 2.6% and 1.7% for Cerebral Venous Thrombosis.

Conclusion: The data from Sudan-DNC showed that the most common neurological disorders descendingly were Stroke, Epilepsy, Headache, Movement Disorders, Peripheral Neuropathy, Dementia, Infections, Demyelinating Disorders, Spinal Spondylotic Radiculopathy, and Cerebral Venous Thrombosis. The demyelinating disorders and peripheral neuropathy showed a higher percentage than our previous preliminary prevalence study in 2012 compared to the other conditions, which showed similar rates in that study.

Key Words: Sudan, Prevalence, Neurological Disorder, Stroke, Dedicated Clinic

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MicroRNA-4422-5p as a negative regulator of Amyloidogenic Secretases: A Potential biomarker for Alzheimer's disease

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Beta-secretase (BACE1) and Gamma-Secretase Activating Protein (GSAP) are pivotal enzymes in the cleavage of Amyloid Precursor Protein (APP). Beta-amyloid (Aß) formation is considered one of the main reasons for Alzheimer's disease (AD) pathology. In our preliminary study, a series of microRNAs (miRs) with possible interaction with BACE1 and/or GSAP was selected using computational analysis. Our results showed that miR-4422-5p had a reduced level in the serum of AD patients. In this study, the effect of miR-4422-5p using miR-4422-5p mimic and inhibitor on BACE1 and GSAP were investigated, and a probable novel early diagnostic marker for AD was introduced. The effect of miR-4422-5p interaction with BACE1 and GSAP was evaluated via in vitro experiments using dual-luciferase assays, western blotting, and Immunocytochemistry. Luciferase assay demonstrated that miR-4422-5p mimic suppresses BACE1 and GSAP expression by directly targeting the 3'UTR of BACE1 and GSAP mRNA in HEK293T cells. Also, western blotting and immunocytochemistry confirmed the regulatory role of miR-4422-5p mimic on BACE1 and GSAP genes. miR-4422-5p mimic significantly decreased BACE1 and GSAP protein expression in SH-SY5Y and A549 cells, respectively. Moreover, miR-4422-5p-inhibitor reversed the expression processes in both cell lines. Our data suggest that miR-4422-5p may be an important regulator of both BACE1 and GSAP genes and can represent a novel potential biomarker or therapeutic target in AD.

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The use of drugs affecting the glymphatic system in the therapy of patients with Alzheimer's disease

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Background: The glymphatic system is a functional pathway for filtering cerebrospinal fluid through the brain parenchyma and removing products of cell metabolism from the central nervous system. One of the causes of Alzheimer's disease is now considered to be a malfunction of the glymphatic system.

Method: We followed 4 women aged 65-70 years with a diagnosis of Alzheimer's disease. They were treated in the department according to Alzheimer's disease treatment standards. During periodic examination by an ophthalmologist, they were diagnosed with stage I (initial) glaucoma - a blind spot interfering with normal peripheral vision was detected, as well as a deepening of the optic disc in the central zone. For a glaucoma treatment, they have prescribed Acetazolamide - 125 mg once a day in the morning for 7 days with weekly monitoring of intraocular pressure. They also received Asparkam 1 tablet 3 times a day during Acetazolamide administration to prevent deficiency of potassium ions in the body. After 11-14 days, intraocular pressure normalized and, they discontinued Acetazolamide. To monitor the dynamics of cognitive impairment, patients on the unit took the Trail Making Test Parts A & B paper-and-pencil version every month.

Results: Before glaucoma treatment, patients' speed of Trail Making Test task A was 84, 87, 90, and 92 seconds. The speed of Trail Making Test task B was 270, 293, 300, and 305 seconds. After two weeks of glaucoma treatment, patients again completed the Trail Making Test Parts A & B paper-pencil version. The patients' speeds for task A were 60, 63, 68, and 70 seconds. The speed of task B was 180, 190, 194, and 217 seconds.

Conclusion: Acetazolamide can be recommended for inclusion in the treatment of patients with Alzheimer's disease.

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Identification of microRNAs associated with Human Fragile X Syndrome using Next-Generation Sequencing

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Fragile X Syndrome (FXS) is caused by a mutation in the FMR1 gene which can lead to a loss or shortage of the FMR1 protein. This protein interacts with specific miRNAs and can cause a range of neurological disorders. Therefore, miRNAs could act as a novel class of biomarkers for common CNS diseases. This study aimed to test this theory by exploring the expression profiles of various miRNAs in Iranian using deep sequencing-based technologies and validating the miRNAs affecting the expression of the FMR1 gene. Blood samples were taken from 15 patients with FXS (9 males, 6 females) and 12 controls. 25 miRNAs were differentially expressed in individuals with FXS compared to controls. Levels of 9 miRNAs were found to be significantly changed (3 upregulated and 6 downregulated). In Patients, the levels of hsa-miR-532-5p, hsa- miR-652-3p and hsa-miR-4797-3p were significantly upregulated while levels of hsa-miR-191- 5p, hsa-miR-181-5p, hsa-miR-26a-5p, hsa-miR-30e-5p, hsa-miR-186-5p, and hsa-miR-4797-5p exhibited significant downregulation; and these dysregulations were confirmed by RT- qPCR. This study presents among the first evidence of altered miRNA expression in blood samples from Patients with FXS, which could be used for diagnostic, prognostic, and treatment purposes. Larger studies are required to confirm these preliminary results.

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