



12th International Conference on

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Posters

Dementia 2018

Brain metabolic and functional aspects of frailty in elderly with mild cognitive impairmentsSeong A Shin^{1,2}, Dong-Hyun Yoon¹, Wook Song¹, Jun-Young Lee² and Yu Kyeong Kim²¹Seoul National University, Seoul, South Korea²SMG-SNU Boramae Medical Center, Seoul, South Korea

The presence of frailty in elderly population has been clearly linked to higher risks of cognitive impairments and even dementia. Literature documented that physical frailty was associated with accelerated cognitive decline, involving memory, perceptual speed and visuospatial cognitive systems. Our study aimed to investigate alterations in metabolic and functional activity in patients with mild cognitive impairments (MCI) with frailty phenotypes defined according to Fried criteria, and to explore cognitive domains affected by frailty in association with the alterations in the brain. Participants were assessed for frailty status based on the presence of five phenotypic components according to Fried criteria, and 21 MCI without frailty (robust; absence of any frailty components) and 27 age- and gender-matched MCI with frailty (at-risk; presence of one or more components) underwent [18F] FDG PET and resting state fMRI (rs-fMRI) scans. Using Statistical Parametric Mapping 12 software in Matlab 2014a, [18F] FDG PET images were spatially normalized to a standard space for voxel-wise statistical analyses. rs-fMRI data was also preprocessed to examine local intrinsic functional activity using fractional amplitude of low frequency fluctuations (fALFF) and regional homogeneity (ReHo) measures. Subtle metabolic and functional activity changes between groups as well as the associations between the activity of clusters showing significant group differences and the performance in cognitive function were assessed after controlling for age, gender and year of education. In at-risk group, reduced metabolic activity was found in left precuneus and right dorsolateral prefrontal cortex (Figure 1). Increased fALFF was found in left supplementary motor area (Figure 2A), while disruptions in ReHo were found in bilateral caudate, right lateral and medial frontal cortex and superior temporal cortex in at-risk group (Figure 2B). The alterations were significantly correlated with the performance in several cognitive functions including executive function, language and visuospatial function. Our results support that the physical frailty in MCI may accelerate the cognitive deteriorations by affecting frontal and temporal areas.

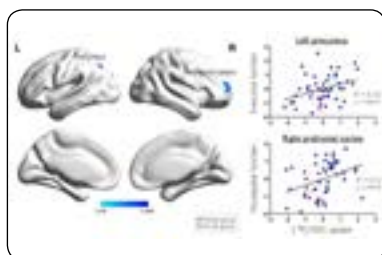


Figure 1. Reduced glucose metabolism in at-risk group.



Figure 2. Abnormal local functional activity in at-risk group.

Biography

Seong A Shin has completed her undergraduate study, majoring in Neurobiology at Department of Biomedical Science from University of Auckland, New Zealand, and is continuing her postgraduate study (as a PhD candidate) on neuroimaging topics in neurodegenerative diseases including dementia and Parkinson's disease.

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Manifestations of grief in patients with dementia and management considerations: A review of current literature

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Introduction: Grief can present differently in patients with dementia with many clinical and ethical considerations compared to patients without dementia. Patients with dementia often have co-morbid medical and psychiatric illnesses which can complicate the presentation and subsequent management of grief in those patients.

Aim: This review aims to look at the different presentations of grief in patients with dementia and review of literature on existing management considerations both clinically and ethically.

Method: A literature search was conducted to look for current literature on the presentation and management of grief in patients with dementia.

Results: There has been much literature written on the process of grief in caregivers of patients with dementia. There is a paucity of literature on the presentation of grief in patients with dementia as well as the best management practices. Presentations of grief in patients with dementia were varied with many physical and psychological symptoms after they were told about the loss. This included complaint ranging from anxiety, depression and aggression to increased complaints of somatic symptoms. Ethical dilemmas were also encountered by staff involved in the care of patients with dementia ranging from many aspects including false reassurances, the usage of psychotropic medication and conflicts with family members.

Conclusion: The presentation of grief in patients with dementia is varied and presents many clinical and ethical challenges to the practicing clinician. Targeted research should be conducted in this field to determine the best practices for the management of the grief process in patients with dementia.

Recent Publications:

1. A K Johansson and Grimby A (2012) Grief among demented elderly individuals: a pilot study. *The American Journal of Hospice and Palliative Medicine* 30(5):445–9.
2. Cindy J G and David D M (2006) Bereavement in cognitively impaired older adults: case series and clinical considerations. *Journal of Geriatric Psychiatry and Neurology* 19(4):209–215

Biography

Jiali Lau completed her graduation from the National University of Malaysia and she is currently working at the Urology Centre in Singapore General Hospital. She is a Family Medicine Resident with the Singapore Health Services. She is actively involved in research and clinical work. She has presented at international conferences as the Lead Oral Presenter in the field of Adolescent Medicine with special interests in eating disorders.

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Mindfulness based interventions for caregivers of patients with dementia: A review

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Introduction: Caregivers of patients with dementia often face challenges and difficulties associated with behavioral and psychological symptoms of dementia. Family members often provide the majority of care for those with Alzheimer's disease and other age-related problems. Studies have shown that about one-third of caregivers of patients with dementia experience a major depressive episode and 5– 10% have symptoms consistent with an anxiety disorder. There is emerging evidence that mindfulness-based interventions may be useful for these caregivers and may mitigate some of the negative effects related to care giving.

Aims: This review aims to look at mindfulness-based interventions which may be beneficial for caregivers of patients with dementia.

Methods: A literature search was performed to look for existing literature on mindfulness-based interventions for caregivers of patients with dementia.

Results: A review of the literature had mixed findings. Mindfulness based stress reduction may be beneficial in reducing depressive symptoms and anxiety symptoms in caregivers of patients with dementia, although the effects were not apparent in some studies after some time had lapsed after the intervention. Caregiver burden and perceived stress was shown to improve in some studies but had no effect on other studies.

Conclusion: While there is emerging evidence that mindfulness-based interventions may be effective for caregivers of patients with dementia, it is difficult to determine the specific elements of mindfulness-based interventions that are efficacious in mitigating the negative effects related to caregiving, has the heterogeneous nature of studies performed. Cultural factors may also play a role in the efficacy of such interventions. Future research should emphasize on larger scale studies with more robust methodology.

Recent Publications:

1. Hurley R V C, Patterson T G and Cooley S J (2014) Meditation-based interventions for family caregivers of people with dementia: a review of the empirical literature. *Aging and Mental Health* 18(3):281–288.
2. Whitebird R R, Kreitzer M, Crain A L, Lewis B A, Hanson L R, et al. (2013) Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. *Gerontologist* 53(4):676–86.
3. Lavretsky H, Epel E S, Siddarth P, Nazarian N, Khalsa D S, et al. (2013) A pilot study of yogic meditation for family dementia caregivers with depressive symptoms: effects on mental health, cognition, and telomerase activity. *International Journal of Geriatric Psychiatry* 28(1):57–65.
4. Epstein-Lubow G P, Miller I W and Mc Bee L (2006) Mindfulness training for caregivers. *Psychiatric Services* 57(3):421–421.
5. Waelde L C, Thompson L and Gallagher-Thompson D (2004) A pilot study of a yoga and meditation intervention for dementia caregiver stress. *Journal of Clinical Psychology* 60(6):677–687

Biography

Chao Tian Tang is a Psychiatry Resident in the National Healthcare Group, Singapore. He completed his graduation from the National University of Malaysia and is currently working at the Institute of Mental Health, Singapore. He has experience working in high dependency Psychiatric Care Units, Adult Neuro Developmental Services, Geriatric Psychiatry, Child and Adolescent Psychiatry and General Psychiatry Units. He is actively involved in research and clinical work. He has published articles in the field of Geriatric Psychiatry, Adult Neuro Developmental Services and Bibliometrics. He has attended and presented at conferences in fields such as Neuro Developmental Disorders and General Psychiatry. He hopes to take an integrated approach to medicine for Holistic Psychiatric Care.

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Yolkin polypeptide complex isolated from hen egg yolk regulates BDNF production in PC12 cells via cAMP/CREB –dependent mechanism

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Background & Aim: Brain-derived neurotrophic factor (BDNF) supports neurons of the central nervous system (CNS) and is a key molecule in the maintenance of synaptic plasticity and memory storage in the hippocampus. However, changes in the level of BDNF mRNA or protein have been reported both in the CNS and in the blood of Alzheimer's disease (AD) patients, which indicates its potential role in the pathogenesis of AD. Yolkin, the polypeptide complex isolated from hen egg yolk was discovered as a fraction accompanying immunoglobulin IgY, which possesses neuroprotective activity and improves cognitive function of aged rats. We also demonstrated that yolkin stimulates both PC12 neuron-like cells and human whole blood cells to release BDNF in a dose- and time-dependent manner. However, the mechanism of yolkin action is not clear. The aim of the present study was to investigate the mechanism of yolkin action which leads to increased BDNF production by PC12 cells.

Methods & Results: We have found that yolkin stimulates PC12 cells to release significant amounts of mature BDNF protein, when added at concentrations higher than 10 µg/ml in a time-dependent manner. This effect was connected with the impact of yolkin on activation of adenylate cyclase, resulting in the increase of cAMP concentration and upstream phosphorylation of cAMP response element-binding protein (CREB).

Conclusion: Our study showed that the regulatory substance of natural origin, yolkin, is able to amplify neuroprotective mechanisms in the CNS and can be considered as a potential therapeutic agent in the treatment of neurodegenerative diseases.

Biography

W Kazana is a second-year PhD student at the Hirsfeld Institute of Immunology and Experimental Therapy in Wrocław. She graduated in Biotechnology from Wrocław University of Science and Technology (MSc thesis awarded). Her research focuses on neuroprotective and immunoregulatory properties of yolkin, polypeptide complex isolated from hen egg yolk. She has already presented her preliminary results at Neuronus conference (poster) and symposium opening Biotechnology: Research and Industrial Applications conference (oral presentation) during this year. She is also one of the Co-Authors of an article presented in Neuropsychiatry, London.

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Diagnosis of preclinical AD stage

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Background: Diagnosis of preclinical Alzheimer's disease (AD) stage is one of the most acute problems now-a-days. The research was conducted on descendants of patients suffering from AD.

Methods: Fourteen patients aged 34–48 (mean age: 42) were examined, five (35.71%) men, nine (64.29 %) women, one of whose parents was diagnosed with AD and one of whose grandparents suffered from mental disorders. The examination included: clinical dementia rating (CDR), mini-mental state examination (MMSE), tomography dementia rating scale (TDR), cerebral computed tomography (CT), magnetic resonance imaging (MRI), cerebral scintigraphy (SG), rheoencephalography (REG) and cerebral multi-gated angiography (MUGA).

Results: The examination revealed memory disorder in 14 (100%) patients; signs of dementia were not detected in any case; cognitive functions decrease to 26–28 MMSE points in 14 patients (100%); reduced blood flow in the cerebral hemispheres in 14 patients (100%); decrease in volume pulse blood filling in carotid basins in 12 (85.71%) patients. Involuntary changes in the brain were detected in 14 (100%) patients with widening of the subarachnoid space in 13 (92.86%) patients; 4–8% decrease in the temporal lobes volume in 14 (100%) patients; Sylvian fissure expansion in 14 (100%) patients; initial manifestations of non-occlusive hydracephaly in 4 (28.57%) patients. Symptoms of dyscirculatory angiopathy of Alzheimer's type (DAAT) were detected in 14 (100%) patients who had reduction of the number of capillaries in temporal and frontal parietal areas in 14 (100%) patients; development of multiple arteriovenous shunts in the basins of arteries supplying blood to temporal and frontal parietal areas in 14 (100%) patients; early venous discharge of arterial blood into the venous bed in 14 (100%) patients; abnormal widening of lateral veins in 12 (85.71%) patients; stagnation of venous blood at the border of the frontal and parietal areas in 11 (78.57%) patients and increased looping of intracerebral arteries in 12 (85.71%) patients.

Conclusions: The data obtained indicated that in 14 (100%) patients, amid a decrease in memory, there is a decrease in the volume of temporal lobes by 4–8% (TDR=0), as well as dyscirculatory angiopathy of Alzheimer's type (DAAT), which clearly shows that they have preclinical AD stage.

Biography

Ivan V Maksimovich is a member of ISTAART, ESC, EAPCI, WSO, ESO, EPA and Head Physician of Clinic of Cardiovascular Diseases named after Most Holy John Tobolsky, Moscow, Russia, since 1993. One of the major problems the clinic deals with is the diagnosis and treatment of various brain lesions including Alzheimer's disease. Over the past 20 years, he has published over 200 scientific publications on this subject.

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Brain insulin resistance: Targeting PI3K/AKT/GSK3- β pathway in intracerebroventricular-streptozocin induced rat model of Alzheimer's disease

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Alzheimer's disease (AD) featuring dementia, cognitive deficits and behavioral alterations is one of the most common prevalent neurodegenerative diseases affecting majorly elderly people termed as sporadic AD. Global prevalence of AD is sharply increasing, expected to affect almost 115 million people by 2050. Down regulation of insulin signaling pathway of PI3K-AKT plays a significant role in the pathophysiology of AD. Intracerebroventricular streptozocin as a model of sporadic Alzheimer's disease is being established. Animals are divided into various groups comprising normal control, sham control, diseased and drug treated groups. Protocol lasts for 21 days, sacrificing animals on the 22nd day followed by isolation of serum and dissection of cortex and hippocampus, preserving the same for further analysis. Behavioral studies, biochemical estimations and molecular techniques are done for evaluating several parameters of control, diseased and treated groups of animals. Behavioral studies like Morris water maze, novel object recognition and actophotometer are performed for cognition, memory and locomotor activity. Biochemical estimations for antioxidant activity are performed by glutathione reductase assay, catalase assay, glutathione S-transferase assay, lipid peroxidation assay, superoxide dismutase assay and protein carbonylation assay. Protein concentrations are determined by biuret method. Cholinergic activity is determined by acetylcholinesterase assay. Inflammatory cytokines like TNF- α and IL-6 are determined by ELISA method. Mitochondrial dysfunction is evaluated by estimating mitochondrial enzyme complex I, II, III and IV. Histopathology is done. Molecular techniques like western blotting for Akt protein and RT-PCR for PI3-K, AKT, p-AKT, NF- $\kappa\beta$ and GSK 3- β is performed for gene expression analysis.

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Ambiguous meaning boundary of words in Alzheimer's disease

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Although certain types of dementia such as progressive nonfluent aphasia (PNFA), semantic dementia (SD), and logopenic progressive aphasia (LPA) involve language dysfunction, most Alzheimer's disease (AD) patients have no trouble in verbal communication. However, it is unclear whether they speak and perceive words in semantically the same manner as normal people. To examine word meaning for AD we performed picture word matching task (VC 14,15) in 18 patients with AD and 11 controls and similarity decision task (VC 16,17) in 40 patients with AD and 15 Controls. All tasks are subtests of SALA (a Japanese aphasia battery), which corresponds to PALPA in Europe. AD patients performed poorer than controls did in both tasks ($p < .005$, $p < .01$, respectively). Moreover, more errors were found for verbs than for nouns ($p < .05$, $p < .001$, respectively). However, the effect of similarity differed among the two tasks. In the picture-word matching task, more errors were observed for semantically similar pairs than for dissimilar ones ($p < .005$). On the other hand, similarity had no major effect on the similarity decision task ($p = .161$). Factually, direct comparison between the two tasks for 18 AD patients revealed significant interaction between the similarity and task type ($p < .001$). In the latter task, AD patients often excessively associated the given dissimilar words. They said everyone should wear a suit to go to hotel, so suit and hotel are similar or a dancer is shining, thus dance and shine are similar. The results have shown not only the semantic difference between pictures and language but also the ambiguous meaning boundary of words in AD.

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Mesenchymal stem cell expansion with small molecules

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The development of commercially available stem cell sources has let the researchers to modulate the immune system and provide valuable assets for regenerative medicine and cell-based tissue repairing systems. Mesenchymal stem cells are great candidate for transplantation based therapies with their immunomodulatory abilities, differentiation potentials because of their easy accessibility. They are present in the adult body, they can self-renew themselves and exhibit multipotency. They can differentiate to bone, fat, chondrocyte and other various cell types under specific conditions including neuronal cells. They can be obtained from different tissue types including; bone marrow, adipose tissue, umbilical cord, dental tissue, etc. Isolation of MSC is easy but there are major challenges on mobilization, expansion and understanding the differentiation mechanism. If these challenges overcome, MSCs show great potential for experimental and clinical applications. Stem cell based therapeutic approaches have also shown to be effective in neurodegenerative diseases' treatment. In our study we focused on expansion of mouse bone marrow MSCs, with small molecule treatment, with that we hope to achieve increased mobilization results as well. We selected four effective molecules firstly by WST-1 assay, cell viability assay was supported by pyronin y/hoechst staining. To see the effects on cell mechanism; cell cycle analysis, apoptosis analysis were conducted. The results did not suggest any misconduct on our MSC culture. Next, we performed RT-PCR and checked if there were any negative changes on HDR-related, CDKI, S-Phase and MSC immunomodulatory gene expressions. Also with CFU assay, we showed that after small molecule treatment, differentiation ability of our MSC was not lost. Our first and most effective molecule is a GSK-3 inhibitor that stabilizes free cytosolic β -catenin and inhibits differentiation. Second one is a p38-MAPK inhibitor. In conclusion, we found a safe and reliable way of in vitro expansion of mouse BM-MSCs. Our next step is in vivo trials by small molecule treated stem cell transplantation to SCID mice. With all this, our goal is to carry this knowledge to therapeutic field.

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From thalamus to cortex: Exploring the EEG cortical rhythms in dementia with Lewy bodies

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Growing evidences suggest that the thalamus acts as a brain activity pacemaker, regulating the information transmitted to the cortical areas. Particularly, thalamus plays a central role in altering and maintaining arousal. Anatomically its nuclei are topographically organized to modulate and synchronize distributed cortical networks supporting large scale cerebral dynamics related to goal directed behaviors and awareness. On this basis, it was suggested that phenomenal consciousness is generated by synchronized neural activity in thalamic neurons and that thalamic activity is driven by information arising from the cortical computation. Furthermore, the thalamus is critically involved in the modulation of visual transmission to the cortex and also to different cortical areas. It modulates visual attention based on its widespread connectivity with the visual cortex and the fronto-parietal attention network. Abnormal functional connectivity and micro-structural damage within thalami have been reported in dementia with Lewy bodies (DLB). DLB patients present specific symptoms characterized by clouding of consciousness (fluctuating cognition), sleep disturbances (mind-body dissociation) and visual hallucinations (within-mind dissociation), which have all been demonstrated to be associated with abnormalities of thalamic nuclei or thalamo-cortical connectivity of dysfunctions of thalamo-cortical connections in the genesis of DLB clinical features. A relevant role might be played by the thalamus in the physiopathology of core symptoms in DLB. Particularly thalamic cholinergic alterations could be related to fluctuating cognition (FC) and microstructural damage of pulvinar region could be linked to visual hallucinations.

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Protective effects of phycobiliprotein on streptozotocin induced behaviour and biochemical deficits in experimental model of Alzheimer's disease

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The present study was designed to explore the neuroprotective efficacy of a promising antioxidant and anti-inflammatory, phycobiliprotein (PB) against intracerebroventricular (ICV) streptozotocin (STZ) induced cognitive impairment in rats. STZ (3 mg/kg) was introduced in rats' brains on 1st and 3rd day bilaterally, followed by treatment with PB or rivastigmine for 28 days. Estimation of alteration in the behaviour of treated and untreated group of rats were done by Morris water maze, elevated plus maze and open field test. Afterwards, rats were sacrificed, and brains were harvested for the evaluation of various biochemical parameters in post mitochondrial supernatant fractions of cerebral cortex and hippocampus. The levels of several oxidative stress (SOD, CAT, LPO) and inflammatory (TNF- α , NF- κ B) biomarkers activity were analyzed towards acetylcholinesterase and was also investigated by ChAT assay. The amelioration of ICV-STZ induced spatial learning and memory impairment by PB could be associated partially to the down regulation of NF- κ B activity and the mitigation of expression of neuroinflammatory cytokines, along with modulation of cholinesterase, suggesting that PB may be explored further as a potent candidate for Alzheimer's disease therapy.

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Khat, a natural amphetamine, worsens cognitive and behavioural outcomes following repetitive mild traumatic brain injury

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Mild repetitive brain injury (mild TBI) frequently occurs in contact sports. It has received more attention in recent years following suggestions that it may lead to neurodegenerative, neurocognitive and neuropsychiatric consequences. The course of these neurological effects may be influenced by the use of psycho stimulants during training and competition. The plant (*Catha edulis* Forsk) khat, synthesizes cathinone, an amphetamine like psycho stimulant. Khat is consumed widely in Eastern Africa and parts of the Arabian Peninsula and likely used in sports of these regions. We investigated if khat would alter the neurological outcomes in a mouse model of repetitive mild traumatic brain injury (RmTBI). Adult male Swiss albino mice were randomly assigned into four groups: control (CON); khat treated (K); repetitive mild TBI without khat treatment (rmTBI) and; repetitive mild TBI with khat treatment (rmTBI+K). RmTBI was simulated using a modified protocol of the Wayne State USA weight drop model, where the mice received a single mild head injury daily for five days. Freeze dried extracts of fresh khat was administered by an I.P. injection every day for five days, 15 minutes before injury induction. In the rmTBI+K, there was significant increase in righting reflex time, working memory deficits at day 15 in a spontaneous-alternation task in a T-maze, reduced grooming time on day 30 in the depression splash test and longer time to complete the difficult tasks in the puzzle box on day 60. Compared to CON, the rmTBI group performed poorly in the same tests, but the difference was not statistically significant. The performance of the K and CON groups were similar. The results show that rmTBI resulted in deficits in behaviour and cognitive function on a long-term basis and these deficits are worsened by khat.

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Designed multi target drugs initiating neuroprotection, neurorestoration and mitochondrial biogenesis via activation of PGC-1 α for Alzheimer's disease

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Novel therapeutic approaches for the treatment of Alzheimer's disease (AD) comprise drug candidates designed specifically to act on multiple CNS targets, rather than a single receptor, as has been done with cholinesterase inhibitors. Major pathology of AD is the accumulation of iron in nucleus basalis, dentate gyrus, amyloid plaques and tangles and increase in monoamine oxidase (MAO). The iron contributes to the onset of oxidative stress and glutaminergic excitotoxicity via interaction with hydrogen peroxide generated by the reaction of MAO. We have synthesized several multi target non-toxic, brain permeable iron chelator drugs, such as M30, M30P and HLA20, possessing propargyl MAO and cholinesterase inhibitory moieties with neuroprotective and neurorestorative activities. These drugs possess anti-apoptotic, pro-survival neuro rescue effects, induction of neuronal differentiation, regulation of amyloid precursor protein (APP) and β -amyloid (A β) levels. They induce the outgrowth of neurites in neuronal cell cultures, trigger cell cycle arrest in G0/G1 phase and enhance the expression of growth associated protein 43, HIF (hypoxia inducing factor) and increased brain levels of brain-derived neurotrophic factor (BDNF), glial cell line-derived neurotrophic factor (GDNF), vascular endothelial growth factor (VEGF) and erythropoietin. This has been shown to be associated with the inhibition of iron dependent prolyl-4-hydroxylase that regulates HIF. Both M30 and HLA20 process APP via activation of alpha secretase. They possess neurorestorative activity in in vivo models of Parkinson's disease and restore the cognitive deficit in APP/PSI double transgenic mice, the streptozotocin (STZ) Mc Gill rat transgenic models of AD. The dual control of mitochondrial biogenesis and energy metabolism is regulated by silent information regulator 1 and 3 (SIRT1 and SIRT3) and peroxisome proliferator activated receptor γ co-activator-1 α (PGC-1 α) is both activated by M300 and HLA20.

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Dementia and the cycle of role reversal: Always a matriarch

Naomi Lilly

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My grandmother is an 88-year-old African American woman with dementia. My project seeks to explore the role dementia has played within my family, specifically, how the cycle of role reversal has shaped the matriarch position my grandmother once held within my family. Discussion of the topic will be facilitated by my grandmother, her children and grandchildren. Literary works include publications that focus on dementia as a symptom and dementia as it pertains to the role of caretakers. These works were used to demonstrate differences between written text and what it means to face dementia outside of text. The final project will take the form of a documentary that seeks to capture the emotions and realities my family has to face as a result of my grandmother's condition. The documentary is different from a paper in many ways, it serves as a case study that helps to build personality and impact. This personality and impact will ultimately help viewers paint an image of what life looks like for a person with dementia and how the conditions that are attributed to dementia, impact surrounding individuals (i.e., family). The documentary will be guided by the recognition of a role reversal and reflections on memories before and after my grandma's condition began and continued to worsen. These memories help to allow individuals to recognize the changes dementia can have on what may be considered a person's everyday routine. These memories will also help viewers connect to the content due to the raw nature of the responses given by interviewees and the unfortunate realities dementia presents. The analysis of the interviews I have conducted has portrayed general disdain for my grandma's health status, but a fondness and admiration that can be attributed to the way she has helped to unite and lead my family throughout the years. This admiration was reflected heavily amongst my family members and their acceptance of the role reversal, due to the nurturing my grandmother has provided us throughout the years. Evidence for this claim can be greatly attributed to the heartfelt answers provided by family members. These answers help to paint the image of a matriarch and a change in the hierarchal roles within the family at large.

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Use of Mancala/Sungka to reduce cognitive decline in institutionalized elderly in Metro Manila

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Introduction: As people age, their mental and physical functions diminish due to their inactivity. The purpose of this study is to use Sungka to reduce cognitive decline and enhance cognitive aspects (memory and retention, attention and concentration, executive function and mood) among institutionalized elderly in Metro Manila.

Methods: The playing of Sungka was incorporated into a structured routine program, entitled Comply: Communicate Move Play (which includes social, physical and cognitive activities). The subjects were 12 elderlies, who came from an elderly institution in Metro Manila, selected under purposive sampling. The study was conducted for 45 minutes to one hour, once a week for four weeks. Quasi-experimental design was utilized through a pre and post intervention test using mini mental state exam (MMSE). Two researchers' developed tools were used in determining the effect of the structured routine program. The consent of the institution and the subjects were obtained and was assured that their privacy, confidentiality and anonymity were secured. Measure of pre and post MMSE scores was analyzed through dependent t-test, while cognitive aspects under the research developed tool were analyzed through repeated measures ANOVA.

Results: Findings revealed that there is a significant difference between the pre and post MMSE ($p=0.001$). The results suggest that Sungka is effective in reducing cognitive decline in geriatric subjects. Further, attention and concentration were shown to have a significant change ($F=4.600$, $p=0.030$) indicating that the subjects were being taught lesser in every transpired session. However, memory and retention ($F=1.882$, $p=0.169$), executive function ($F=0.792$, $p=0.502$) and mood ($F=1.0000$, $p=0.339$) had no significant change.

Discussion: The significant difference in the pre and post MMSE shows that the use of Mancala/Sungka can reduce cognitive decline among institutionalized geriatric subjects in Metro Manila. Further research is needed to extend the length of application of the said structured program.

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Alzheimer's disease: Metal toxicity and metal chelation therapy

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Plaques are highly associated to Alzheimer's disease, formed by the aggregation of amyloid in the brain. The aggregation of amyloid can be induced by the presence of mis-regulated metals. The interaction between mis-regulated metal and amyloid leads to generation of reactive oxygen species. In our study, molecular modelling was performed to understand the behavior of cyclen compounds with E2 domain of APP (amyloid precursor protein) in its interaction with Cu and Zn (PDB: 3UMI and 3UMK). After that cyclen compounds with pendant arms were synthesized to chelate the mis-regulated metal ions by the cyclen cage and to increase the lipophilicity and reduce the oxidative stress by the pendant arm. We synthesized Cu, Zn and Ni complexes to show the ability of our compounds to chelate AD mis-regulated metals. X-ray study was performed for some of the complexes and the effect of cyclen compounds on A β 40 deaggregation was tested by using turbidometry, solubility of A β 40 and mass spectrometric analysis. The antioxidant of cyclen compounds was tested by using DPPH scavenging assay. Pharmacokinetics parameters were performed to investigate the ability of cyclen compounds to arrive at its target and to see its side effect in the body. Our results show that cyclen compounds have ability for A β 40 de-aggregation by chelation of the mis-regulated metals and may decrease the oxidative stress in the brain and can thus be considered as neuroprotective agent for treatment of Alzheimer's disease.

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Intranasal insulin attenuate signs of Alzheimer's disease following chronic hypoxia

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Alzheimer's disease (AD) is a metabolic neurodegenerative disease featured by cerebrovascular dysfunction in addition to cognitive decline. Amyloid β ($A\beta$) plaques followed by up-regulation of amyloid precursor protein (APP) and seladin-1 down-regulation, as well as insulin signaling impairment are associated with this disease. This study was designed to evaluate the effect of insulin on Alzheimer's signs induced by chronic hypoxia. 24 male rats were randomly divided into four groups: control (C), sham (Sh), hypoxia (H), hypoxia + insulin (HI) and were exposed to hypoxic chamber (8% O₂, 92% N₂) for 30 days (four hours/day) in H and HI groups. Pro-inflammatory cytokines and insulin receptor substrate (IRS-1) in sera were measured on day 30 after hypoxia period. Intranasal insulin administration was used as a neuroprotective and antidiabetic drug. Spatial learning and memory were analyzed using the Morris water maze task. Amyloid precursor protein gene (APP) and seladin-1 gene expression were studied in the hippocampus by real time-PCR. TNF- α , IL-1 β and IRS-1 had significant magnification in H group compared with C and Sh groups ($p < 0.05$). Insulin improved Alzheimer's signs such as seladin-1 fallen, APP risen gene expression and memory impairment. In conclusion, we indicate that chronic hypoxia mediates AD pathogenesis and using insulin hormone as a neuroprotective and antidiabetic drug could be beneficial in neurodegenerative damage induced by hypoxia.

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Can we quantify the person-centered care concept for people with dementia? Extract of priority approach points for people with dementia: A pilot study

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To quantify the care concept (person-centered care) for people with mild cognitive impairment (MCI) and early stage dementia, we analyzed the difference between the MESD's and family caregiver's narratives and extracted approach points for MESDs. We conducted a semi-structured interview for 14 pairs of MESDs and caregivers visiting the National Center for Geriatrics and Gerontology (NCGG). Based on the self-regulatory model of illness behavior, the interview items were set to eight categories (physical and mental changes, self-esteem, etc.). Methods of content analysis were, segmenting the contents of utterances; classifying them as positive and negative and sorting those classified into eight categories (ultimately, sorting them into 16 categories). Finally, the percentage of speech in each category and their total number of words was calculated (incidence of occurrence) and compared between MESDs and caregivers. The attributes of MESDs were age: 78.0±3.4, MCI 50.0%, MMSE (mini-mental state examination): 21.7±3.4. The attributes of caregivers were age: 64.0±11.5, relationship: biological parent and child was 57.1%. The categories of significantly higher incidences in MESDs were: affirmative self-esteem ($t(24)=1.8$, $p<0.05$), family affinity ($t(24)=1.9$, $p<0.05$). Conversely, in caregivers, pessimistic feelings of MESD's mental and physical changes accounted for a high percentage. MESDs positively talked about their personality and their families. On the other hand, caregivers negatively talked about changes of MESDs. As a result, the focus approach point for MESDs is based on personal history, such as personal background and the individual's view of life. In other words, this suggestion is synonymous with the concept of person-centered care.

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Elderly patient care with Alzheimer's: Can family caregiver information on illness make a difference?

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The research deals with the care of elderly patients with Alzheimer's disease, which is a severe dementia associated with old age and a high increase of diagnosis is observed in Brazil. The objectives were the recognition of importance that a regular multi-professional course is given to a family caregiver; exercises the quality of accompaniment to the elderly that is to recognize the role of health education. Participants comprised group A of caregivers who participated in a course that is regularly offered at the Taguatinga Health Unit, reference center for geriatric care and in group B of caregivers who did not participate in the course. The research is qualitative and descriptive. The collection was carried out in April and May of 2017 through a structured interview. Content analysis was used, and the research was approved by the Government Ethics Committee. The majority profiles of the interviewees are of the women married over 45 years old and some elderly without a higher educational degree. They are usually daughters who have lived with elderly people for more than seven years. Respondents in group A reported having knowledge about the disease and felt prepared to deal with care for the elderly, unlike group B, who stated lack of knowledge and feeling of unpreparedness for dealing with the elderly. Both groups showed similarity only when they agreed on the importance of a course of care. In general, the research presents questions that merit reflection (Metacognitive Reflection and Insight Therapy). We recognize the importance of health education and its positive impact on the complex chain that is care for the elderly with Alzheimer's and validates the relevance of the course periodically offered by a health unit that has turned to this significant clientele, who are family caregivers, a strategic link between the elderly and health services.

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