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Keynote Address

The Future of Health & Rehabilitation Sciences in the IR4.0 era

Dr. Normy Norfiza Abdul Razak
Universiti Tenaga Nasional

The Fourth Industrial Revolution with a key component of IOT is changing everything we do, from the way we watch movies, the way we take our lunch, dinner, breakfast- we simply ordered and have it delivered right to our doorstep. How we find directions, navigating our way...the way we talk to our friends, colleagues, family- Facetime, Whatsapp, Snapchat, Instagram just to name a few. Look around us, everything is changing and what we previously see on science fiction or thought to be far-fetched has caught up with reality. We have self-driving cars- just waiting for it to be in Malaysia; we have robot/humanoid with granted citizenship! Sofia, as she is known. Industry 4.0 will definitely make our lives better. Surprisingly, health industry is a bit resistant and seems like we are moving at a slower pace compared to other industry. Yet what it has and what's in store is going to be very significant. Statistics cited in Meeker’s report from the Rock Health Digital Health Consumer Adoption Survey, 2018, show that the appetite for digitized healthcare is there. Disruptions of technologies are happening through various sectors and for health industry; we shouldn’t be too far behind. There’s rapid development in today’s technology, IOT- Big Data, Cloud Computing and in this digital age business are embracing by automating their production lines.

The picture of traditional healthcare is where a patient sits at the hospital or clinic waiting to be assessed by the doctor. Any diagnosis or treatment happens in the doctor’s office. But with IOT and IR4.0 this flips the dynamic. Healthcare can be brought home, as easy as having your Grab Food. The disruptor will be wearable devices, smartphone apps, wireless connectivity etc. The ecosystem is vast and the applications of IOT in healthcare can be endless. Cloud, AI and research capabilities will play a fundamental role towards the future. We will see a revolution in treatment, rehabilitation and diagnosis. When connected to the internet, ordinary medical devices become smart- collecting invaluable data, give insight into symptoms and trends, enable remote care, and generally give patients more control over their lives and treatment.

Here are examples of IoT in healthcare that demonstrate what medicine or healthcare can bring in the near future. Smart continuous glucose monitoring (CGM) and insulin pens, Closed-loop (automated) insulin delivery, Connected inhalers, Ingestible sensors, The Apple Watch app that monitors depression, Apple’s ResearchKit and Parkinson’s Disease, ADAMM Asthma Monitor.

Notice how there’s Apple throwing their weight. Big tech companies are increasingly developing their own healthcare for healthcare technology. Tim Cook, CEO of Apple, said in January 2019 that Apple’s “greatest contribution to mankind will be about health. Because our business has always been about enriching people’s lives.” Worth to note that the market for medical wearables is estimated to hit $12.1 billion by 2021, according to a recent study by Markets and Markets.

Research is busting, healthcare would be accessible to inaccessible parts of the world, aftercare into home isn’t a worry, the future is indeed exciting and we look forward to what IR 4.0 will bring to make all our lives better.
Plenary Lecture 1

Finding the centre in person-centred care: What does it mean, why do it and how can we do it?

Assoc. Prof. Dr. Deborah Hersh  
Edith Cowan University, Australia

The concept of person-centered practice is deeply embedded in many healthcare systems and is often central to the vision statements and policies that guide health services. It involves respect for patients’/clients’ individual needs, recognition of their autonomy, and mutual collaboration between them and their clinicians. However, particularly in acute and sub-acute settings where the medical model remains dominant, it can be difficult to implement person-centredness. In this presentation, Deborah will focus on what we mean by person-centred care in practice and explore why and how we might work in this way. Building on clinical and research experience from post-stroke rehabilitation, she will explore ideas of personalising care, good communication, shared decision-making and family involvement. Deborah will highlight and summarise studies carried out with people with aphasia after stroke that demonstrate person-centredness in relation to assessment, goal setting, and discharge planning, and show how this work might be generalised to other patient groups and interprofessional teams.
Lecture 1

Interdisciplinary Therapy - Sharing Our Discipline Strengths

Dr. Ai Lian Lim
Bellevue Hospital Center, New York, USA

Most patients are recommended for occupational therapy, physical therapy and speech therapy, which can be very costly. While each discipline has specialized skills to treat patients, we can do better at integrating treatment plans so that patients receive optimum therapy in a short duration at lower cost.

How do we complement each other for our patients’ benefit?

We can do so through:
1. Having clinical dialogues;
2. Observing each other in therapy;
3. Determining what the “links” are to accelerate recovery;
4. Learning from each other;
5. Understanding each other’s approaches and using this understanding to make us better practitioners and
6. Learning each other’s skills to the extent possible.

I shall present three actual cases to show how interdisciplinary treatment plans work.

Case 1:
Case 2:
Case 3:

By using interdisciplinary treatment plans, we would be providing our patients with the best care at the best value.
Challenges in Molecular Diagnostics of Lung Cancer

Prof. Dr. Cheah Yoke Kqueen
Universiti Putra Malaysia

Globally, lung cancer remains the leading cause of cancer-related mortality. Non-small cell lung cancer (NSCLC) accounts for majority of lung cancers, and huge fraction of patients encounter metastatic disease at presentation. Chemotherapy, the standard treatment of metastatic lung cancer, results in a modest survival benefit compared to best supportive care, and has reached a plateau with no meaningful differences among the many platinum-based regimens used. The discovery of Epidermal Growth Factor Receptor (EGFR) mutations that confer sensitivity to tyrosine kinase inhibitors in lung adenocarcinomas in 2004 signalled the beginning of the era of precision medicine for lung cancer. A range of technologies are employed to perform molecular testing, from sophisticated genomic sequencing platforms to simpler single-marker assays. These tests, broadly referred to as molecular diagnostics, have quickly become an essential component of the treatment of advanced lung cancer. The simpler tests, which identify the presence of a single molecular marker, are often called “companion diagnostics” because they are developed and tested alongside targeted therapies in clinical trials. The molecular profiling of lung cancer using molecular diagnostic approach is useful to diagnose specific EGFR mutations and subsequently prescribe tyrosine kinase inhibitors as part of the targeted therapy. Moreover, the advancement of molecular diagnostic also plays an important role in the progress monitoring of the emerging drug resistant lung cancer cells. At the molecular level, the most common mechanism of resistance is the EGFR T790M resistance mutation. This finding has led to the development of third generation mutant specific EGFR TKI’s to specifically target T790M. Droplet digital polymerase chain reaction (ddPCR) is an emerging technology that has attracted attention because of its favorable prospect in detecting minor amounts of nucleic acid [21–22]. By separating the target DNA into thousands of oil droplets that carry out PCR reactions independently, the competitive inhibition between wild and mutated DNA can be effectively avoided; thus, the theoretical sensitivity of ddPCR may reach to one DNA strand. One concern is that a slow, disorganized testing process may drive patients to receive chemotherapy before the likelihood of their benefiting from less toxic targeted therapies is known. Another is that shortcomings in the communication between the various specialties involved in the molecular testing process have led to delays and uncoordinated care, especially in the tissue collection process, where lack of sufficient tissue has been cited as an impediment to testing. Strategies for process improvement are necessarily to address these concerns.
Lecture 3

Prevention of Blindness at Community Level - Does It Work?

Rokiah Omar PhD. (UNSW), BOptom. (UKM)
Universiti Kebangsaan Malaysia

Identifying effective vision screening mechanism will facilitate in reducing avoidable blindness especially among preschoolers. Engaging community will ensure the sustainability of such program. The objective of this lecture is to share Malaysian’s experience on the effectiveness of vision screening conducted at community level.
Plenary Lecture 2

From Evidence to Practice in Health and Rehabilitation

Assoc. Prof. Dr. Saravana Kumar
University of South Australia, Australia

The seminal work of John Snow in tracking the cholera outbreak in Soho, London in 1854 and the subsequent engineering solution on how water and waste systems are handled highlights the importance of partnership approach, within and outside of health disciplines, in implementing best practice and ensuring quality and safe healthcare. In this presentation, Dr Kumar will outline his experiences of, and lessons learnt from, engaging with healthcare stakeholders when implementing best practice in the field of health and rehabilitation. Using case studies from the Australian context, Dr Kumar will outline the process of and outcomes from the partnership approach and how this has transformed health and rehabilitation services and has generated a range of positive impacts. The presentation will provide key take home messages about strategies could be used when engaging with healthcare stakeholders to achieve and demonstrate impact in the field of health and rehabilitation.
Gold Sponsor Talk

A Listening Life After Deaf… With Cochlear Implants

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It is estimated that 13 in every 1000 children have disabling hearing loss (WHO, 2012). Prelingual deafness impacts on an individual’s life on various domains and levels, mainly due to the lack of spoken language, cutting off the main mode of communication from the mainstream society.

To date, over 500 have received cochlear implants. The history of cochlear implant in Malaysia started with the UKM Cochlear Implant (CI) program, launched in 1995, the first of its kind not only in this country but also the first documented in the Southeast Asian region.

This presentation will take the audience along the journey made by these individuals with cochlear implants, from being deaf and not hearing, to being able to listen and speak and living in the mainstream society. The professionals involved in this program have the common goal of empowering individuals with hearing loss to live and function in the mainstream society, and therefore maximizing their full potentials. To this end, several crucial elements need to be factored in, among which, early diagnosis and intervention, usage of advance technology such as cochlear implant, and strong family support.

**Keywords:** hearing loss, cochlear implant, speech-language therapy, aural re/habilitation, family empowerment,
Lecture 4

Management of Children with Balance Disorders

Prof. Dr. Sylvette R. Wiener-Vacher
Robert Debre Hospital, Paris, France

Vertigo and balance disorders in children often lead to the excessive prescription of MRI before any clinical oto-neuro-vestibular examination. This presentation will review different situations where vestibular testing help in the management and diagnosis in this population. Relying solely on symptoms can be misinterpreted and may lead to erroneous diagnosis. It is crucial that every physician knows how to (1) clinically orient the diagnosis of vertigo and balance disorders, (2) when to prescribe and reserve the MRI in children with neurological signs or cranial traumatism with hearing or vestibular impairment. Also, vestibular testing should become obligatory before any cochlear implantation in young children, to avoid any bilateral vestibular impairment that can severely impact their psychomotor development.
Mental Health Issues in Children

Assoc. Prof. Dr. Azizah Othman
Universiti Sains Malaysia

Mental health is a state of well-being where a person is aware of his ability, coping with stress adequately, functioning productively, and contributing to the community. Slade’s model of mental health proposes that a mentally healthy person is not necessarily free from mental illness, vice versa. As for adult, children’s emotional well-being is equally important as their physical health. The rise of mental health issues especially among Malaysian children and adolescence is worrying. The prevalence, risk factors, and common mental problems among children are presented, in addition to consequences in later life. We highlight the challenges in providing mental health support and services to this population. We propose that the approach to deal with mental health problems to be focusing on increasing well-being rather than treating illness, incorporating positive psychology into education and training for health professionals in particular, and possibly modifying some existing work routine. Finally, evidence-based intervention practices are briefly reviewed, with examples to illustrate some efforts that have been done locally in managing mental health issues in children and adolescence.
Lecture 5

Grammatical Based Intervention in Developmental Language Disorder: Data and Future Directions

Assoc Prof. Dr. Maria Garraffar
Heriot-Watt University Edinburgh Campus, UK

Is Developmental Language Disorder (DLD) a domain-specific impairment or the outcome of the damage in domain-general cognitive mechanisms? Which are the linguistics markers proposed to identify the DLD? Is DLD a delay in the language onset or it is manifested as dissociation of different language components? In this talk we will discuss language profiles in children with DLD, with an emphasis on the investigations of the mechanisms beyond grammatical learning and recent applications of syntactic priming for language learning and intervention.
Lecture 6

Back to the Future: The Contralateral Suppression of Otoacoustic Emissions as a Potential Clinical Tool to Detect Active Auditory Hallucinations among Schizophrenia Patients

Dr. Noor Alaudin Abdul Wahab
Universiti Kebangsaan Malaysia

Introduction: Auditory hallucinations are subjective-positive symptoms, which reported verbatim by the schizophrenia patients. The attention deficit theory suggested schizophrenia patient having difficulty to filter the not important information, causing sensory overload. To date, there is no rapid, non-invasive and relatively cost-effective method to objectively detect the presence of the symptom in schizophrenia patients. Hence, the current study aims to utilize the contralateral otoacoustic emission to measure the functional auditory suppression, integrating with attention tasks, to observe the attentional influence in suppressing auditory information between schizophrenia patients and normal individuals. Methodology: Four normal-hearing schizophrenia patients with either active or passive auditory hallucinations experience were assessed using contralateral auditory suppression. All patients are on atypical anti-psychotic medication. One of the patients was also treated with electroconvulsive therapy a month before the audiological assessments. The contralateral suppression test was conducted in both ears with two conditions i.e without and with auditory attention tasks. The results of each patient were compared with the mean suppression values of six aged-match normal controls that went the similar audiological procedures. Results: Two patients with active hallucinations revealed absence of suppression in both ears for all test conditions. A patient with passive hallucination showed absence of contralateral suppression only in the right ear during auditory attention task. A patient who received the episodes of electroconvulsive therapy showed presence of bilateral suppression in both conditions. Conclusion: The findings suggest that contralateral suppression of otoacoustic emissions with auditory attention task could become a potential clinical tool to objectively identify patients with active auditory hallucinations. In addition, it might also be a useful tool to evaluate the effectiveness of medical treatments received by patients. Hence, further studies to investigate its effectiveness are required.

Keywords: Auditory neuroscience, Neuroaudiology, Schizophrenia, Auditory hallucinations, Contralateral suppression.
Lecture 7

Psychosocial Factors Affecting Obesity among Primary School Children: A Qualitative Study

Norimah AK and Nur Syafira Y

Nutritional Science Programme, Community Health Centre, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.

The prevalence of overweight and obesity among schoolchildren in Malaysia has increased in the last decade. It is well established that excessive food intake and physical inactivity are risk factors to obesity. This qualitative study explores the psychosocial factors affecting obesity among primary schoolchildren in Klang Valley. 27 overweight and obese Malay children from three primary schools participated in this study. The in-depth interviews which lasted on average 32 minutes were audiotaped, transcribed and coded. Themes and subthemes were categorized through consensus with three experienced qualitative study researchers. The results showed that individual influences could be grouped into four themes namely low self-regulation, pressure and boredom, barriers to physical activity and sleep deficiency. On the other hand, for parental and familial influences, an additional four themes were identified which included feeding styles such as pressure to finish up food and food rewards, family eating practices including eating out and no family meals during meal times, availability of unhealthy foods at home as well as less involvement in physical activity. Three themes were ascertained in the community and social influences; namely physical environment such as availability and accessibility to buy unhealthy foods, no facilities for physical activity, unhealthy food advertising and peers which also included no friends, no facilities and body weight stigma and discrimination. In conclusion, this study showed that psychosocial factors played an important role in the development of obesity among primary schoolchildren. Future interventions to combat obesity in Malaysia should give serious considerations to psychosocial factors that can influence obesity among schoolchildren.

Keywords: psychosocial factors, obesity, schoolchildren, qualitative study
Cognitive Frailty Among Malaysian Older Adults: Who Are at Risk?

Suzana Shahar  
Centre for Healthy Aging and Wellness, Faculty of Health Sciences, Universiti Kebangsaan Malaysia

Cognitive frailty (CF) is a newly described predementia syndrome characterized by simultaneous presence of both physical frailty and cognitive impairment. Several population-based studies have estimated the prevalence rate of cognitive frailty at 1.0% to 12.0% among community dwelling older adults, with a much higher rate has been reported in clinical settings at 10.7% to 40%. Cognitive frailty can be influenced by a number of risk factors including vascular, lifestyle (physical activity and smoking), poor nutritional status and psychosocial. Among Malaysian population, frailty affects 9% of individuals aged 60 years and over; whilst 61% considered as pre frail. Further, mild cognitive impairment (MCI) is present at a range of 16 to 21%. Recent study involving 815 Malaysian older adults from two states (Perak and Selangor) indicated that 37.4% were cognitively pre-frail and 2.2% cognitively frail. Advancing age, depression, dependancy in daily activities, low social support and low niacin intake were found to be significant factors of cognitive frailty. Specifically, the concept of cognitive frailty may be useful in identifying individuals with cognitive impairment caused by physical and non-neurodegenerative conditions and to promote interventions that can lead to improved quality of life among older adults. Comprehensive multimodality interventions comprising of nutritional, physical and cognitive intervention has been reported to be superior in reversing frailty in older adults, as compared to single intervention. It is noteworthy that this program was targeted to address frailty and not cognition in specific. Evidence on effective intervention on newly defined geriatric syndrome, ie. Cognitive frailty is limited, but combined cognitive training and targeted physical activity might be useful to mitigate or prevent gait and cognitive decline. Adequate to high protein and at least 16 micronutrients have been reported to be beneficial in improving musculoskeletal health and/or cognitive function in older people: beta-alanine, calcium, creatinine, fluorides, leucine, magnesium, omega-3 fatty acids, potassium, vitamin B6, vitamin B9, vitamin B12, vitamin C, vitamin D, vitamin E, vitamin K2, and zinc. However, quite often nutrition component has not been given equal emphasise in effort to improve cognition and musculoskeletal health. There is a need to embark on a larger scale community based study to determine the prevalence, incidence and risk factors of cognitive frailty among Malaysian older adults.
Audiological Management of Age-Related Hearing Loss: Beyond Hearing Amplification

Dr. Siti Zamratol-Mai Sarah Mukari
Universiti Kebangsaan Malaysia

Age-related hearing loss (ARHL) is a progressive disorder affecting hearing functions and among the elderly has been recognized as the third most frequent cause of disability. This presentation will explain why older adults often have more difficulties perceiving speech in noisy situations compared to young adults. Age-related changes in the auditory system and cognitive function that are related to speech comprehension will be described, with a few examples of recent research from our lab. Finally, some potentials for clinical applications in audiological assessment and rehabilitation of age-related hearing loss will be discussed.
Lecture 9

Neuroprotective Potential of Commercial-Mixed Functional Food Juice on Amyloidogenesis Rats

Prof. Dr. Nor Fadilah Rajab
Universiti Kebangsaan Malaysia

Alzheimer’s disease (AD) is a chronic neurodegenerative disease that affect memory and cognitive function. One of the key pathological hallmark of AD is deposition of amyloid-beta (Aβ). Various studies had failed to slow down the disease progress. Prevention of Aβ plaque deposition has better potential compared to removal of existing Aβ. Recently, researchers had identified that diet and lifestyle could serve as protective strategies to reduce the risk of developing AD. Several functional foods were considered to be part of this strategies which included highly potential medicinal plants such as pomegranate, date fruits, honey, black seeds and olive. Many commercially functional foods were claim of to possess health beneficial only based on scientific reports of each individual fruits or plants without any data on its usefulness in combination. In the present study, the neuroprotective effect of commercially available mixed functional foods juice (MFF) was evaluated following an intracerebroventricular (icv) introduction of amyloid beta-42 (Aβ42) via injection into male Wistar rats as an AD model. The MFF product consists of several functional foods combination such as pomegranate, date fruits and honey. Three behavioural tests were used at pre-surgery (day 0) and post-surgery (day 7 and day 14) namely Y-maze (spatial learning and memory), Morris water maze (spatial memory) and open field test (locomotor activity) detecting cognitive impairment in amyloidogenic condition. Various biochemical parameters which include oxidative and inflammatory markers (IL-1β, IL-6, TNF-α, IL-10, NFκB and Nrf-ARE levels) as well as metabolomic analysis were done to evaluate the health beneficial claims of commercially available MFF. Pre-treatment of MFF to the Aβ42-injected rats significantly (p<0.05) increased locomotor at day 7, short-term spatial memory at day 14, Nrf-ARE, and decreased Aβ42 protein, NFκB, IL-1β and IL-10 levels. Amyloid beta-42 (Aβ-42) induction in male Wistar rats increased succinate (p<0.05), panthothenate (p<0.001) and glucose (p<0.01) levels but reduced pyruvate (p>0.05) level significantly compared to control in metabolomics analysis. However, supplementation of MFF did not improve these conditions. Taken together, these results demonstrated that MFF has neuroprotective effects by reducing the Aβ42 levels and inflammatory cytokines, and improving Nrf-ARE levels. This suggests the potential protective role of MFF in AD model.
Lecture 10

Diabetes Nutrition: Challenges and Best Models

Assoc. Prof. Dr. Barakatun Nisak Mohd Yusof
Universiti Putra Malaysia

Asia has been experiencing a tremendous surge in diabetes, and Malaysia is no exception. The prevalence has dramatically increased more than 100% from 2.1% in the 1980s to 20.8% in 2014, highlighting the public health burden on these issues. For those individuals with a type 2 diabetes, many of them did not achieve optimal glycemic control, which put them at a higher risk of developing diabetes-related complications. While lifestyle modification and medical nutrition therapy are the mainstays of diabetes management, non-adherence to lifestyle measures are highly prevalent. This presentation highlights the challenges and the critical needs of people with type 2 diabetes. The best model of nutrition therapy for the prevention and management of diabetes are also proposed, which is hoped to lead to a better quality of life in individuals with diabetes.
Lecture 10

Towards a More Caring and Dignified Infrastructure in our Society beyond the Silver Age

Dr. Ai Lian Lim  
Bellevue Hospital Center, New York, USA

What does our Malaysian society want for the elderly? No problems to themselves and to their families. This we know is unreal and impossible. It is not the fault of an elderly person to grow old with dementia, to have ill health or to be disabled and not to have funds to provide for oneself. Also it is debatable on the reasons that their families neglect them. We need a humane society. What can we offer as occupational Therapist? We could work with policy makers to create an environment of care (health, accessible and stimulating environment at home and at public places) and training people for skilled care. As a society we need to find ways to invest in this care. We can spend prudently to build this environment.
### i-SIHAT: Oral Presentations

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Display of Non-structural Protein 1 of Influenza A H5N1 Virus on *Lactobacillus casei* strain C1

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H5N1 influenza has been a major public health concern due to its high potential to cause the next influenza pandemic. Universal influenza vaccine is believed to be the solution to prevent influenza disease caused by circulating and pandemic influenza strains. Incorporation of conserved influenza epitopes with lactic acid bacteria (LAB) is an ideal strategy for development of oral universal influenza vaccine. A recombinant *Lactobacillus casei* (*Lb. casei*) displaying the nonstructural (NS) 1 protein of influenza A virus H5N1 was constructed. The NS1 gene was cloned into pSGANC332 expression plasmid and formed pSGNS1-ANC332 plasmid. The plasmid was stably maintained (98.94 ± 1.65%) by the bacterium within the first 20 generations without selective pressure. The NS1 protein was expressed as a 49-kDa protein in association with the anchoring peptide. The yield was 1.325 ± 0.065 µg/mg of bacterial cells. *Lb. casei* expressing the NS1 on its cell wall was red-fluorescently stained, but the staining was not observed on *Lb. casei* carrying the empty pSGANC332. The results implied that *Lb. casei* strain C1 is a promising host that could express NS1 protein of influenza A H5N1 on its cell wall. This potentiates the use of the recombinant bacterial strain as an oral universal influenza vaccine. In order to better authenticate this potency, further studies are required especially in terms of broad-spectrum immunity against influenza infections.
BSO-03

Up-regulation of Leucine-rich alpha-2-glycoprotein 1 (LRG1) in Colorectal Cancer Promotes Disease Progression via Regulation of TGF-β Pathway

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Leucine-rich-alpha-2-glycoprotein 1 (LRG1) has been implicated in various types of malignancies and was listed as one of the 41 highly potential protein biomarkers in cancer. Despite several biological functions of LRG1 have been addressed mostly from the aspect of cell growth and survival in various types of cancers; however, the underlying mechanisms of LRG1 modulating these processes in colorectal cancer (CRC) have not been fully elucidated. We aim to investigate the presence of LRG1 in both CRC patients’ serum and its molecular role in CRC by identifying the possible signaling pathways involved. Quantitative proteomics was performed on 15 human serum samples representing four stages of CRC and a normal control (n=3 for each group). Western Blot was conducted to confirm the expression of target proteins in the cell line model followed by cell manipulation. Cell-based assays were performed to evaluate the functional activities and real-time quantitative PCR for determining the signaling pathways. We have identified significant up-regulation of LRG1 protein in the sera of CRC patients, particularly in the advanced stage. The endogenous expression of this protein in the CRC cell lines revealed high expression in a stage-dependent manner, whereas present at a very low level in the normal. Additionally, we have also found that over-expression of LRG1 enhances epithelial-mesenchymal-transition (EMT) by activation of Ki67 (p<0.01), promotes cell migration via ZEB1 (p<0.05) and increases invasion of CRC, through the regulation of TGF-β pathway. In conclusion, the up-regulation of LRG1 observed in CRC patient is in concordance with its role in the progression of the disease via collective proliferation, migration and invasion through the regulation of TGF-β pathway.
BSO-04

Anti-proliferative, Apoptosis Induction and Cell Cycle Arrest Abilities of Organotin(IV) Dithiocarbamate Compounds on Chronic Myelogenous Leukemia Cells

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The study of organotin compounds has been of particular interest to scientists worldwide for the past few decades due to their proven anti-fungal, anti-microbial and anti-cancer properties. In this study, six organotin(IV) dithiocarbamate compounds, namely dimethyltin(IV) N-methyl-phenetyl dithiocarbamate (C1), dibutyltin(IV) N-methyl-phenetyl dithiocarbamate (C2), dibutyltin(IV) bis(2-ethoxyethyl) dithiocarbamate (C3), dibutyltin(IV) N-ethylcyclohexyl dithiocarbamate (C4), diphenyltin(IV) N-ethylcyclohexyl dithiocarbamate (C5) and triphenyltin(IV) N-ethylcyclohexyl dithiocarbamate (C6) were synthesized and tested for their anti-proliferative, apoptosis induction and cell cycle arrest abilities. Imatinib was used as the positive control whereas the untreated cells act as the negative control for all three assessments. First, anti-proliferative studies were conducted via (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay on K562 cells for treatment duration of 24 hours. The IC50 values obtained were from 0.18 to 16.61 µg/cm3 for all six compounds. Hence, all compounds, aside from C1, were classified as strongly active on the leukemic cells tested. The mode of cell death was then assessed via Annexin V FITC/PI assay for treatment duration of 24 hours, where it was found that the percentage of apoptotic cells were about 50% for all compounds on the K562 cells, except for C5 (30% apoptotic cells) at their respective IC50 values. Next, two compounds with the lowest IC50 values and highest percentage of apoptosis (C2 and C6) were further studied to assess their cell cycle arrest abilities through cell cycle analysis. C2 was able to induce K562 cell cycle arrest at S phase and C6 at G2/M phase for treatment duration of 6 hours. In summary, four out of the six compounds (C2, C3, C4 and C6) showed potent cytotoxicity on the leukemic cells tested through induction of apoptosis. The two chosen compounds, C2 and C6, were able to induce cell cycle arrest, which indicates their abilities to cause K562 cells DNA damage.

Keywords: Organotin(IV) dithiocarbamate; anti-proliferative; apoptosis; cell cycle; leukemia
Development And Acceptance Of Telescreening Module For Periodontal Disease Detection

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Periodontal disease is highly prevalent, but the number of dentists to detect the disease is limited. Healthcare professionals (HCPs) are dealing with patients with systemic problems, but their involvement in oral health promotion has yet to be identified. The use of teledentistry to detect periodontal disease is scarce. Hence this study is aimed to develop and test the concept of telescreening module for HCPs in primary care setting to detect periodontal disease, and their acceptance of module.

Research is divided into three phases: (1) Telescreening module development and validation. Protocol of taking intraoral photographs using smartphones was developed. Ten consented patients were subjected to photos using developed protocol, and a clinical examination carried out by an examiner using Basic Periodontal Examination (BPE). Photos were evaluated by 13 reviewers and decisions were made for: i) best view to detect periodontal disease, and ii) presence/absence of periodontal disease. Presence/absence of disease via photo review were compared to BPE. From the findings, protocol for telescreening was revised and edited accordingly. (2) Introduction and training of module protocol. HCPs were then instructed to use it for a week. (3) Evaluation of HCPs' acceptance.

Sensitivity and specificity of intraoral photograph was 60% and 80% respectively. Full agreement among HCPs was obtained that teledentistry module is useful and easy to understand, while 90% agreed on the practicality to use in their workplace. The newly developed telescreening module using photos taken on mobile phone is a reliable method to detect periodontal disease. The HCPs well accepted it as a method to detect periodontal disease in their primary healthcare setting.
MyGenomSihat™: Genome health clinic and cancer risk scoring based on optimising genome integrity using personalised diet/life-style intervention for cancer prevention

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Oxidative stress is define as an imbalance in the biochemical process that produce reactive oxygen species (ROS). Imbalance of oxidation and reduction processes cause toxic due to a production of free radicals and peroxides (reactive oxygen material and nitrogen species) which damage the protein, lipid and DNA cell, hence leading to all sorts of degenerative diseases, as such cancer. A protective mechanism known as the antioxidant protective system helps in prevention of free radicals from damaging the cells lead to diseases, and aging. There are several vitamins and micronutrients, which are substrate and/or cofactor in the metabolic pathway that control production and repairing DNA and gene expression. Based on previous study, lack of micronutrients will cause the disturbance in genome integrity and modification in DNA in turn affecting cell growth, tissue differentiation, cancer incidence and ageing. We developed a module for personalized nutrition counselling (namely MyGenomSihat) and cancer risk scoring for cancer prevention in order to optimise the genomic stability. Intervention after 6 weeks with personalized nutrition counselling managed to decrease the DNA damage level significantly as well as other oxidative stress markers (p< 0.05). Proof of concept for this clinic and cancer risk scoring that potentially be developed into a mobile application may lead for a better future in personalized nutrition based on their genome health, hence leading a prospect for MyGenomSihat clinic service.
Development and Validation of Adherence Tool for Subcutaneous Biologic Disease Modifying Anti-Rheumatic Drugs (bDMARDs)

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The biologic disease modifying anti-rheumatic drugs (bDMARDs) have been used as a part of the pharmacotherapy management of inflammatory arthritides (IA). Adherence to bDMARDs is crucial to ensure treatment goals in IA is achieved. Recent studies on evaluating adherence level in patients using subcutaneous injections of bDMARDs, were done by indirect methods adapted from the adherence assessment of oral medication. This study aimed to develop a set of questionnaires to assess adherence specifically on the self-injectable subcutaneous bDMARDs. The development of the subcutaneous biologic disease modifying anti-rheumatic drugs (bDMARDs) Adherence Score (SCADS), involved the content validity and development stage, and the Judgement-Quantification Stage. Literature reviews provided as the base for domain identification and items formation. Four experts evaluated the instrument by using a 4-point ordinal scale with a rubric scoring on relevance, importance and clarity of each item in measuring the overarching construct. The Item Level Content Validity Index (I-CVI), the Scale-Level Content Validity Index (S-CVI) and the modified kappa values were calculated. For item level, the I-CVI for each item had a score of 3 and 4. Both S-CVI/UA (universal agreement) and the Averages Scale-Level Content Validity Index (S-CVI/Ave) for the entire instrument; and the modified kappa coefficient value for all items were calculated with a value of 1.00, indicating excellent criteria. The Cronbach’s alpha coefficient value for SCADS was 0.750 which shows that the instrument has good internal consistency. The SCADS is a consistent and reliable instrument, and yet simple and comprehensible to be used for evaluating adherence among patients using the subcutaneous bDMARDs.
Determination of Creatine And Guanidinoacetate In Dried Blood Spot, Plasma And Urine By Tandem Mass Spectrometry (MS/MS).

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Creatine (Cr) and Guanidinoacetate (GAA) are biochemical markers detection for primary creatine disorders (PCD). This study aimed to develop and validate underivatized and derivatized methods for the simultaneous determination of Cr and GAA in dried blood spot (DBS), plasma and urine using flow injection analysis (FIA) without chromatographic separation. 3mm of DBS (equivalent to 2.81µL blood) and 25 µL of plasma and urine were put into 96-well polypropylene microtiter plate. Underivatized only requires precipitation of protein with methanol and acetonitrile followed by centrifugation and omitting the butylation and heating step during sample preparation while derivatized was followed by butylation steps with acetylchloride:butanol (1:9) to form butyl ester. Samples were run using a Micromass Quattro macro TMS coupled with Waters 2795 Alliance HPLC in positive electrospray ionization (ESI+). Retention times for both methods were 0.38 to 0.4 minutes. The limits of detection and quantification for each GAA and Cr varied from 0.2µmol/L to 5.0µmol/L and from 0.6µmol/L to 4.8.0µmol/L, respectively. Results showed that both methods were precise and accurate with less than 20% of coefficient variation (CV). Recoveries ranged from 80% to 110%. Receiver operating characteristic (ROC) analysis showed a good separation (sensitivity and specificity equal to 0.998 to 1.00) for all analytes and Passing-Bablok regression analysis for method comparison and showed linear relationship for both methods. We have developed and validated a reliable method for measurement of Cr and GAA. Both methods using FIA are comparable and applicable for PCD diagnosis.
A Cross Sectional Survey on Knowledge, Attitude and Preventive Practice of Dengue Fever in Semi-Urban Community

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Apartment Idaman of Damansara Damai has been notified as a dengue cluster areas since early 2016 and was once included as dengue hotspot area in 2014. This survey aims to assess knowledge, attitude and practice of the community in that area. A cross sectional study was done by a validated self-administered questionnaire (Cronbach Alpha:0.746, N=14) was distributed in Apartment Idaman, PJU 10/1, Damansara Damai in December 2015. The questionnaire contain 39 questions. It comprise of 4 sections. Sample size calculated using G Power, (effect size : 0.2,two-tailed), 394 questionnaire delivered to respondents by systematic random sampling. The inclusion criteria were residents of teh apartment age 18 years old and above. From 394 individuals, 202 completed the questionnaires (51.2%). Based on the score, respondents had a poor knowledge, attitude and practice respectively (87.6%, 96% and 89.6%). The Spearman’s rho indicated the presence of a strong positive correlation between ranked knowledge and attitude score, rs=0.058,p<0.05,two-tailed (p=0.428), N=189. The bivariate Pearson’s correlation between knowledge score and practice score were positive and medium , r=0.553,p<0.01 (two-tailed),N=197. There was no significant correlation between attitude score and practice score of dengue prevention and control , r= 0.076, p>0.05(two-tailed), N=194. The community in Apartment Idaman have lack of awareness on dengue vector control and prevention and this contributed to poor preventive practice in the community. Therefore, an intervention with the community empowerment with correct dengue preventive practice was recomended to increaase the awareness and sustaining the behavioral change.
Why Is It Harder To Be Visually Attentive As We Got Older?

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Multifocal pupillographic objective perimetry (mfPOP) has recently been shown to be able to measure cortical function. Here we assessed 44 regions of the central 60 degrees of the visual fields of each eye concurrently in 7 minutes/test. We examined how foveally- and peripherally-directed attention changed response sensitivity and delay across the 44 visual field locations/eye. Four experiments were completed comparing white, yellow and blue stimulus arrays. Experiments used three variants of the mfPOP method that provided increasingly improved signal quality; centrally directed attention and comparisons to attention directed to different peripheral targets. Attention reduced the sensitivity of the peripheral locations but only for the white stimuli not yellow. Blue stimuli behaved like white. Peripheral attention showed increased sensitivity around the attentional targets. The results are discussed in terms of the cortical inputs to the pupillary system. The results agree with those from multifocal and other fMRI and VEP studies. mfPOP may be a useful adjunct to those methods and give insights to the effect of brunescence of lens in the aging populations.
L-Glutathione Supplementation Inhibits The Melanogenesis Activity And Oxidative Stress In UVB Irradiated BALB/C Mice

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Extensive exposure of skin to ultraviolet radiation B (UVB) will lead to oxidative stress and accelerates the melanogenesis activity. Dietary antioxidant supplementations such as L-glutathione which can act as a UV protecting agent due to its potential antioxidant properties has also gained considerable attention in dermatology and cosmeceutical fields. We aimed to determine the melanogenesis inhibitory effect of L-glutathione supplementation in UVB irradiated Balb/c mice. Eighteen female BALB/c mice were randomly divided into 3 groups: vehicle control group (n=6), group without UVB irradiation and L-glutathione supplementation; UVB irradiated group (n=6), irradiated with UVB dose of 250 mJ/cm² for 3 minutes; and the treatment group (n=6), irradiated with UVB and treated with 100 mg/kg of L-glutathione by oral gavage. Treatment was given for 14 days and UVB irradiation was given on day the 9, 11 and 13. L-Glutathione significantly (p<0.05) reduced lipid peroxidation and elevated of superoxide dismutase activity and glutathione level. L-Glutathione also inhibited melanin content and tyrosinase activity significantly (p<0.05) as compared to the UVB irradiated group. Histopathological observation also showed L-glutathione reduced the deposition of melanin pigment in the basal layer of epidermis as compared to the UVB irradiated mice. In conclusion, L-glutathione has the potential to be developed as a dermal photoprotection agent against UVB induced oxidative stress and melanogenesis activity.
Comparing Brain Activation between Normal and Low Auditory Working Memory Subjects during Word Recall Task

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Previous results have shown differences in brain activation among individuals. However, differences in brain activation between normal and low auditory working memory individuals are still being studied. Auditory working memory network (AWMN) is the cognitive system that is responsible for the maintenance and manipulation of auditory information related to working memory. This study aimed to compare brain activation, specifically in AWMN, between normal and low AWM subjects during word recall in different noise levels. Forty healthy participants were divided equally into two groups based on their performance in the Malay Version Auditory Verbal Learning Test (MVAVLT). Participants then performed a backward recall task (BRT) during functional magnetic resonance imaging (fMRI) scans. The task requires the participants to listen to four consecutive meaningful but unrelated words and immediately recall those words in reverse order of presentation within a stipulated time frame. The task was performed in four runs, each with different background white noise levels: 45 dB, 50 dB, 55 dB, and 60 dB. The words were presented at 60 dB throughout the presentations. Brain activations were analyzed using Statistical Parametric Mapping (SPM12). Both groups revealed significant activation in the AWM regions (p<0.05). Normal AWM individuals showed higher activation in bilateral superior temporal gyrus (STG) for all noise levels as compared to low AWM individuals. In addition, the prefrontal cortex (PFC), an area crucial for high-order cognition, also exhibited higher activation in the normal AWM group than in the low AWM group. However, comparisons in the brain activation between two groups for all noise levels were not significant. These findings suggest that, despite the differences in AWM-capacity, brain functions among healthy individuals are relatively similar, at least in the context of auditory working memory.

Keywords: auditory working memory; functional MRI; white noise; sound level; statistical parametric mapping
DRO-02

Image Quality of Coronary CT Angiography (CCTA) using 640-slice Scanner: Qualitative and Quantitative Assessment of Coronary Arteries Visibility.

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Introduction: This study's purpose to evaluate the image quality and diagnostic accuracy of CCTA using 640-slice. Advancement of MDCT technology with higher spatial and temporal resolution improve visualization of coronary arteries, thus more small and complex coronary artery was evaluable. Qualitative and quantitative assessment was used to evaluate coronary arteries visibility.

Method: A total of 49 patients (24 men and 25 women) underwent CCTA and data was acquired by 640-slice scanner. 16 segments of coronary arteries for each patient were evaluated by 2 independent blind reviewers using a 4-likert scale for qualitative image assessment. In quantitative image assessment, the evaluation of 4 main coronary arteries at region-of-interest (ROI) was analysed using an offline workstation to include CT attenuation, noise, signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR).

Results: Coronary arteries images of 49 patients with a mean age of 53.78±13.28 years and BMI of 24.37±3.22 kg/m² were analysed in this study. Qualitative assessment based on 784 coronary arteries segments in which 741 segments (94.5%) were considered to have diagnostic value. The Average score of reviewers showed that, 455 segments (58%) were excellent vessel's opacification, 234 segments (30%) were good vessel’s opacification, 52 segments (6.6%) were acceptable vessel’s opacification and 43 segments (5.5%) were poor vessel’s opacification. In quantitative assessment, there was no statistical differences in gender, race and BMI (p>0.05). Overall evaluation showed that, higher CT attenuation (HU) at the left main artery (LM) 383.88±51.94 and lower at the left circumflex artery (LCx) 357.91±44.50. Image noise was higher at LCx 39.96±19.72 while lower at right coronary artery (RCA) 36.20±15.93. SNR and CNR showed higher at LM with 13.08±6.46 and 9.87±5.73, but lower at LCx with 11.24±6.30 and 8.65±5.96, respectively.

Conclusion: This study indicates that 640-slice MDCT has higher diagnostic value in CCTA examination with 94.5% vessel visibility.

Keywords: CCTA, 640-slice scanner, coronary arteries, MDCT
Distribution Pattern of Types and Location of Brain Tumors in Patients Underwent MRI scans: A Survey of 1240 Patients in a Tertiary Malaysian University Hospital

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Introduction: This present study presents the distribution of brain tumour types, size, locations and demographics of patients with brain tumours who underwent MRI brain examination in Pusat Perubatan Universiti Kebangsaan Malaysia (PPUKM) from January 2012 to December 2017. Methods: This retrospective study evaluated the distribution pattern of 1240 brain tumour in PPUKM. Data were retrieved from the Integrated Radiology Information System (IRIS). The distribution pattern of brain tumour such as gender, race, age, types and location of brain tumour was analyzed. Result: Results revealed (55.9%, 693) of patients with brain tumours who underwent brain MRI examinations were female and (44.1 %, 547) were male. The patients consisted of (55.1%, 683) Malays, (35.8 %, 444) Chinese, (7.5 %, 93) Indian and (1.6 %, 20) others. The most common brain tumour diagnosed in children and teenagers with age range 10 - 19 years old was medulloblastoma (2.74 %, 34). Data collected showed the most common brain tumour that undergo MRI brain scan were sellar/parasellar tumors (33.5%, 416), meningioma (27.2%, 337), glioma (18.4 %, 228) and nerve sheath tumour (11.5 %, 142). Result also showed that brain tumours increased with age as it is frequently affected older people. The present study also found gliomas (6.21%, 77) and meningioma (11.37%, 141) tends to develop in frontal lobe brain meanwhile for nerve sheath tumour (11.29%, 140) and medulloblastoma (3.79%, 47) the most common site was occipital lobe. Data also revealed a little different result between right (468, 37.7%) and left-brain hemisphere (434, 35.0%) that were affected due to the brain tumour. Conclusion: The knowledge about brain tumour distribution pattern especially in a big community is important to plan for health services, treatment and research. With a significant number of patients with frontal lobe tumours, we are confident that we can acquire enough patients for functional MRI studies of the frontal lobe tumours.

Keywords: MRI, Brains, demography, brain neoplasms, Malaysia, PPUKM
DRO-04

Effect On Different Scan Length In Brain Functional Connectivity In Default Mode Network In Healthy Subject: A Resting State fMRI Approach

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Background: Resting state functional magnetic resonance imaging (rs-fMRI) has become one of the methods that can be used to evaluate the brain functional connectivity. This technique using blood oxygenated level dependent (BOLD) that only requires the subject to lie inside the MRI machine without performing any specific task and it is non-invasive. One of the most active networks that can be evaluated using rs-fMRI is DMN. Four main regions involved in DMN are Posterior Cingulate Cortex (PCC), Medial Prefrontal Cortex (mPFC), Right Inferior Parietal Cortex (RIPC) and Left Inferior Parietal Cortex (LIPC). Default mode network is one of the large brain scale network that highly active during rest. Recently most researcher worldwide suggested that longer the scanning time could give better and more reliable result compared to short scanning time length in terms of functional brain connectivity. This study aims to assess the effect of different scan length on a healthy subject using a resting state fMRI approach between 10 minutes and 15 minutes. Methods: 16 participants (14 right-handed and 2 left-handed) with an age range between 21 to 60 years old were recruited in this study. The experiment was carried out at the Unit MRI, Jabatan Radiologi, Pusat Perubatan Universiti Kebangsaan Malaysia (PPUKM). The T2*-weighted rs-fMRI data was analyzed using MATLAB 7.10.0 (R2010a) (Mathworks Inc. MA, USA) and Statistical Parametric Mapping (Functional Imaging Laboratory (FIL) version 12 (SPM12). SPSS version 12 was used to evaluate the significant value between two different scanning times. Result: Result from the Paired Sample T-test shows that there is no significant different in terms of connectivity strength between 10 minutes ($p = 0.232\ p > 0.05$) and 15 minutes ($p = 0.551\ p > 0.05$) scanning time. Data shows that both scanning times able to evaluate the functional brain connectivity between the DMN regions. Among the three models, the connection in Model 1 (PCC to mPFC) and (mPFC to PCC) shows the highest connectivity strength compare to another two models. Conclusion: Data shows that both 10 minutes and 15 minutes scan times able to evaluate the effective connectivity strength and brain functional connectivity within the DMN region on healthy subjects.

Keywords: Resting state, f (MRI), scan duration, functional connectivity
Brain Activation Pattern on Facial Emotion Stimuli among Male and Female Teenagers in Malaysia: Preliminary Study

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Background: Report on the prevalence of stress among teenagers in our society is slightly high in this recent years. Facial emotion stimuli usually being used to identify whether the subject is dealing with stress with the help of functional magnetic resonance imaging (fMRI) as neurological evidence. This study aimed at investigating the differences in human brain activity using fMRI between different facial emotion stimuli on different gender of teenagers.

Methods: Ten participants consist of five males and five females were recruited and undergo a task-based fMRI scanning. All participants viewed facial displays of happy, sad, angry and fear faces obtain from diverse ethnicity and age. Their task in the formed of event-related paradigm needs them to match the emotion with the answer by a using response button. MATLAB 8.5 (R2015a) and Statistical Parametric Mapping 12 (SPM12) will be used to analysed the data.

Result: Result showed that female teenagers have more brain activation in a different region than male teenagers. The happy facial emotion stimuli activated cuneus, calcarine, angular and cingulum which are known to be involved in visual, attention, memory retrieval, and emotion formation and processing. While, sad facial emotion stimuli activated extra one region which is fusiform that responsible for facial recognition. Next, angry facial emotion stimuli activated all previous regions including frontal region for female but without calcarine region. Lastly, the same activation region for fear emotion stimuli for both genders are cuneus and calcarine while female teenagers have extra activation in angular, cingulum, paracentral, fusiform and frontal.

Conclusion: A deeper understanding of human brain activation in different types of facial emotion stimuli in our male and female teenagers will be provided from this finding. It will also contribute to understanding of brain function differences between female and male.

Keywords: functional magnetic resonance imaging; facial emotion stimuli, event-related; teenagers; gender; Malaysia
Neural Activation Pattern during Working Memory task: an fMRI Preliminary Study

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Background: In recent years, it has been reported that the study on brain performance especially working memory is highly requested. It could be prevalence to explore deeper in cognitive assessment of executive function in the human brain. This study aimed at investigating the differences in human brain activity using fMRI between three different stimuli blocks as the task which to test the brain capability and the pattern of neural activation.

Methods: Two participants consist of one male and one female was recruited and undergo a task-based fMRI scanning. All participants viewed a series of a random sequence of the alphabet and performed n-back working memory task. Their task in the form of block paradigm requires them to memorize and answer the question depending on the type of block which is 0-back, 1-back or 2-back by using response button. Data will be analysed using MATLAB 8.5 (R2015a) and Statistical Parametric Mapping 12 (SPM12).

Result: The result showed that the 2-back task activated more brain regions than 1-back and 0-back tasks. All these three tasks shared three same activated regions such as motor, cingulum and cerebellum regions which responsible for movement, memory processing and sensory. The brain activation in 0-back and 1-back are almost the same while the 2-back task has the most activation in different regions. The 2-back task showed more activation in frontal, parietal and occipital regions associated with increased of working memory load and attention. This activation showed that extra component is needed when maintaining a representation of previous stimuli.

Conclusion: These finding may provide a deeper understanding of human brain activation in different types of an n-back working memory task in our brain.

Keywords: functional magnetic resonance imaging; n-back; 0-back; 1-back; 2-back; human brain
An fMRI Study On Neural Activity Of Internet Gaming Addiction Among Malaysian Adolescents

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Video games are engineered to visualize entertainment that allowed us to experience enjoyment, pleasure and also widen our social connection. The rapid development of internet gaming technology in Malaysia has come with a cost of greater vulnerability in becoming addicted to video games, especially for a high-risk group adolescent whose mental abilities were not fully developed. The aim of the study was to investigate the differences in human neural activation using fMRI that being triggered towards gaming video among Malaysian young adults. A total of 16 participants internet addiction (minimum cut-point score was 43) were recruited. They undergo a 552-seconds task-based fMRI scanning that will be presenting an ordered of 20-seconds games-related and control (mosaic) video simultaneously then followed by 4-seconds of strength scale to respond their cravings towards the video shown. Data were analyzed using MATLAB 8.5 (R2015a) and Statistical Parametric Mapping 12 (SPM 12) to evaluate brain activation. The results demonstrated a difference in brain activation towards gaming video where it exhibits activation on the left occipital middle, parietal superior, temporal middle, hippocampus and postcentral. While in the right hemisphere, only activated on occipital middle, thalamus, and parietal superior. Based on the result, these regions are known to be linked in visuospatial, somatosensory, semantic memory processing, emotional response, motivation, reward, integrating information process, memory retrieval, spatial navigation, and orientation. These findings may yield added values in this study and provide a deeper understanding in developing appropriate guidelines and interventions to treat internet gaming addicts community, especially in the Malaysian population.
Boron removal from an aqueous solution using coagulation-flocculation process with curcumin aided had been investigated. Application of Response Surface Methodology (RSM) had been used in this study to determine the optimum parameters. In addition, boron removal without the aid of curcumin also been investigated to differentiate to total percentage of boron removal with boron removal with curcumin aided. It shows that the percentage of boron removal with curcumin aided was 75%, while boron removal without curcumin aided was 67%. By using application of RSM, the optimum parameters obtained for boron removal with curcumin aided were at pH 2.8 with dose of PAC and curcumin was 132.05 ppm and 1161.4 ppm respectively. For boron removal without curcumin aided, the parameters were optimum at pH 11.5 with 105.36 ppm dose of PAC. By using t-test, it shows that there was a significant difference between boron removal with curcumin aided and boron removal without curcumin aided where the p-value = 0.03 which is less that 0.05 (p < 0.05). Hence, it shows that the boron removal with the aids of curcumin is more efficient than boron removal without the aids of curcumin.
Digital Approach for Lip Prints Analysis in Malaysian Malay Population (Klang Valley): Scanning Technique

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Lip print is very useful in forensic investigations for individual identification. The present study was done to discriminate gender based on lip print patterns in Malaysian Malay population in Klang Valley using a scanning technique. Lip prints of 360 subjects (180 males and 180 females) were taken using lipstick-cellophane tape technique, pasted onto A4 papers. These papers were then scanned using Brother DCP-J100 printer (300dpi resolution). The images were analysed using a software based on Suzuki and Tsuchihashi’s classification. The lip print images were divided into six sections which are upper left, upper middle, upper right, lower right, lower middle and lower left. This study showed that in Malaysian Malay population, type V was the dominant pattern for the upper left, upper right, lower right and lower left sections while type IV was dominant in upper and lower middle sections. In Malay male, type V was the dominant pattern for the upper left, upper right, lower right and lower left sections while type IV was dominant at upper and middle sections. Type IV was dominant in the upper middle section for female, while for the rest of the sections, type V was the dominant lip print pattern. Based on the Pearson Chi-Square results, there was a significant difference between male and female in Malaysian Malay population in Klang Valley for each section ($p < 0.05$) except for the upper middle section. The results showed that cheiloscopy can be used as a suggestion for individual identification in forensic investigation.

Keywords: Cheiloscopy, lip print identification, scanning technique, Malaysian Malay, sex
Altering The Physical Form Of Apples Impacts Emptying And Satiety.

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Background: Apples are well known for its health benefits. The underlying mechanism of how different forms of apples produce satiety is unclear.

Objectives: To assess the impact of different form of apples on gastric emptying by using magnetic resonance imaging (MRI).

Methods: This is a three-way crossover, randomised controlled trial in healthy volunteers. Participants consumed an isocaloric test meal consisting of whole apples, apple puree and apple juice, followed by MRI scans at 45 minutes interval to assess gastric emptying, from baseline up to 315 minutes post meal ingestion. Fullness and satiety were also assessed at each time point.

Results: Mean (SEM): Whole apples had slower gastric emptying as assessed by half-emptying time (T50) compared to both apple puree and apple juice, T50 for whole apples being 65min (3.3), puree 41min (2.8) and juice 38min (2.9) p<0.001. Fullness (p<0.0001) and satiety (p<0.0001) was also greater for whole apples ,271 (22.3) cm.min and 280 (22.8) cm.min compared to juice, 166 (12.1), 186 (11.6) cm.min from time 45-135 minutes post-ingestion.

Conclusions: Whole apples slows gastric emptying and cause greater sensation of fullness and satiety than puree or juice.

Keywords: gastric emptying, magnetic resonance imaging, appetite, satiety, fullness, apples.
NO-01

Benefits of Weight Loss on Cardiometabolic Health among Participants of the 6-month F.E.A.T Intervention Study

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Introduction: Cardiometabolic diseases are related to obesity, insulin resistance, dyslipidemia and hypertension. Increasing physical activity and reducing excess body weight can reduce the risk of developing cardiometabolic diseases. While 5-10% weight loss improved cardiometabolic (CM) risk factors, it is unclear whether subtle weight loss is associated with improvements in CM risk factors. The aim of this study is to determine the benefits of weight loss to cardiometabolic health through behavioural intervention. Methods: A quasi-experimental study involving healthy, overweight/obese adults was conducted in Malacca, among 53 subjects aged between 30-59 years old. Intervention group underwent F.E.A.T programme, which comprises aerobic exercise (60min/day for 2 days/week), resistance band exercise (30 min/day for 2 days/week), brisk walking (30-60min/day for 3 days/week) and increase in physical activity (10,000 steps/day), with healthy diet using behavioural change strategies of self-monitoring and support group. Anthropometric measurements including body weight (Wt), body mass index (BMI), waist circumference (WC) and percentage of body fat (%BF) were measured. Blood pressure (BP), lipid profile, fasting blood glucose (FBG), fasting insulin and adiponectin levels were also assessed. Results: After six months, significant reductions in Wt (-4.7%, p=0.001), BMI (-4.7%, p=0.001), WC (-10.7%, p<0.001), %BF (-4.7%, p=0.007), systolic (-5.6%, p=0.003) and diastolic pressures (-15.5%, p<0.000), along with increased adiponectin levels (37%, p<0.001), were observed in intervention group but not in control group. However, no significant differences were seen in lipid profile, FBG and insulin resistance (HOMA-IR) in both groups. Positive correlation was found between weight loss and reduction in diastolic pressure (r=0.424, p=0.024). Conclusion: F.E.A.T intervention resulted in some improvements in cardiometabolic markers despite subtle weight reduction.

Keywords: cardiometabolic health, weight loss, obesity
Barriers and Enablers for Adopting Lifestyle Behavioural Changes in Children and Adolescents with Obesity: A Qualitative Study

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Prevalence of childhood obesity has increased tenfold over the past four decades. Understanding the sustainability of obesity intervention is essential to produce long-term results. To meet the needs of children and adolescents with obesity in adopting lifestyle behaviour modifications, it is imperative to gain a better understanding of their experiences. Juara Sihat and C.E.R.G.A.S were 12-week obesity intervention programmes on healthy eating (HE), physical activity (PA), and physical fitness to combat obesity among children aged 9-11 years and adolescents aged 13-14 years, respectively. This study aimed to explore the barriers and enablers that influence participants’ ability in adopting behavioural changes. Face-to-face in-depth interviews were conducted at 30 months post-intervention with 26 children who participated in Juara Sihat and 21 adolescents who participated in C.E.R.G.A.S programmes. The interviews for both Juara Sihat and C.E.R.G.A.S programmes were conducted at two schools located in Kuala Lumpur and Selangor, respectively. The interviews were audio-recorded, data were transcribed verbatim and analyzed using thematic analysis. As a result, three shared themes for barriers were identified: (1) inconsistency of knowledge; (2) peer influence; and (3) negative attitude, such as being lazy, feeling embarrass, boredom, busyness and lack of self-discipline. Meanwhile, the five shared themes for enablers were: (1) support from family members, peers and school teachers; (2) self-awareness on mobility, health status, and body image; (3) knowledge on food pyramid and PA; (4) supportive physical environment; and (5) PA and HE practices after intervention. In conclusion, this study indicates knowledge, peers and social influences are important components to include in the obesity intervention programmes for children and adolescents. The programme should be multidisciplinary and taking into consideration the important role of the family. Schools are considered conducive in promoting health behaviour as they have access to students for over several years; hence, teachers need to be empowered to ensure long-term success.

Keywords: Adolescents; Behaviour; Children; Obesity; Qualitative
Relationship Between Physical Activity, Nutritional Status, Cognitive Development And Motor Development Among Preschoolers In Kuching, Sarawak.

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Introduction: The rise in child obesity, and the consequent reduction in physical activity (PA) levels among preschool children is a growing national concern. There is limited evidence providing associations between PA, nutritional status, cognitive outcomes and motor development, especially among Sarawakian preschoolers. As reduced PA levels become more prevalent, its relation to nutritional status, cognitive and motor development was investigated in this study.

Method: The study consisted of 337 KEMAS preschoolers, aged 4 to 6 years old, from the Bau, Lundu, Samarahan and Siburan areas in Sarawak. Most were from Iban or Bidayuh communities (76%), Malay (18%) and other races (6%). PA levels were measured using the Actigraph GT1M Accelerometer (AA), while the InBody body composition analyser (IBCA) was used to measure nutritional status. Cognitive development was measured using the Ravens Coloured Progressive Matrices (RCPM), and motor development with the Test of Gross Motor Development 2 (TGMD-2).

Results: Out of the total number of children n=(247), 49% had normal BMIs, 14.3% were overweight and obese, and 9.2% underweight. The RCPM indicated 32.3% were below the 37% percentile, 31.5% were at the 37-75 percentile and 14.8% above the 75 percentile. TGMD-2 scores indicated that 22.3% were at the poor to very poor category, 12.2% at average and below average, and 45% in the above average category. One Way Anova analysis showed that there was no significant difference in RCPM, TGMD-2 and nutritional status, between those who were active and not active (p>0.05). Nevertheless children with normal weight and superior gross motor skills, showed higher physical activity levels compared to underweight, overweight and obese children.

Conclusion: The results suggests that PA levels should be further explored to ensure continued cognitive and motor development in a formative healthy lifestyle.

Keywords: Preschool; Active; Composition; Cognitive; Motor
Snacking pattern of preschool children in Klang Valley: Baseline findings from the ToyBox Study Malaysia

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Globally, the prevalence of childhood obesity has increased at an alarming rate. Unhealthy eating behaviour is a contributing factor to the increasing prevalence, particularly in Malaysia. Thus, a study adapting European ToyBox Study intervention protocol on improving eating behaviour in early childhood years may help to establish healthy eating behaviour. Therefore, this study was conducted to assess mealtime pattern and snacking behaviours among preschool children prior to the ToyBox Study Malaysia intervention. A total of 257 children aged 4-6 years from Kuala Lumpur and Selangor participated in this study. Weight and height were measured, and body mass index (BMI) calculated. BMI-for-age z-score (BAZ) was calculated using WHO AnthroPlus software. Mealtime and snacking pattern were assessed using a parent-proxy report questionnaire. Mean age, weight, height, and BAZ were 5.0±0.6 years, 17.5±4.2 kg, 106.7±6.1 cm and -0.153±1.42, respectively. The study revealed that nearly a third of the children (28%) skipped breakfast; while more than 60% snack at least once a day, on both weekdays and weekend days. Bread and biscuits are the most popular snack choices, with nearly 20% consuming 5-6 servings weekly. Only 22.7% and 11.6% of children consumed 1-2 servings daily of vegetables and fruits, respectively. The findings showed that preschool children enjoyed eating snacks, but their choices of snacks need to be further improved. The results from this study shows that there is a need to improve preschoolers’ eating behaviour. This can be achieved through increasing awareness of healthy eating behaviour among preschoolers, and empowering teachers and parents to implement healthy eating practices with their children and with themselves as role models. In conclusion, adaptation of the European ToyBox Study will be useful to disseminate the message on healthy eating behaviour to preschool children in Malaysia.

Keywords: mealtime, snacking pattern, preschool children, ToyBox Study
Physical Activity, Stress Level, IQ And Quran Memorization Among Students From Selected Tahfiz Schools In Selangor

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Background: In Malaysia, Tahfiz school employs Quran memorization method to improve physiological and psychological well-being of the students. The cross-sectional study (n = 64) was conducted to determine the physical activity, stress and IQ among Tahfiz students. The study also determined the association between stress and IQ with number of pages memorized.

Methods: Students from two selected Tahfiz schools in Selangor were recruited using purposive sampling. Physical activity, stress and IQ were assessed using Physical Activity Questionnaire for Older Children (PAQ-C), Depression Anxiety Stress Scale (DASS-21) and Wechsler Abbreviated Scale of Intelligence (WASI-II) respectively.

Results: There was no significant difference between levels of Quran memorization with physical activity (p = 0.81) and stress level (p = 0.36). Results showed that there were a weak negative correlation between number of pages memorized with stress (r = -0.15) and showed very weak positive correlation with IQ level in School A(r=0.013) and School B(r=0.049).

Conclusion: Result suggests that stress and IQ does had weak effect on process of memorizing Quran among students from selected Tahfiz schools from Selangor.

Keywords: physical activity, stress, IQ, quran memorization, mood, stress level
Brain Activity and Quran Memorization among Tahfiz Students in Selected Schools in Selangor, Malaysia

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EEG is a non-invasive tool that can be used to assess brain activity during performing a task. Previous studies reported that reciting and listening to Quran could affect brain activity. However, scientific studies on the effect of Quran memorization on brain activity is still limited. This study aimed to examine the effect of memorizing Quran on brain activity among tahfiz students in selected schools in Selangor, Malaysia. In this experimental study involving 16 right-handed male tahfiz students (mean age = 15). The EEG signal was recorded for three memorization tasks, involving: 1) recalling the memorized verses that they were familiar with, 2) memorizing process of the new verses and, 3) recalling the newly memorized verses. Using repeated measures ANOVA, it was found that theta wave is dominant during recalling familiar and new verses and alpha wave is dominant during the process of memorizing new verses. In conclusion, Quran memorization affect brain activity. This finding suggests the potential calming effect of memorizing Quran.

Keywords: Brain activity, brain waves, EEG, Quran memorization

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Introduction: Parenting for children with autism could be demanding to some parents. This research examined the parental stress, quality of life, social support and needs among parents of children with autism in Selangor, Malaysia.

Method: This research was carried out using a mixed-method design with the rational of triangulating findings on parental stress, quality of life and to expand knowledge on social support and needs among parents of children with autism. For quantitative study, a sample of 134 parents, from Selangor participated in this study. The questionnaire comprises of demographics, Malay versions of The Parenting Stress Index-Short Form, The World Health Organization Quality of Life-BREF, and The Pediatric Quality of Life Inventory. Individual interviews were carried out on 12 parents for the qualitative design. A series of t-tests, correlation analysis and regression analysis and a higher order thematic analysis were carried out.

Results: The findings indicated that there is a significant difference on parenting stress, based on different parents’ age, child’s age and the period of diagnosis; a significant difference on the parents’ quality of life, based on different marital status and family income; and a significant difference on the child’s perceived quality of life, based on different parents’ age. The correlational analysis indicated that there is a negative correlation between child’s perceived quality of life and parenting stress. The child’s perceived quality of life as a significant predictor of the parenting stress. It was also indicated that the child’s age and marital status were significant predictors of the parenting stress. For qualitative findings, three main themes were identified; psychological experiences, the nature of support, and the psychological and parenting needs among parents of children with autism. These themes are interrelated in explaining experiences in parenting of children with autism among parents.

Conclusion: These findings have the potential to promote knowledge and awareness related to parenting children with autism, as well to inform the professionals and service providers regarding the care and needs of parents of children with autism in Malaysia.
A Review on Biopsychosocial Predictors of Cognitive Impairment among Multiple Sclerosis Patients in Malaysia

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This review is structured to provide a comprehensive view on predictors of cognitive impairment among patients with multiple sclerosis in Malaysia focusing on biopsychosocial factors. Cognitive impairment is recognized as one of the leading causes of disability among the patients and were assessed using various neuropsychological assessment. The most common impaired cognitive domains are memory, sustained attention, information processing and visuospatial ability. Biological predictors included are age, gender, disability, disease duration, course of disease, fatigue, and location and burden of lesion; psychological predictors included are depression, anxiety and stress; and social predictor included is educational level. This paper accentuates the need of investigating predictors in improving cognitive impairment among Malaysian multiple sclerosis patients by providing evidence of limited research and lacking validated neuropsychological tools for this population. Having a better understanding in predictors on affecting cognitive impairment among multiple sclerosis patients may provide more input for prevention and intervention management.
Mental Health Literacy Status amongst Lower Secondary Students in Selangor

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This study attempts to assess the mental health literacy status among lower secondary school students about depression, social phobia, schizophrenia and drug abuse. A total of 270 respondents were chosen randomly using 2 stage simple random sampling from two schools, one from urban and another from rural area. Participants were administered with questionnaire adapted from the original mental health literacy questionnaire. Ability to recognize was moderate for depression and social phobia and low for schizophrenia and drug abuse. The ability to recognize causes were relatively high for all disorders. Help-seeking behaviour also was high where more than 80% of respondents would seek help for all disorders. Help seeking sources were always informal such as family, friends and teachers. Beliefs on interventions are also more towards non-standardized informal interventions such as becoming more active or learning how to relax oneself. However, for schizophrenia counselling was said to be more helpful rather than getting treatment from the nearest mental health facility. Counseling was considered to be more helpful for drug abuse rather than getting help from drug rehabilitation centre. Helpful ratings for person who could help was higher for non-formal persons like family and school counselors. Ratings of helpfulness becomes higher for doctors for schizophrenia and drug abuse. Pharmacological interventions shows vitamins and tranquilizers to be the most highly endorsed medicines for all the problems. Preventive measures endorsed mostly are strengthening relationships with family and friends, having spiritual beliefs, avoiding alcohol, drugs and smoking. In conclusion, mental health literacy still needs to be improved especially in schizophrenia and drug abuse. It is also evident that professional treatments and interventions are still not widely endorsed by the respondents. Therefore, knowledge in terms of ability to recognize mental disorders and professional help as well as treatment available should be increased among teenagers.
The Indigenous Community's Socioeconomic and Health Status at Kg. Gedung Siam, Pahang

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Advancement of technology and development in Malaysia has increased the life span of Malaysians in general. But the indigenous community are still experiencing very low socioeconomic and health advancements. Their living space in the interior jungles, urban periphery and a few in urban locations make these luxuries not easily accessed by them. A simple profiling was conducted to investigate the current prevalent situation in Kampung Gedung Siam, Pahang. The location does have a medical or health clinic in the village. The nearest clinic or hospital is 30 minutes away. The Kampung Gedung Siam’s residents rely on private vehicles to get them to the nearest health facility. A total of 27 Orang Asli were interviewed in Kampung Gedung Siam. Results show that the average number of children are 3.26 among the Gedung Siam villagers and 17 (62.96) families have 3 children less and 5 (18.51%) with no children. Only 2 respondents stated that they were not well. Average monthly income is RM437.03 placing them at the bottom of the hard core poor in society. Orang Asli are known to rely on traditional medication for common illness like cold, fever and muscle ache. This is not different for the community under study. As policy recommendation, the traditional health practices and the use of various medicinal herbs need to be documented and studied to validate their relevance for use in society to mitigate the rising cost of living and also to alleviate the health status of the Orang Asli community in Malaysia.

Keywords: indigenous community, socioeconomic, health, traditional health practices, medicinal herbs
Quality Measures of Universal Newborn Hearing Screening in the Ministry of Health Hospitals

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Introduction: Out of 1000 birth, 1 to 5 babies are born with permanent hearing loss. If permanent hearing loss is not detected earlier, it will lead to various developmental problems such as speech, language, cognitive or socio-emotional skills. Thus, newborn hearing screening program (NHSP) has been recommended to reduce these negative effects. To ensure that NHSP provide quality care and early diagnosis of hearing loss, annual measurements of key performance indicators (KPIs) are recommended. This study aims to evaluate the outcome measures of multi-center, universal newborn hearing screening program (UNHSP), at the Ministry of Health.

Method: This cross-sectional retrospective study involved analyzing the UNHSP records for four individual hospitals from January to December 2016. The KPIs of screening (i.e. the coverage rate and the refer rate) were analyzed from all hospitals. The measured KPI were compared with the standard benchmarks proposed by the Joint Committee on Infant Hearing (2007).

Results: Among the four hospitals, only two hospitals achieved the targeted coverage rate of screening where >95% of babies born were screened for hearing loss before one month old. Specifically, the coverage rate for Hospital A, B, C and D were 90.17%, 98.25%, 84.79% and 95.77% respectively. Regarding the KPI of refer rate, only one hospital hit the targeted benchmark of <4%, The refer rate of other hospitals ranged from 13.79% to 31.22%.

Conclusions: Further evaluation is required to determine factors leading to low coverage and referral rates in the participating hospitals.

Keywords: universal; newborn; hearing screening; quality; hospital
Introduction: Digital noise reduction (DNR) is one of the advanced features in hearing aids (HAs) that aim to improve speech comprehension or listening comfort. Past studies have shown that different HA manufacturers used proprietary DNR parameters and the amount of gain reduction of one HA cannot be generalized to another HA. Electroacoustic testing is crucial to evaluate the efficacy of DNR in HAs available in the market because continuing technology upgrade in HA signal processing platforms. Therefore, this study aimed to examine the effects of noises and signal-to-noise ratios (SNRs) of newly developed test signals (Malay sentence-plus-noise) on the amount of gain reduction of commercially available hearing aids.

Methods: Development of the test signals was done by recording Malay sentences, which were then mixed with white noise and multitalker babble noise at three SNRs (+0, +5 and +10 SNR). The sentence-plus-noise test signals were presented to each of the three HAs of different manufacturers, in a test box at 65 dB SPL input level. The sentence-plus-noise output level from each HA under DNR on-maximum and DNR-off conditions were recorded. The difference of output levels between the two DNR conditions were taken as the amount of gain reduction.

Results: There was a significant effect of SNR, $F(2, 4) = 43.69, p= 0.00, n^2 = 0.96$ on the amount of gain reduction across hearing aids. However, there were no significant effect of types of noise, $F(1, 2) = 6.90, p= 0.12), n^2 = 0.78$ and no interaction effect between types of noise and SNR, $F(2, 4) =0.34, p=0.73), n^2 =0.15$ on the amount of gain reduction.

Conclusion: Each hearing aid showed different amount of gain reduction when tested with the newly developed test signals at different SNRs. Therefore, this study helps clinicians to understand the efficacy of DNRs in commercially available HAs.

Keywords: Digital noise reduction, Malay sentence-plus-noise, Signal-to-noise-ratio, Hearing aids, Electroacoustic testing.
Patterns of recognition of Arabic graphemes by non-native children with cochlear implants and normal hearing

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INTRODUCTION: Recognizing Arabic graphemes is important for learning to read Arabic scripts. This study compared the recognition patterns of Arabic graphemes in Malay children with normal hearing (NH) and hearing-impaired with a cochlear implant (CI). The effects of three visual features of Arabic graphemes – ‘no dot’, ‘single dot’ and ‘more than one dots’ – on the participants’ graphemes recognition performance were examined.

METHODS: Participants were matched for hearing age and duration of exposure to Arabic sounds. All 28 Arabic phonemes (in the form of consonant-vowel /a/) were presented randomly twice, through a loudspeaker at 65 dB SPL. Participants were asked to repeat and point to the associated graphemes, of the presented stimuli.

RESULTS: A total of 336 and 616 tokens were collected for each task from six CI and 11 NH Malay children, respectively. The results revealed that it was easier for both groups to recognize phonemes auditorily than visually. The CI children’s confusion matrix (CM) for graphemes recognition indicated more visual confusions, compared to the NH children’s CM especially for dotted graphemes. Recognition of visual features and hearing status accounted for 88% of the variance each. There was a significant interaction (p = 0.001) among the three visual features and the two-hearing status (CI and NH), indicating that both groups had different visual feature processing mechanisms to learn phonemes-graphemes association.

CONCLUSION: As CI and NH Malay children have different processes to recognize Arabic graphemes’ visual features, thorough understanding of these differences will significantly help CI Malay children to learn Arabic.

Keywords: Arabic graphemes; non-native children; cochlear implant; normal hearing; phonemes.
Parents’ Experiences In Getting Early Diagnosis And Intervention For Their Hearing-Impaired Children

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Introduction: Early diagnosis and intervention are important for speech and language development for children with hearing loss. However, in Malaysia, hearing loss in children was generally detected late resulting in late intervention. Objective: This study aimed to identify the challenges faced by parents in seeking early diagnosis and intervention for their hearing-impaired children. Method: A semi-structured interview was conducted on four parents who fulfilled the following criteria: i) had children with sensorineural hearing loss; ii) diagnosis of hearing loss was done within three years at the time of the study; iii) child had been fitted with hearing device(s); and iv) under follow-up with speech language pathologist at the time of the study. The guiding questions for the interview were (Q1) Why did you suspect hearing loss in your child?; (Q2) Can you share with us the process that you went through for the diagnosis of hearing loss?; (Q3) Please share your experiences or challenges that you faced during the current intervention process (for your child’s hearing loss). Results: Three major themes were identified from the interview: parents’, child and professionals’ factors. Parents’ factors were further divided into knowledge/ awareness on childhood hearing loss, geographical distance, and financial burden that contributed to late diagnosis and challenges faced by parents in the intervention process. Child’s lack of attention, uncooperative behavior and rejection towards hearing devices were also among the great challenges faced by parents for early diagnosis and during the intervention process. Parents also mentioned about late referral to the relevant professionals, and to other centers due to lack of equipment to confirm diagnosis. Conclusion: The current results suggest that parents deal with multiple factors that hinder early diagnosis and intervention for their children with hearing loss. Professionals need to address some of the issues such as late referral to other relevant professionals.

Keywords: parents, early diagnosis, childhood hearing loss, intervention
The Mainstream School Readiness and Language Abilities of Six 6-year-old Malay Children with Cochlear Implants

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INTRODUCTION: Hearing plays a vital role in the acquisition of speech and language in children. The absence of hearing in children consequently affects their ability to learn in school settings as they are unable to effectively engage in the school curriculum, causing them to fall behind their peers in class. In this study, we aimed to determine the school readiness and language abilities of six 6-year-old Malay children with cochlear implants and to estimate the proportion of variance in their language abilities that accounted for their school readiness.

METHODS: The subjects’ school readiness was rated by their respective parents using the Year One School Readiness Scale while their language abilities were assessed using the Malay Preschool Language Assessment Tool (MPLAT), the Malay Language Assessment, Remediation and Screening Procedure (MLARSP), and the Multilingual Phonological Test (MPT). Their age of cochlear implantation ranged from 2;1 (years;months) to 5;7 (Mean=39.83 months, SD=18.39 months).

RESULTS: Findings determined that five out of the six subjects were rated to be unprepared for mainstream schools while all six of the subjects performed below the expected level of their chronological age in their language performance. In addition to that, it was estimated that their language abilities accounted for a significant 70% of the variability in school readiness, p=0.08 (significant at 90% confidence interval).

CONCLUSION: The implication of the findings was that language played a significant part in the school readiness of hearing-impaired children and that the subjects’ poor language performance had led to their low scores of school readiness as rated by their parents. Therefore, it is suggested that the subjects are placed into language remedial programs in order to increase their chances of catching up to their same-aged hearing peers in mainstream educational settings.

Keywords: School readiness; cochlear implant; normal hearing; Malay children; language abilities
Impaired Oculomotor Function Post-Ischemic Stroke: Frequency, Characteristics And Lesions Involved

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Introduction: Oculomotor assessment reflects the central vestibular projections from the vestibular nucleus in the brainstem to the extraocular muscles of the eyes. To date, there is a lack of studies which investigate the oculomotor abnormalities and the applicability of videonystagmography (VNG) to quantify oculomotor disorders among post-stroke patients. This study aimed to investigate the frequency and characteristics of oculomotor abnormalities in patients with ischemic stroke and the lesions involved in the generation of pathological oculomotor controls.

Methods: All first-time ischemic stroke patients with at least three months post-stroke onset were included in the study. All patients underwent standard neurological and radiological procedures during the stroke onset to confirm the diagnosis of stroke. The oculomotor assessment i.e VNG was performed on the patients using video goggles to measure oculomotor movement and related central pathways. Spontaneous nystagmus, gaze-evoked nystagmus, saccade and smooth pursuit functions were recorded on the patients. Oculomotor test results were correlated to radiological test findings.

Results: 10 subjects aged between 44 to 78 years old were included in the study. Eight subjects had abnormal saccade and one had abnormal smooth pursuit function. Three patients reported persistent vertigo since the stroke onset. Oculomotor abnormalities occurred among patients with lesions in the pons, frontal-temporal, internal capsule and corona radiata.

Conclusion: Ischemic stroke may cause oculomotor abnormalities, predominantly the saccades. Lesions surrounding the pons, frontal-temporal, internal capsule and corona radiata may impair oculomotor controls. This study suggests that the VNG may be a useful, cost-effective and non-invasive clinical assessment in identifying oculomotor disorders among post-stroke patients.

Keywords: Videonystagmography; stroke; post-stroke; oculomotor; vestibular dysfunction
Validation of the Inversion Technique for Separating Speech and Noise Signals Post Hearing-aid Processing

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Introduction. It is necessary to present speech and noise signals simultaneously to a hearing aid when examining the acoustic effects of hearing-aid features such as digital noise reduction on speech signals. Subsequently, speech-plus-noise output of the hearing aid is separated into speech-only and noise-only signals using the inversion technique for individual acoustic analysis. Noise, distortions, time delays, and level differences may result in incomplete separation of the speech and noise signals post hearing-aid processing. This study aimed to test the validity of the inversion technique as a tool for separating speech and noise signals recorded from hearing aids in sound field by quantifying (i) the amount of error and (ii) changes to speech fidelity introduced by the inversion technique.

Methods. Two types of speech-plus-noise sound files were created: (i) original-speech plus original-noise, and (ii) original-speech plus phased-inverted noise. These sounds files were presented at -10 to +10 dB SNR in 5 dB steps to hearing aid mounted on a KEMAR. The amount of error from the inversion technique was quantified by the amount of residual signal when pairs of original and phase-inverted speech-plus-noise recordings were summed to retrieve silence. Speech fidelity of the retrieved-speech signals was quantified by the amount of attenuation obtained when a retrieved-speech signal was subtracted from a speech-only signal to retrieve residual-speech signals.

Results. The average amount of attenuation ranged from 22 to 34 dB for both hearing aids. The average amount of attenuation for HA#1 exceeded the 15 dB attenuation criterion at all SNRs. The amount of attenuation for HA#2 at negative SNRs did not meet the 15 dB attenuation criterion.

Conclusion. This study showed that the inversion technique is a feasible and reliable tool for separating speech and noise post hearing-aid processing. However, fidelity of the retrieved speech signals showed variability between hearing aids.

Keywords: Inversion technique; hearing aids; residual noise; speech fidelity.
Noise Exposure Among Hospital Melaka Workers

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Introduction: Noise exposure may be harmful if not detected early. This cross-sectional study aims to evaluate the noise exposure level within several units and departments in Hospital Melaka and to compare with the Malaysian Occupational and Health (Noise Exposure) Regulations 2019.

Methods: Noise levels were measured in 11 randomly selected areas; seven areas with shifts working system and four areas with 8-hours working periods. Noise measurements were conducted in the Intensive Care Units, Central Sterile Supply Unit (CSSD), main kitchen, Central Delivery Suite, Neonatal Intensive Care Unit, Emergency and Trauma Department, Forensic Department, Otorhinolaryngology Clinic, Ophthalmology Clinic and Dental Clinic. The sound level meter was used to record noise levels for thirty minutes at several locations within the workplaces, during five randomly selected days in a week (three days during weekdays and during the weekend). Two representatives were randomly selected at each site to wear a dosimeter.

Results: The mean Continuous Equivalent Level (LAeq) did not exceed 80 dB at all areas, but the maximum level of noise (LAmax) were recorded high in the main kitchen (87.9dB, 89.6dB) and CSSD (93.9dB, 85.5dB), during weekdays and weekends respectively. The noise level reached its peak (LApeak) of >80 dB in all areas, with the highest reading at 114.8dB in CSSD during weekdays. The dosimeter readings showed no workers were exposed to noise more than the allowable dosage.

Conclusions: The overall noise exposure level in Hospital Melaka did not exceed the Permissible Exposure Limit as stipulated in the rule.

Keywords: Noise; Exposure; Hospital; Workers
Study on Balance Tests Suitable for Patients with Parkinson's Disease

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Introduction: Patients with Parkinson's disease are characterized by postural instability, therefore various balance tests such as Berg Balance Scale (BBS), Timed Up and Go Test (TUG), Functional Reach Test (FR) are used in clinical settings. However, it is not clear which balance test is suitable for Parkinson's disease. The aim of this study was to identify which balance test is most suitable for Parkinson's disease patients.

Methods: Subjects were 43 patients with Parkinson's disease (21 women, 22 men, mean age: 66±10 years, The Hoehn and Yahr Scale (H & Y) stage I: 5, II: 18, III: 16, IV:3). We measured BBS, TUG, FR, and Basic Balance Ability Test (BBA), and compared the results of these tests and H&Y stage using Spearman's rank correlation coefficient and Kruskal-Wallis test. BBA contains holding several sitting and standing positions, weight shifts in sitting and standing position, step movements, and rising up from chair and sitting down. Results: Significant correlations were found between the results of balance tests and the H&Y stage; BBS (rs = -0.72), BBA (rs = -0.78), and TUG (rs = 0.64). As for the BBS and BBA, there were significant differences between H&Y I and III, I and IV, II and III, II and IV. Conclusion: The BBS and BBA scores changes in accordance with the progress of Parkinson's disease. The BBA is a structured balance test and can be implemented more conveniently than the BBS. The BBA is suggested to be an excellent balance test for patients with Parkinson's disease.

Keywords: Parkinson’s disease, balance, Basic Balance Ability Test
No!! My Child Does Not Have Autism!! Exploring Needs of Family with Autism Child

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Introduction: Early phase of autism diagnosis is time where family is psychologically unstable due to lack of perceived information related to early intervention and supports. This study aims to explore the support sources for families with autism children that exist in Malaysia; i) after the child is diagnosed with autism, ii) parents' perception towards early intervention and iii) parents' hopes for children’s’ future. Method: This is an observational study among ten parents with autism children referred by professionals, early intervention centers and researchers around Klang Valley, chosen based on 3 criteria’s. This study involved two steps: 1) determination of demographic data by filled up the form; and 2) in-depth interview and direct observation. In step 2, a validated open-ended question used to explore parent’s perception within 60 minutes per subject. Results: Thematic content analysis based on the questionnaire revealed that all parents with autism children experience high emotional disturbance after the diagnosis. Four needs established 1. social support mostly from their families, spouse and parents; 2) informational support to gain new knowledge about autism; 3) psychological support; and 4) financial support. Due to that supports, children went for speech therapy and occupational therapy. Finally, parents hope that their autism children can survive in the future. Conclusion: This study has successfully explored the needs of autism child’s family and recommended to involve in education programs to improve their knowledge. Family are the core forces that determine the outcome of an intervention which facilitate the transition from early diagnosis to the next.

Keywords: Autism, family, needs, children
Development of Transitional Training Package for Active Employment in Schizophrenia

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Introduction: Employment programs for person with schizophrenia has been a part of psychosocial rehabilitation. Employment issues had raised concern for individuals with schizophrenia in association with the lack of appropriate general social competence and social skills necessary in the workplace. Therefore, the objective of the study is to generate discussion regarding a work-transitional package consisting of a training module and an outcome measure to support active employment for persons with schizophrenia. Methods: A series of focus group discussions (FGDs) were undertaken with expert panels selected based on their specific field expertise either clinically or experience wise including clients (n=4), occupational therapists (n=7), clinical psychologist (n=1) and employers (n=4). The training module consisted of structured programs emphasizing on social skills, self-care and cultural elements related to work, whereas the outcome assessment evaluated the work-related performance, capabilities, and perceptions and needs. Result: The discussions revealed nine general sections for the module and six domains for the outcome measure including work-related skills, communication and listening skills, cultural norms and managing condition and relapse. Issues concerning on requirements of training and supports and stigma in mental health were also identified. Conclusion: The discussion had facilitated the development of a comprehensive and effective training package as intervention approach specifically designed for persons with schizophrenia in succeeding active employment. Further study is required to assess the validity and reliability of the training package prior to practical application in real clinical situation.

Keywords: Focus group discussion; employment program; transitional training package; training module; outcome measure
The impact of DIR/Floortime® home-based parent-implemented intervention on children with Autism Spectrum Disorder’s pretend play

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Introduction: Children with autism spectrum disorder (ASD) mostly show a noticeable lack of imaginative and pretend play abilities. This could cause by myriad of factors and it is impacting children with ASD’s social abilities. Pretend play can be a fun and enjoyable activities for developing children with ASD’s social skills. Provided with ample prompting combined with affective component, a child’s pretend play can be developed and improved. The DIR/Floortime® intervention is an approach based on a developmental model, factoring in child’s differences and parent-child relationship. The study investigated the impact of DIR/Floortime® home-based parent-implemented intervention on children with ASD’s pretend play. 

Method: A mixed methods study involving ten parent-child with ASD’s were conducted with families in Malaysia for the period of eight weeks. During the intervention period, parents received coaching for implementing the intervention biweekly. The pretend play of children with ASD was assessed during unstructured play session three times during the study: pre- intervention, during intervention and post-intervention. Parents were interviewed at the end of the intervention period to gain an insight of children’s pretend play with the implementation of DIR/Floortime® intervention. 

Results: The study showed that, contrary to the trend of findings, the majority of the children demonstrated spontaneous pretend play prior to intervention period. The complexity of the children’s pretend play have noticeably improved over the course of intervention. Parents reported that the implementation of the intervention has improved their skills in playing with the child, thus, improving their child’s pretend play skills and capabilities. One of the intervention’s core techniques, ‘following the child’s lead’ has been namely the most useful technique in encouraging children’s pretend play. 

Conclusion: The home-based parent-implemented DIR/Floortime® intervention positively impacted children with ASD’s pretend play.

Keywords: autism, pretend play, DIR/Floortime, parent-implemented, home-based intervention
Understanding and Management of Attention Deficit Hyperactivity Disorder: Psychological Case Study

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Introduction: This case study examines the importance of psychological assessment and interventions to handle impulsivity and inattention behavior of an 8 years old boy. Results: Case study finding are based on clinical interview, family sessions, teachers recommendation plans, psychological assessment and intervention plans. The child attended the sessions for 12 weeks duration. The interventions has significant effect on the behavior outcome and family understanding about the child, emotional, cognitive and social issues. Child behavior was significantly improved in classroom by engaging in activities and providing positive verbal support and appreciation by teachers. Conclusion: This Study shows the significant importance of psychological management to manage childhood problems. The early detection of issues and management can help the children to grow effectively in school and society. The implications of the study are important for healthy development and early childhood education.

Keywords: Attention deficit hyperactive disorder, psychological intervention, assessment, management.
Introduction
Skin movement artifact has been one of the main problems when using three-dimensional motion analysis systems. We considered these inconsistencies were derived from sliding mechanisms in between subcutaneous tissue and superficial fascial layer. The purpose of this study was to quantify the sliding mechanism for the clinical usage.

Methods
Nine healthy men participated in this study. None of the subjects had any known musculoskeletal or neurological disorders. Approval was obtained from the Ethics Committee of Health Science Technology, Bunkyo Gakuin University. Kinematic data were obtained by using a 3-dimensional motion analysis system (Vicon Motion systems, UK) with 10 MX-cameras sampling at a rate of 100 Hz. They were asked to walk, jog and run with the speed of 4km, 6km, 8km per hour on the treadmill, respectively. Several makers were attached on their front and back thigh. A plug-in gait model was used to calculate hip and ankle joint centers as well as hip and knee joint angles. The hip and ankle joint centers were connected with a line; thus, a longitudinal line was assigned to the lower extremity. Sagittal plane angles were formed between pairs of front and back markers on their thigh and the line connecting the hip and ankle joint centers. These angles were defined in the sagittal plane to express skin movement.

Results
Front thigh skin moved distally and back thigh skin moved proximally during hip flexion phase. Conversely, front skin moved proximally and back thigh skin moved distally during hip extension phase.

Conclusion
Thigh skin moved longitudinally according to hip and knee joint movement relative to the femur.
Shoulder Range of Motion Measurements Using Goniometer and Inertia Measurement Unit among Younger and Older Adults

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Introduction:
Universal goniometer (UG) is the typical tool used for joint range of motion (ROM) measurements in clinical settings. High-end device such as Inertia Measurement Units (IMU) is commonly used for research purposes. There is limited evidence reporting the comparison of measurements using these two tools. We compared shoulder ROM using UG and IMU sensor among healthy younger and older adults during forward reaching task.

Method:
A total of 15 younger (age: 22.8 ± 1.01) and 15 older (age: 63.67 ± 5.54) adults were recruited via convenient sampling. An IMU sensor was strapped on the central upper third of the dominant upper limb. Participants were required to reach for a standard size mug placed at 90% of arm length distance on an adjustable table while sitting on a standard size chair. Shoulder ROM were recorded using IMU sensor and re-measured using UG. Mixed ANOVA was used to determine the mean difference of shoulder ROM between older and younger adults and within goniometer and IMU.

Results:
Mean shoulder ROM using UG among younger and older adults were 58.97° ± 5.33°; 61.96° ± 4.76° respectively. IMU measurements were 61.91° ± 2.72° in younger adults and 61.59° ± 2.71° among older adults. There were no significant within and between subject effect (p> 0.05).

Discussion & Conclusion:
Shoulder ROM among younger and older adults were similar during forward reaching task, regardless of the instruments used. IMU sensor can be used as an advanced ROM measurement tool to provide multi-planar ROM information when required.

Keywords: Goniometer; Inertia measurement unit; range of motion; younger adults; older adults
Introducing the multi-component intervention to reverse cognitive frailty in older adults: Systematic review preliminary findings

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Introduction: The relationship between physical frailty and cognitive impairment has become increasingly more apparent. However, these two conditions are often addressed and managed separately in geriatric healthcare practice. Aims: This review aims to examine best available evidence on exercise interventions which improve frailty and cognitive function is needed to develop an integrated multi-component intervention for cognitive frailty among community dwelling older adults. Methods: PubMed, Cochrane Library, EMBASE, MEDLINE and EBSCOhost were searched for systematic reviews published in the English language from the year 2009 to 2019. This study included systematic reviews with or without meta-analysis conducted among older adults aged 60 and above with frailty or cognitive impairment. Results: At present fourteen studies have met the inclusion criteria. Nine studies reported the effects of exercise on pre-frailty or frailty. Five studies reported the effects of exercise on cognitive function. Multicomponent exercise was categorized based on physical function domain as described in the respective studies. Aerobic, balance, flexibility and resistance training were shown to be effective in improving frailty symptoms. Multi-component exercise was also found to improve executive functioning among older adults with cognitive impairment. Evidence suggests that physical exercise interventions are generally effective for reducing or postponing frailty and cognitive function, especially when conducted in groups. Conclusion: The preliminary recommended guideline for exercise sessions would be a multicomponent exercise session at least twice a week, with low to moderate intensity for duration of 45 to 90 minutes for at least 6 weeks to potentially reverse cognitive frailty among community dwelling older adults.

Keywords: Multi-Component Intervention, Cognitive Frailty, Older Adults
Hydrotherapy and motivational interviewing programme for children with disability: A protocol for a randomised controlled trial

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Hydrotherapy has been shown to improve motor performance in children with muscular dystrophy, cerebral palsy, and cystic fibrosis. Motivational Interviewing (MI) which is defined as a directive, client-centered counselling style for eliciting behavioral changes by helping clients to explore and resolve ambivalence. The impact of combining hydrotherapy and motivational interviewing on physical function and quality of life has not been explored in young people with disabilities. Therefore, this study aims to evaluate the feasibility and effectiveness of hydrotherapy and motivational interviewing (MI) on physical function and quality of life among children and adolescents with disabilities. 30 children and adolescents aged <18 years with disabilities will be recruited from Pusat Dalam Komuniti (PDK) around Klang Valley and Physical Therapy Clinic, FSK, UKM. A randomized controlled adhering to CONSORT guidelines will evaluate the efficacy of six sessions of hydrotherapy (once weekly session of 30 min for 6-8 weeks) and three sessions of MI compared to usual therapy. Primary outcome will be measured by a blinded examiner at baseline and 8 weeks using gross motor function measure, movement assessment battery for children, six-minute walk test, grip strength and short form 12. All analyses will be conducted on an intention-to-treat using mixed model ANOVA. This RCT is targeting young people with disabilities with a new approach of intervention. The trial's outcome will influence the module of rehabilitation for children with disabilities in the community setting.
Efficacy of a Newly Developed Auditory-Cognitive Training System on Speech Recognition, Central Auditory Processing and Cognitive Ability among Older Adults with Normal Cognition and with Neuro-cognitive Impairment.

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**Aim:** To evaluate the efficacy of a newly developed Auditory-Cognitive Training System (ACTS) on speech recognition, central auditory processing and cognition among older adults with normal cognition (NC) and with neuro-cognitive impairment (NCI).

**Methods:** A double blinded quasi-experiment was conducted on NC (n=43) and NCI (n=33) groups. Participants in each group were randomly assigned into treatment and control programs groups. The treatment group underwent auditory-cognitive training whereas the control group was assigned to watch documentary videos, for 3 times/week, 8 consecutive weeks. Study outcomes which included Montreal Cognitive Assessment (MoCA), Malay Hearing in Noise Test (MyHint), Dichotic Digit Test (DDT), Gaps in Noise Test (GIN) and Pitch Pattern Sequence Test (PPST) were measured within four weeks’ interval: baseline, weeks 4, 8 and 12.

**Results:** Mixed design ANOVAs revealed significant training effects in the total MoCA and DDT domain for both groups, NC (p<0.001) and NCI (p<0.01). Significant training effects were also seen in MyHint (quiet) (p<0.01), GIN (p<0.001) and PPST (humming) (p<0.05) among NC group. Training effects were sustained up to four weeks after the training ended.

**Conclusions:** The evidence from this study suggests that the newly developed interactive adaptive auditory cognitive training system has the potential to improve general cognition and some of the auditory processing abilities but not translated to better speech recognition in noise. However, due to the short duration of the test-retest interval, it is possible that the effect on DDT measure was influenced by learning and should be considered cautiously.

**Keywords:** Auditory-cognitive training, Cognitive interference, Older adults, Speech recognition, Working memory
Development of Mandarin Speech Perception Test Materials for Malaysian Children Aged 3 to 6 Years Old

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Introduction: Paediatric speech perception tests are important validation measures to evaluate auditory processing skills among children. Children's dominant language and culture need to be considered when developing such tests so that their speech perception ability is represented appropriately. As such, development of the Malaysian Mandarin paediatric speech perception test has been started. This study aimed to determine suitable test items for the development of Malaysian Mandarin paediatric speech perception test and to produce digital audio stimuli for the test. Method: In Phase I, Mandarin words familiar to Malaysian Mandarin-speaking children were gathered from several resources and tested on 40 children aged 2; 0 to 5; 11 years old. Words with the highest correct identification score were selected as test items for Phase II. In Phase II, 480 tokens spoken by two native Mandarin-speaking adults were digitally recorded. Acoustic analysis, quality rating and identification test were conducted on these digital audio files to select the final test items. Results: In Phase I, 80 words with the highest correct identification score were selected. Pictures corresponding to each of the words were developed. In Phase II, acoustic analysis showed that 20% (n=94) of the 480 words were excluded. From the remaining 386 words, 99% (n=384) received good quality rating by three professionals. Pictures corresponding to all test items were validated as suitable representation of test items. A total of 160 tokens (80 words X 2 talker genders) were selected as the final test materials for the test. Conclusions: Digital test stimuli for the Malaysian Mandarin paediatric speech perception test, which consists of five categories, were developed. Tone perception category might be more suitable for older children with higher acquisition of vocabularies and monosyllable tones. Future research includes collecting normative data and evaluating the test application in local audiology clinics.

(296 words)

Keywords: Mandarin; Speech perception test; Digital test stimuli; Paediatric; Malaysia
SO-04

Survey of Screentime Exposure and Association with Language Skills In Children With Developmental Disabilities

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Introduction: There is limited research regarding the impact of screen media on speech and language skills in children with developmental disabilities (DD).

Objectives:
To determine in children with DD:
i) total screen time and age of first exposure; ii) possible association between screen exposure and language skills

Method: Parents attending the child development centre at WQ Park were given a self-reported questionnaire on screen exposure. Receptive language (RL) and Expressive language (EL) skills were determined using Schedule of Growing Skills-2 screening tool.

Results: A total of 106 children with DD aged between 2-6 years were considered. Among them, 59 were Autism Spectrum disorder (ASD) and 47 were Other developmental disabilities (ODD). A total of 46 (43.4%) children exposed to screens <2 years of age. There were 7 (6.6%) children viewed screen media for 0-30 minutes/day; 22 (20.8)%, for 30 minutes - 2 hours/day and 77 (72.6%) for > 2 hours/day. Individuals with ASD were significantly more likely to have been first exposed to screen media < 2 years of age compared to children with ODD (p<0.01). Children with > 2 hours of screen time/day and exposed to screens < 2 years of age were more likely to have significant RL and EL delay (p<0.01). There was no association between total screen time and language abilities.

Conclusion: The findings support the American Academy of Pediatrics recommendations of discouraging exposure to screen media for children <18 months old and not >1 hour/day for children 2-5 years old.

Keywords: Screentime, Autism, Language
Survey on Usage of Non-Speech Oral-Motor Exercises Among Malaysian Speech Therapists to Treat Speech Disorders

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Introduction: Previous literature has indicated that most of the speech therapist tends to use Non-Speech Oral-Motor Exercises (NSOMEs) on regular basis to treat speech disorders.

Objective: The current study aimed to investigate the pattern and extent of usage of NSOMEs among Speech Therapists (STs) in Malaysia.

Method: An online survey was conducted to obtain information on the usage of NSOMEs among STs. A total of 97 STs responded to the survey. The questionnaire consisted of three sections. The first section solicited ‘demographic information’, the second and third sections solicited ‘who did’ and ‘did not prefer’ to use NSOMEs respectively. Descriptive statistics were employed to analyze the responses that were clinically relevant.

Results: The results suggested that majority of STs (86%) indicated that they used NSOMEs. Among them, 29% of STs use NSOMEs to treat Motor speech disorders followed by Swallowing/feeding disorders (25.3%), Speech sound disorders (18.99%) and least with fluency disorders (1.27%). However, the frequency of use of NSOMEs was occasional (25-50% of the caseload). Majority of STs indicated that NSOMEs were used to treat the conditions like drooling (25.97%), followed by motor aspects of articulators (24.68%). It was also found that STs use various tools and strategies to treat speech disorders.

Conclusion: The percentage of STs preferring to use NSOMEs is similar to the findings of existing evidence. Majority of STs continue to use NSOMEs along with other speech therapy techniques based on a multitude of beliefs.

Keywords: Speech Therapists; speech disorders; oral-motor exercises
Post-Stroke Aphasia Rehabilitation in Malaysia: Findings From A Survey With Speech-Language Pathologists

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Introduction:
Stroke is the third leading cause of death and disability in Malaysia, contributing to a growing population of people with post-stroke aphasia. This population is in need of speech-language pathology (SLP) services. To date, the SLP services for this population have been largely unexplored. This study aimed to obtain SLPs’ perspectives regarding SLP services for people with post-stroke aphasia in Malaysia with respect to: 1) current management practices; 2) barriers and facilitators to service provision; and 3) clinical and research priorities.

Methods:
Convenience and snowball sampling were used to recruit participants via professional networks. Ninety-two SLPs who were currently providing post-stroke aphasia services contributed to the survey. Questions were based on previous survey research exploring aphasia management in other countries. Quantitative data were analysed using descriptive statistics and qualitative data using inductive qualitative content analysis.

Results:
The majority of SLPs were employed in a government-funded institution (60.9%) and provided aphasia services within an outpatient rehabilitation setting (59.8%). All SLPs reported speaking two or more languages. Approximately half (53.2%) reported ‘always’ or ‘often’ providing bilingual or multilingual aphasia services. Current practices related to referral, screening, assessment, intervention, and adherence to evidence-based practice were reported. SLPs identified several barriers to the aphasia service provision, including the shortage of SLPs and appropriate communication resources for working with a multilingual population.

Conclusion:
The findings provide an overview of current SLP aphasia practice and have implications for the future development of aphasia rehabilitation in Malaysia and other countries with a culturally and linguistically diverse population.
Hearing Health Education in Public Schools in Malaysia

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Noise-induced hearing loss (NIHL) is a permanent but preventable hearing loss caused by damage hair cells in the cochlea due to exposure to the loud noise of significant duration. Prevalence of NIHL has increased rapidly over the years, affecting people of all ages that have been attributed to lack of awareness about the danger of loud noise. This lack of awareness and poor listening habit may be due to lack of hearing health education during the school years. To gain insights into the level of hearing health knowledge of the Malaysian students, we investigate the extent of hearing-health related information that is included in the current school curriculum. We reviewed all textbooks used in the year 2019 as listed on the registered website of the Ministry of Education. From 88 books reviewed, eleven textbooks from Science and Biology subjects were identified to have hearing health content. The hearing health content was later categorized into five different themes which were; 1) Sound 2)The Auditory System 3) Hearing 4) Hearing Technology and 5) Noise pollution. The findings were further organized according to the year that it was taught and into two different categories which were; i) theoretical information which is factual of an event and ii) mobilizing information, which is a step towards enabling a good behavior. We found that hearing health content provided in the current school curriculum is mainly theoretical focusing on topics of sound and the auditory system, and presented mostly during secondary years. In conclusion, the current curriculum does deliver information related to hearing health, but the content lack mobilizing information that promotes healthy listening behaviour among Malaysian students.
Language abilities of a cochlear-implanted child with abnormal cochlea and auditory nerves: A case study

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INTRODUCTION: Deaf children with hypoplastic auditory nerves and learning three languages are almost impossible. The present study reports a case study of a Chinese girl, YX, 6 years 3 months, congenitally deaf with bilateral cochlea hypoplasia, smaller on the left and bilateral cochlear nerves hypoplasia, identified through radiological findings, fitted with bilateral cochlear implants (CI), and acquired three languages. YX’s left ear was fitted with a hearing aid at 8 months old whilst her right ear was implanted at 1 year 10 months. The aim was to explore if YX was able to catch up with the peers in terms of phonological skills after 4 ½ years of CI experience.

METHODS: YX had regular auditory-verbal therapy (AVT) soon after CI. The local multilingual phonological test (Lim et al., 2015) for normal hearing children was administered on YX. RESULTS: YX was a simultaneous multilingual Mandarin-English-Malay child. The test results indicated comparable multilingual phonological skills to that of normal hearing peers. YX had acquired all consonants and vowels in the three ambient languages except for English consonant clusters (kl, sp, sk, sn, sl). Her Percent Consonant/Vowel/Tone Correct (PCC/PVC/PTC) were: Mandarin- PCC 84, PVC 95 & PTT 100; English- PCC (singleton) 83, PVC 99; Malay- PCC 66, PVC 100. She used both typical and atypical errors in all three languages. CONCLUSION: Encouraging language outcomes (phonological abilities) seen in this child suggest cochlear implantation should not be excluded as a management option for these children. Early intervention and intensive, long-term AVT might have contributed to her good language outcomes.

Keywords: Abnormal cochlea, hypoplastic auditory nerves, cochlear implantation, phonological skills, multilingual.
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Fenitrothion Impaired Sexual Behaviour and Reproductive Performance in Male Sprague-Dawley Rats

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Pesticide may cause male sexual dysfunction including erectile dysfunction. Fenitrothion (FNT) is one of the pesticides reported to induce male reproductive damage; however, its effects on the male sexual behaviours and reproductive performance remain unclear. Therefore, this study aimed to evaluate the effects of FNT administration on male sexual behaviour and reproductive performance. Fertile male Sprague-Dawley rats were randomly divided into three groups (n=8/group): Control - receiving corn oil (1 ml/kg); FNT-10 and FNT-20 receiving 10 mg/kg and 20 mg/kg of FNT, respectively. FNT was administered via oral force feeding for 28 consecutive days prior to mating with untreated fertile female rats. After mating, the rats were sacrificed to obtain the plasma and sperm for further evaluation. The results showed a significant decreased of acetylcholinesterase enzyme (AChE) activity (p<0.05) in FNT-20 group as compared to the control. Both doses of FNT also decreased in sperm quality as compared to the control (p<0.05). A significant difference was also found (P<0.05) for the presence of intromission and ejaculation among all groups. The mount and intromission latencies as well as post–ejaculation interval were increased (P<0.05) in FNT groups compared to the control. Conversely, only FNT–20 reduced the intromission frequency and increased in ejaculatory latency compared to the control (P<0.05). The total and frequency mount were decreased (P<0.05) in FNT-10 and FNT-20 compared to the control. For reproductive performance, there were significant differences (P<0.05) for the mating and pregnancy indexes among all groups. Furthermore, both doses of FNT reduced the number of dams, delivered pups and male pups compared to the control (P<0.05). In conclusion, FNT impaired the sexual behaviour and reproductive performance of experimental male rats in dose-dependent manner.
Translation and Validation of the 14-Items Health Literacy in Dentistry (HeLD-14) Scale

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The Health Literacy in Dentistry (HeLD) scale is an oral health literacy measurement tool that estimates an individual’s capacity to obtain process, interpret, and understand basic oral health information and services needed to decide appropriate oral health-related decisions. The aim of this study was to adapt culturally the Malay version of HeLD-14 (MHeLD-14) for Malaysian adults and to evaluate its psychometric properties. Initially, HeLD-14 was translated from English into Malay language, which later adapted to Malaysian culture. Then MHeLD-14 was tested in a 343 adults sample who attended a mega carnival in Kuala Lumpur including a set of brief Health Literacy Screening questionnaire (HLS). Convergent validity was established by testing MHeLD-14 against HLS. Psychometric properties were examined using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). Internal consistency (Cronbach’s Alpha= 0.77) and test-retest reliability (Intraclass correlation coefficient= 0.76) were satisfactory for MHeLD-14. Estimates of ≥ 0.50 for Average Variance Extracted (AVE), and ≥ 0.70 for Composite Reliability (CR) were demonstrated across all factors for both MHeLD-14 and HLS, indicating acceptable convergent validity for both forms. Psychometric test results show that all 14 items had strong factor loading (>0.50) making them suitable to be retained in the tool. The goodness-of-fit of the HeLD-14 confirmatory factor analysis model was good, with acceptable thresholds for (CMIN/DF= 2.016, GFI= 0.902, CFI= 0.960, RMSEA= 0.075 and NFI= 0.925) were obtained. MHeLD-14 appears to be a valid and reliable tool for assessing OHL in adult patients of the studied community.
Anti-Bacterial Effects of Crude Garbage Enzyme on *Streptococcus mutans*

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'Garbage enzyme' is a complex organic substance of enzymes, organic acids and mineral salts which is produced by fermentation of fruits, vegetables or their peels waste within a certain period of time, usually no less than three months. It possesses protease, amylase and lipase activity which can degrade protein, carbohydrate and lipid. This study aimed to assess the antibacterial effects of crude garbage enzyme (CGE) against *Streptococcus mutans* (*S*.mutans) Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of CGE against *S*.mutans were determined after 24 hours incubation period. 10 µL of suspension from the well which showed lowest turbidity for each test material was pipetted out and streaked onto Brain Heart Infusion (BHI) agar plate. The plates were then incubated for 24 hours to observe for any growth of colony of bacteria. Anti-adhesion effects of CGE towards *S*.mutans were determined after an incubation period of 48 hours using crystal violet staining. The differences in MIC and anti-adhesion effects between chlorhexidine and CGE were determined using student’s T-test. Mean MIC and anti-adhesion values of 100% concentration CGE against *S*.mutans were not found to be significantly different from 0.12% chlorhexidine digluconate, p>0.05. The MBC of 100% CGE against *S*.mutans was also found to be similar to 0.12% chlorhexidine digluconate. Full strength of CGE shows similar anti-bacterial effects as 0.12% chlorhexidine digluconate. Hence, CGE’s potential as an alternative mouthwash to chlorhexidine need to be investigated further.
Evaluation the Level of Protein Oxidation and Antioxidant among Traffic Police Officers in Kuala Lumpur

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Oxidative stress is a harmful process that occurs from the excess of free radicals and decrease of antioxidant enzymes in our body. It could be caused by many factors such as air pollutants, smoking and stress at workplace. Traffic police officers responsible for controlling the road traffic are at particular risk since they are frequently exposed to emissions from the vehicles. Therefore, a cross sectional study was conducted to evaluate the oxidative stress status among traffic police officers in Kuala Lumpur. The control group consists of 34 traffic policemen who were working in the office while the experimental group consists of 47 traffic policemen who were controlling the traffic. Questionnaires on demographic data were distributed among the subjects and blood samples were collected to measure oxidative stress biomarker such as advanced oxidation protein product (AOPP) and antioxidant enzymes such as superoxide dismutase (SOD) and catalase (CAT).

The AOPP level in traffic policemen group (4.596 ± 0.278 μmol/g protein) was significantly (p<0.05) higher compared to the control group (3.665 ± 0.236 μmol/g protein). Next, the SOD level in traffic policemen group (1.045 ± 0.09 ure/min/mg protein) was significantly lower (p<0.05) compared to the control group. The CAT level in the traffic policemen group (0.14 ± 0.019 ure/min/μg protein) was significantly lower (p<0.05) than the control group (0.22 ± 0.023 ure/min/μg protein).

In conclusion, the traffic police officers whom controlling the traffic demonstrated with higher protein oxidation level and lower antioxidant enzymes compared to the control group.
Oral Health Knowledge among Healthcare Workers and Challenges in Dealing with Patients' Oral Health Problems

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Although the prevalence of dental caries and periodontal diseases in Malaysia is very high, only 27.4% of adult population visit dental clinic within a year. Additionally, there is an increasing evidence to show the link of systemic diseases with oral health problems. Although the role of non-dental health care workers (HCWs) in promoting oral health is well-accepted, efforts in evaluating their knowledge and skills in this area is yet to be substantiated. Thus, the aim of our study is to assess the HCWs’ oral health knowledge, and explore possible challenges faced by HCWs in managing oral health problems among their patients in a primary health clinic.

A one hour focus group discussion was conducted among a group of government primary HCWs. The moderator probed for participants’ input on oral health knowledge, issues and challenges faced when dealing with patients with oral health problems. The recorded audio from this session was transcribed and data were grouped according to research objectives.

Participants appeared to have good knowledge on general and oral health. They understood that good health is comprehensive and aware of the relationship between oral health and systemic conditions. There were participants who showed misunderstanding of oral health during pregnancy, and the effect of mental health and bruxism on oral health. Participants faced a lot of challenges when dealing with patients with oral health problems, particularly on medication-related and difficulty in changing mind-set of the patients to seek treatment for oral problems from dentists instead of medical doctors.

HCWs involved in this study have good knowledge on oral health and general health. It is recognized that there are many challenges faced by HCWs when dealing with patients especially on their awareness on oral health facts and medication-related problems.
The Antioxidant Effect of *Hibiscus Sabdariffa Linn.* (Roselle) Extracts in Human Umbilical Vein Endothelial Cells (HUVEC)

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*Hibiscus sabdariffa Linn.* (Roselle) rich in organic acids such as anthocyanins, phenolic acids and flavonoids that serve as antioxidant agents. Excessive reactive oxygen species (ROS) is involved in diseases pathogenesis. As such, their antioxidant effect at cellular level yet to be elucidated. The aim is to determine whether Roselle extracts demonstrated antioxidant activity *in vitro* particularly in human umbilical vein endothelial cells (HUVEC). Both extracts; polyphenol (HPE) and aqueous extract (Aq) were tested for their cytotoxicity by 3-(4,5-dimethylthiazol-2-yl)-2,5- diphenyltetrazolium bromide (MTT) assay on three different dosages (0.01 mg/ml, 0.005 mg/ml and 0.001 mg/ml) with two different time points; 24 hours and 48 hours. As for 24 hours HPE treatment, the concentration of 0.001 mg/ml showed significant (p<0.05) highest cell viability (90.335 ± 0.535). However, 0.005 mg/ml of 24 hours aqueous extract treatment showed a significant (p<0.05) highest percentage of cell (92.560 ± 1.923) as compared to other concentrations. In addition, the results suggested that 24 hours’ incubation with both extracts showed a better cell viability as compared to 48 hours of treatment. HUVEC were then isolated from three umbilical donors and divided into three groups; Control (untreated), HPE (0.001 mg/ml) and Aq (0.005 mg/ml) for 24 hours. The cells lysed with RIPA buffer for oxidative stress level assessment measured by malondialdehyde levels (MDA) assay. Anti-oxidant activities were analyze by superoxide dismutase (SOD) and glutathione (GSH) activity assay. Significant reduction (p <0.05) of MDA level shown in Aq treated cells. Significant increment (p<0.05) of SOD activity observed in both extracts compared to control. However, increment of GSH level was not significant in both extracts. In addition, HPE extracts exhibit higher MDA level whereby aqueous extracts detonated a better SOD and GSH activity compared to HPE. In conclusion, both Roselle extracts demonstrated an antioxidant effect at cellular level in HUVEC.
Organotin(IV) Dithiocarbamate Compounds Induces Cell Cycle Arrest and Apoptosis in Chronic Myeloid Leukemia K562 Cells

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Imatinib was the first drug to specifically target the BCR-ABL tyrosine kinase protein (TKIs) produced due to abnormal gene, BCR-ABL which found in chronic myeloid leukemia (CML). Development of inhibitors targeting BCR-ABL has been generally successful in the past 15 years, with highly decreased mortality for CML patients. However, resistance to this drug has been increasingly reported. Therefore, novel drugs with other than BCR-ABL targets are needed. Following the discovery of cisplatin as the first metal-based anticancer drug, countless attempts have been made to study other metal complexes, especially organotin(IV) complexes. Thus, four new organotin(IV) dithiocarbamate compounds namely dibutyltin(IV) and dimethyltin(IV) bis(2-methoxyethyl)dithiocarbamate (C1, C2), diphenyltin(IV) bis(2-ethoxyethyl)dithiocarbamate (C3) and triphenyltin(IV) N-methylphenethyldithiocarbamate (C4), have been studied for their cytotoxic effects against K562 cells by MTT assay upon 24h treatment. The mode of cell death was then determined using Annexin V FITC/PI assay. The effect of compounds on cell cycle distribution was assessed by cell cycle analysis. The values of IC₅₀ obtained from MTT assay showed that all compounds except for C2 were very toxic on K562 cells with IC₅₀ value of 3.63, 21.5, 4 and 2.4 µM respectively. All compounds could induce apoptosis in the range of 35-72% when treated with IC₅₀ values upon 24h treatment. The cell cycle analysis showed that there was an accumulation of DNA in S phase when K562 cells were treated with all compounds for 3 h treatment. Thus, it can be suggested that these compounds inhibit the growth of K562 cells by inducing cell cycle arrest in S phase and apoptosis. However, further study will be conducted to clarify DNA damaged caused by the compounds through micronucleus assay and the interaction of those compounds with DNA using DNA-binding study.
**Zingiber zerumbet Ethyl Acetate Extract (10%) Exhibit Wound Healing Potential in Streptozotocin-Induced Diabetic Rats**


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Delayed wound healing in diabetic foot ulcers is among the challenges in the pharmaceutical field and also imposed a burden in the hospital costs and management. *Zingiber zerumbet* from the Zingiberaceae family has been proven to possess the anti-inflammatory, anti-oxidant, anti-diabetic, anti-microbial and analgesic properties, which are good for the treatment of wounds. Hence, this study was conducted to evaluate the wound healing potential of 10% *Zingiber zerumbet* ethyl acetate extract in streptozotocin-induced diabetic rats. A total of 120 male Wistar rats (150-300 g) were divided into four groups; 1) carbopol 940 negative control group, 2) 10% Solcoseryl gel positive control group, 3) diabetic rats untreated group and 4) 10% *Z. zerumbet* ethyl acetate treated group. Each group was further divided into another five groups of rats (six rats each) based on the day of sacrificed after 24 hours of wound induction, which were at day 1, 3, 6, 10th and 14th. Six circular full-skin thickness wounds of 6.0 mm in diameter were induced bilaterally on the dorsal surface of each rat. The wound contraction area was measured, meanwhile the blood samples and excised skin from the wound area were taken for biochemical analysis (total protein, uronic acid, hydroxyproline, hexosamine and cathepsin B) and histological observations. Results showed that wounds treated with 10% *Z. zerumbet* ethyl acetate extract exhibit a significant rate of wound contraction (p<0.001), total protein concentration (p<0.05), hexosamine (p<0.005), uronic acid (p<0.001), hydroxyproline (p<0.05) and cathepsin B concentration (p<0.05). Histological observations of wounds treated with 10% *Z. zerumbet* ethyl acetate extract displayed an organized granulation tissue and production of a denser collagen deposition indicating a good healing process. In conclusion, 10% *Z. zerumbet* ethyl acetate extract has showed a good healing potential and was able to promote wound healing activities in streptozotocin-induced diabetic rat model.
Intermittent Fasting Aid In Neuro-Protective Metabolites In Mild Cognitive Impaired Older Adults

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The effect of intermittent fasting (IF) on human health is widely examined in nutritional epidemiological studies. However, intermittent fasting (IF) on cognition and health profile is still scarce. This study aimed to identify biomarkers of the habitually practicing IF among the older adults: Non-targeted 1H-NMR metabolite profiling was done on plasma samples obtained from 45 older adults with mild cognitive impairments (MCI) after 36-months of practicing IF. The subjects were divided into three groups which are regularly practicing IF (practicing IF during baseline and after 36 month), irregularly practicing IF (either practicing IF during baseline and after 36 months or vice versa) and not practicing at all. A partial-least square discriminant analysis (PLS-DA) was applied to the mass spectral data. After 36 months of practicing IF, the presence of 3-hydroxybutyrate, acetate, acetoacetate, and n-acetylserotonin were observed in the plasma. Intermittent fasting led to the presence of neuro-protective metabolites while not practicing IF led to the presence of neuro-oxidative metabolites.
Evaluation of *Eleusine indica* (Linn.) Gaertn leaf extracts in vitro wound healing potential.

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**Ethnopharmacological relevance:** *Eleusine indica* (Linn.) Gaertn that is widely accessible in tropical and subtropical countries had been used by local population as traditional medicine to treat various discomfort and diseases.

**Objective:** This study was designed to evaluate the in vitro wound healing effect of *Eleusine indica* leaf extracts against human dermal fibroblast.

**Materials and Methods:** *Eleusine indica* leaves were subjected to maceration extraction method. Eight concentrations were prepared: 31.25, 62.5, 125, 250, 500, 1000, 2000 and 4000 µg/mL. Non-polar (hexane, dichloromethane), semi-polar (ethyl acetate) and polar (methanol, ethanol, aqueous) extracts of *Eleusine indica* leaves were tested their 24-hour effect against the viability of human dermal fibroblast using MTT assay. Incubation period was then extended up to 72 hours to assess fibroblast cell proliferation using proliferation assay. One concentration from each extract was selected to assess cell migration rate by using scratch assay. Data were recorded as mean SEM and analyzed with one-way ANOVA followed by Post hoc Tukey.

**Results:** Hexane extract showed IC50 value in human dermal fibroblast cell viability at 1403 µg/mL while other extracts showed no IC50 value up to maximum concentration. Ethyl acetate and ethanol extracts give significant cell proliferation at 750 µg/mL and 500 µg/mL respectively. Ethyl acetate extract promoted cell migration best compared to other extracts, followed by aqueous hot infusion extract.

**Conclusion:** This study demonstrated that ethyl acetate, ethanol and aqueous hot infusion extract had the potential to be developed as a wound healing agent by promoting fibroblast proliferation and migration through accelerating wound closure in line with its traditional use.

**Keywords:** wound healing; *Eleusine indica*; human dermal fibroblast
Association between Quran memorization and health status among students from selected secondary schools in Selangor

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Previous studies showed that spirituality and religiosity approach such as Al-Quran memorization can improve human well-being and health. However, there is a limited studies on Al-Quran memorization in relation to health status. Hence, this cross-sectional study was conducted to determine the correlation between Quran memorization and health status among students (n = 159, mean age = 15) from selected secondary schools in Selangor, Malaysia. A self-administered questionnaire (Cronbach’s alpha = 0.846) was distributed to obtain sociodemographic data. Health status was measured based on body mass index (BMI), blood pressure (BP), random blood glucose, cholesterol and uric acid levels. All data were analysed using SPSS version 23.0. Results revealed that majority of the students had normal body mass index (BMI), blood pressure (BP), random blood glucose, cholesterol and acid uric. There was a moderate correlation between Quran memorization with age (r = 0.477, p < 0.001) and random blood glucose (r = 0.333, p < 0.001). A weak correlation between Quran memorization with systolic blood pressure (r = 0.237, p < 0.05) and cholesterol (r = 0.156, p < 0.05) were also found. This study could serve as a good platform for future researchers to investigate the health status among students and its association with Quran memorization using longitudinal and intervention studies.
BSP-12

Protective Effects of *Hibiscus sabdariffa* Polyphenol-rich Extract Towards Development of Diabetic Cardiomyopathy in Type 1 Diabetes Rat Model

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Prolonged hyperglycemia in the diabetic condition may eventually lead to diabetic cardiomyopathy. Hibiscus sabdariffa or roselle has been recognized as an antioxidant-rich source. Therefore, this study aimed to determine the potential effects of *H. sabdariffa* polyphenol-rich extract (HPE) to prevent diabetic cardiomyopathy in type-1-induced diabetic rats. Twenty-four male Sprague–Dawley rats were randomized into 4 groups (n = 6/group): nondiabetic, diabetic alone (DM), diabetic supplemented with HPE (DM+HPE), and diabetic treated with metformin (DM+MET). After 8 weeks of study, HPE supplementation improved hyperglycemia and dyslipidemia significantly. HPE supplementation also attenuated cardiac oxidative damage and significantly increased reduced glutathione (GSH) level and superoxide dismutase (SOD) activity. Cardiac dysfunction, cardiomyocyte hypertrophy as well as cardiac fibrosis were also significantly attenuated by HPE supplementation. Ultrastructural changes and impairment of mitochondria were also minimized by HPE supplementation. Collectively, these findings suggest that HPE has a potential in preventing diabetic cardiomyopathy through its hypoglycemic, anti-hyperlipidemia, and antioxidant properties.

Keywords: Hibiscus sabdariffa; diabetes; cardiac dysfunction; hypertrophy; fibrosis
Phytochemical Screening And Cytotoxic Effects Of *Sphagnum sericeum* Extracts On Human Acute Lymphoblastic Leukemia Cell Lines - Jurkat and CCL-119.

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Acute lymphoblastic leukaemia (ALL), the most commonly diagnosed childhood leukaemia, in which occupying 45% of all paediatric cancer. Because of high toxicity and resistency towards clinical chemotherapy such as dexamethasone, research on natural sources as potential chemotherapeutic agents are in full swing to address this problem. *Sphagnum sericeum* (SS), a bryophyte moss, has never been explored its potential and effects in cancer cells. Thus, this study aims to screen the phytochemical contents and cytotoxic effects of *Sphagnum sericeum*) extracts on two human acute lymphoblastic leukemia cell lines, Jurkat and CCL-119. Using different polarity of solvents, aqueous, methanol and chloroform extracts of SS were prepared through sonication method. Phytochemical screening was assessed by chemicals on these extracts to identify the presence of flavonoids, phenols, alkaloids, glycosides, coumarins, saponin, tannin and terpenoids. Both cell lines were treated with the SS extracts at different concentration ranging from 0-500 µg/ml for 24, 48 and 72 hours. Cytotoxicity was accessed using WST-1 cell proliferation assay. Cell morphology assessment was obtained using Giemsa staining. Results showed the yield percentage of aqueous, methanol and chloroform extracts were 5.41±0.94%, 2.51±0.10% and 1.04±0.29% respectively. All the SS extracts contain alkaloids, glycosides and terpenoids, but with different density. Of all the SS extracts, only the chloroform extract showed cytotoxicity with IC$_{50}$ after 48 hours at 280±0.10 µg/mL in Jurkat cells but not in CCL-119 cells. Cell morphological study showed blebbing of cells following 2-6 hours of chloroform SS extract treatment and shrinkage of cells after 12-24 hours of treatment. In conclusion, *Sphagnum sericeum* extracts showed the presence of phytochemical compounds that were able to induce cytotoxicity and cell damage in selective ALL cell lines and its potential as chemotherapeutic agent should be evaluated further in future.
Knowledge, Attitude and Practice towards Breast Cancer Screening Among Staff in Selangor University

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Objectives: Breast cancer screening plays an important role in early detection of breast cancer. Therefore, people need know about Breast Self-Examination (BSE), mammography and Clinical Breast Examination (CBE). This research focuses on evaluating the knowledge, attitude and practice of breast cancer screening among Selangor University staff because they are the best person to influence their family members, friends and students towards the importance of it.

Methods: Quantitative, descriptive survey was used, which required the respondents to answer self-administered e-survey questionnaires. 91 samples were selected randomly using simple random sampling method.

Result: Mean age of respondents was 2.26 ± 0.697 with 58.2% aged 31 to 40 years. 44% of them have Master degree background with the mean 4.21±1.243. Majority of 53.9% respondents have medium level of BSE knowledge while 58.2% of them have high knowledge on mammography. Pearson’s correlation study showed that there are significant positive correlation between BSE level of knowledge and education level ($r^2=0.007; p<0.05$), attitude on BSE and education level ($r^2=0.006; p<0.05$), practice on BSE with gender and age ($r^2=0.049; p<0.05$), ($r^2=0.019; p<0.05$), mammography level of knowledge with staff categories, age and education level ($r^2=0.016; p<0.05$) ($r^2=0.002; p<0.05$) ($r^2=0.006; p<0.05$), attitude on mammography with gender ($r^2=0.001; p<0.05$) and practice on CBE with gender ($r^2=0.01; p<0.05$).

97.8% agreed that BSE is necessary to check any abnormalities in the breast (88.8%) and good to practice (93.4%). 71.4% of them have done BSE before with majority 53.8% started at the age of 26-35 years old. 41.9% of female respondents done their mammography because of having family members with breast cancer. 38.5% respond that mammography is costly and 30.8% said it is very painful to be done.

Conclusion: In conclusion, with these findings, people will be more aware on their level of understanding and attitude in practicing breast cancer screening.

Keywords: Breast Cancer Screening; Knowledge; Attitude; Practice; Staff; Selangor University
Breast Self Examination Practice among Staff in Selangor University: An Observation Study

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Objectives: Breast self-examination (BSE) is one of the most basic yet important screening methods in early detection of breast cancer. In Malaysia, the numbers of breast cancer cases are lower as compared to other country but, the mortality rate due to late detection of breast cancer is higher. Therefore, this research focuses on evaluating the ability of Selangor University staff in practicing correct techniques on BSE.

Methods: 79 respondents was selected using simple random sampling method. Data was analyzed using SPSS 16.0 software. Two qualified observers was selected to observe the ability of respondents to palpate the lumps with correct counting number of lumps on the breast phantom and using proper BSE techniques based on Likert scale.

Result: Majority 64.6\% of respondents feel somewhat confident on palpating the lump, 41.8\% feel confident in counting number of lumps and 54.4\% was not confident on using proper technique on BSE. Mean response on the ability to feel the lumps is (3.11 ± 0.62), ability to palpate the number of lump is (3.34 ± 0.96) and using proper techniques of BSE is (2.38 ± 0.74). Based on Chi square test result on comparing between ability to feel the lumps, ability to count number of palpated lumps and ability to use proper BSE techniques between different faculties, there are no significant difference with the respective p value >0.05 (p=0.105; 0.356; 0.277). In comparing between the ability to feel the lumps, ability to count number of palpated lumps and ability to use proper BSE techniques between two different genders, there are no significant difference with the respective p value >0.05 (p=0.831; 0.581; 0.633).

Conclusion: In conclusion, majority of respondents able to palpate and count the lumps on the breast but not that confident especially in using proper BSE techniques.

Keywords: Breast Self Examination; Practice; Staff; Selangor University; Observation study.
Comparison Of Cerebral Activity Between Gender In Internet Addiction: Resting State fMRI Study

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Internet addiction has become increasingly recognized as a mental disorder and far more prevalent in male than in females, but the neural bases of these differences remain unknown. This study aims to investigate gender-related differences in the organizational patterns of brain networks. 15 male and 20 female participants with internet addiction underwent resting-state functional magnetic resonance imaging (rs-fMRI). The Amplitude of low-frequency fluctuation (ALFF) method was used to assess the local brain activity. The findings in the present study suggested that male has higher activation of ALFF value in the left superior parietal lobe, middle occipital lobe and precuneus compared to female. Our results suggested male and female with internet addiction exhibited different value ALFF value in the resting state pattern of neuronal activity. These results revealed the changed spontaneous brain activity of internet addiction and would enrich our understanding on the neurobiological basis of internet addiction.

Keywords: Resting-state functional magnetic resonance imaging, Internet addiction disorder, Sex differences, Amplitude of low-frequency fluctuation
Effective Connectivity between Medial Prefrontal Cortices, Angular Gyrus and Precuneus during Divergent Thinking

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Divergent thinking is essential as an indicator of creativity. There are growing evidences that performance of divergent thinking requires the interaction between multiple large-scale cerebral networks, including default mode network (DMN), executive control network (ECN) and dorsal and ventral attentional networks. The present study aims to test the connectivity between these networks. By applying Dynamic Causal Modeling (DCM12.5) to functional magnetic resonance imaging (fMRI) data collected during performance of divergent thinking tasks (DTTs) by 6 purposively sampled subjects, integration between DMN and ECN is investigated. Two divergent thinking tasks were performed by the subjects, where common daily-use objects were visually projected to the subjects during 2 fMRI sessions - which are brainstorming of multiple alternative use (AU task) and determination of the most unique and original use of the object (UU task). From the brain activation results, three (3) left hemispheric regions, which are precuneus, representing the core hub of DMN; and medial prefrontal cortices (mPFC) and angular gyrus (AG), the established regions of divergent thinking, were extracted. Nine (9) connectivity models were constructed and estimated. The optimal model was determined using fixed-effect analyses of Bayesian model selection (BMS). Findings showed that the most optimal model during both AU and UU tasks is full bidirectional model between precuneus, mPFC and AG, with posterior model probability of 1.000 for both models. The findings shows that there is no difference in the causal pathways during performance of alternative and unusual use generation, possibly due to the same process involved in achieving both objectives. Integration between regions of DMN and ECN is essential in execution of cognitive tasks which involves brainstorming, episodic memory recall and semantic association.
Determination of Heavy Metals Concentration of African Catfish Pond Farm’s Effluent

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Aquaculture has been a very important industry worldwide. However, it produces a high amount of particles discharge which might contain heavy metals. Heavy metals are potentially toxic to human and environment and it can give impact via bioaccumulation and biomagnification process. This study aimed to determine the concentration of heavy metals in African catfish, *Clarias gariepinus* pond farm’s effluent and Kesang River, Malacca which is the receiver of the effluent. African catfish, *C. gariepinus* has been chosen based on the economic values in Malaysia and it is prone to heavy metals accumulation. Samples were collected for five months in early 2018 at three sampling points which were at Kesang River before the catfish pond farm’s effluent outlet, catfish pond farm effluent outlet and the last sampling point was at Kesang River after catfish pond farm effluent outlet. Heavy metals in water samples were analyzed by Inductively Coupled Plasma – Mass Spectrometry (ICP-MS). Seven heavy metals (Zinc, Manganese, Copper, Iron, Selenium, Cadmium, Chromium) were detected in Sungai Kesang, Malacca and the African catfish pond farm’s effluent. Using descriptive analysis, it was found that the highest mean concentration of the heavy metal at all sampling points was Fe while the lowest was Se. Using one way ANOVA, there was significant different for Fe concentration (p<0.05) at catfish pond farm effluent outlet compared to Fe concentration at Kesang River before the catfish pond farm’s effluent outlet and Kesang River after catfish pond farm effluent outlet. A strict monitoring by local authority should be implemented to control the released of heavy metal from fish pond effluent to the river to decrease the human health risk due to consumption of water.
Indoor Air Quality of Selected Offices at Faculty of Health Sciences, Universiti Kebangsaan Malaysia

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Human spent 90% of their time inside their workplace and inside their home. Thus, indoor air quality plays the important role in community life. Indoor air quality assessment was conducted at administrative offices at Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur’s campus. The study locations involved were Centre of Diagnostic and Applied Health Sciences (PPSDKG), Centre of Healthcare Sciences (PPSJK) and Centre of Rehabilitation Sciences (PPSR). There were 11 parameters involved in this study according to Industrial Code of Practice on Indoor Air Quality 2010 (ICOP 2010). All parameters were compared to the standard value from ICOP 2010. Qualitative approach was done using questionnaire and walkthrough survey. While quantitative approach was done using measurement of indoor air quality parameters with suitable equipment. The results showed that all parameters complied limits as listed by ICOP 2010 except for relative humidity at sampling point two which was PPSJK’s office. Besides, air movement for each centre did not meet the acceptable range which is between 0.15 m/s to 0.5 m/s as listed by ICOP. Independent T test showed there was significant difference (p< .05) between carbon dioxide (CO2) at sampling point one and sampling point two at PPSDKG’s office. There was also significant difference (p<.05) of relative humidity between sampling point one and two at PPSK’s office. For biological parameters which were total bacteria counts (TBC) and total fungal counts (TFC) showed the trend on increasing of both from morning to evening. As a conclusion, indoor air quality for each school in Faculty of Health Sciences was in good condition except for air movement with the lowest reading of 0.028 ± 0.003 m/s. Hence, to overcome the problem related to air movement in the offices, it is recommended to install the exhaust fan in order to avoid accumulation of indoor air contaminants.
Pulmonary Function Status of Construction Site Workers that Exposed to Dust at Setia City Mall Construction Site.

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Workers at construction site always been exposed and inhaled high concentration of dusts at their workplace. There are many sources of dusts at construction site such as from concrete, silica, asbestos, cement, stone and sand that are often used in construction work. The particles inhaled will remain in the lungs causing lung irritation, excessive mucus secretion, followed by lung function damage, pneumonia, chronic obstructive pulmonary disease, restrictive lung disease and pneumoconiosis. The objective of this study is to perform spirometry tests to detect any reduction in lung function parameters. This cross sectional study was conducted to observe the lung function status among workers at construction site (exposed group) and compare with those working in office (non-exposed group). 99 individuals were selected which comprises of 58 from exposed group and 41 from non-exposed group. Forced vital capacity (FVC), forced expiratory volume in one second (FEV1) and the percentage of FEV1 to FVC (FEV1/FVC) were assessed using spirometer. The pulmonary status of 74.1% of exposed group showed restriction and obstruction while only 41.5% of non-exposed group had restrictive and obstructive lung function. The mean of FVC and FEV1 of exposed group were 71.74 and 72.53 respectively, which are lower than office workers that were 82.78 and 84.22. Based on Independent T-Test using IBM SPSS Statistics 21, there were significant difference (p<0.05) on parameters FEV1 and FVC between both of the groups. Based on the questionnaire answered, none of the workers had asbestosis, chronic bronchitis, emphysema, tuberculosis and silicosis. As a conclusion, this study found that the exposure to high concentration of dusts can reduced the lung function parameters. Construction site workers should undergo pulmonary function tests regularly to detect any changes so the management can provide early interventions treatment.
Assessment of Cytotoxicity and Mode of Cell Death of Diorganotin (IV) Dithiocarbamate Compounds in K562 Human Erithroleukaemia Cells

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Imatinib mesylate (IM) which been used as a front-line treatment of chronic myeloid leukemia (CML) has raised concerns about its resistance-development towards CML patients. Thus, organotin(IV) compounds are gaining attention among researchers due to its potential to be developed as alternative anticancer agents to address problems related to resistance-IM treatment. Generally, this research is aims to study the cytotoxicity and mode of cell death induced by diorganotin(IV) dithiocarbamate compounds against human erithroleukemia cells, K562. The two diorganotin(IV) compounds that were used in this study were diphenyltin(IV) N-methyl-N-phenetyldithiocarbamate (compound 1) and dibutyltin(IV) N-methyl-N-phenylethyldithiocarbamate (compound 2). The cytotoxicity of both compounds towards tested cells was determined through 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazholium bromide (MTT) assay for 24 hours of treatment. Both compounds showed cytotoxic effect in K562 cells with IC\textsubscript{50} value of 4.2μM and 1.6μM for compound 1 and 2 respectively. Interestingly, both compounds can be classified as a highly toxic compound due to IC\textsubscript{50} value which is less than 7.34μM. The mode of cell death was then determined based on the externalization percentage of phosphatidylserine using flow cytometer. Cells treated with compound 1 and 2 induced 49.70% and 46.83% of apoptotic cells respectively obtained via MTT assay. The observation of morphological changes were similar to the apoptotic features such as cell shrinkage and apoptotic bodies formation. The changes of cells morphology through necrotic cell death also can be seen which is by cell lysis. In conclusion, diorganotin(IV) dithiocarbamate compounds were shown to exhibit a strong cytotoxic effect on tested cell line. However, further studies on this mechanism are needed in order to identify the suitability of these new compounds to be developed as a new anticancer drug.
Variations in the Volatile Chemical Fingerprint of Petrol; RON 95 and RON 97, from Different Oil Providers in Malaysia

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The chemical and burning properties of petrol are influenced by the origin of the crude oil, the refining process and the presence of additives. These factors can lead to different oil companies formulating the same type of fuel but with variation in their individual properties, making the oil unique to each provider. This study aims to determine the differences in the chemical fingerprint of petrol (RON 95 and RON 97) from three oil providers in Malaysia. Samples were prepared by diluting 1 mL of petrol with 1 mL of pentane as the solvent. 10 µL of tetrachloroethylene was used as the internal standard. Each sample was injected six times into the gas chromatography-mass spectrometry (GCMS). Identification of the chemical fingerprint was conducted on the total ion chromatogram (TIC) of each injection by comparing the mass-to-charge (m/z) ratio of the peaks to that of the National Institute of Standards and Technology (NIST) library, standard mixtures and database from previous researches. Results illustrated that although a majority of the chemical fingerprints were similar across the three oil providers, differences were noted in groups of compounds from the three oil providers (X, Y, Z). X had 3,7-dimethyl-1-octene and 2,2,4-trimethylpentane, Y had 2-methyl-1-butene whereas Z had 2-hexene. Similarly, for RON 97, differences were also reported. X had 2-methyl-1-butene, 2,2,4-trimethylpentane and 2,3,4-trimethylpentane whereas Y had 2,3-dimethylbutane, 3-methyl-2-pentene and octane. The results proved that different oil providers in Malaysia manufacture petrol with different volatile chemical fingerprints. As the unique group of compounds to each oil provider is made known, discrimination between the fuels can be done accurately, which in turn, can be utilized to identify the source of fuel that was used. This information can then be applied in cases where petrol has been deliberately used with malicious intent to commit a crime of arson or murder.

Keywords: Petrol; RON 95; RON 97; chemical fingerprint, Gas Chromatography-Mass Spectrometry (GC-MS), arson
Key Volatile Indicators of Porcine Tissue in the Presence of interferences; Petrol and Kerosene

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Detection and identification of key volatile indicators of porcine tissue (in extension human tissue) in a fire scene is an essential part of a fire investigation, particularly for cases where human remains are not suspected to be present or has been dismembered and severely charred. Challenges arise as fire debris analysis often involve complex and unpredictable chemicals particularly in the presence of interferences such as accelerants (petrol, kerosene). These accelerants generate their own unique key indicators that could mask / mimic those of human remains. Therefore, this study was conducted to elucidate the key volatile indicators of porcine tissue in the presence of interferences namely RON 95 petrol and kerosene. Six replicates of each interference were burnt outdoors together with 25g ± 1.5g porcine bone in a tin can until the auto-ignition of fat from the bone or the ignition of the interference, occurred. The flames were then allowed to reduce to within the size of the tin before forced extinguishment by oxygen deprivation. Activated carbon tablet (ACT) was used as an absorbent, and together with the burnt samples, incubation was conducted in an oven for 16 hours at 80°C. The ACT was then desorbed in 1 mL pentane and injected into gas chromatography mass spectrometry (GC-MS), and the individual chromatograms were scrutinized. Results showed that the key volatile indicators of porcine bone were not detected when burnt in the presence of petrol and kerosene but those of both accelerants such as \(n\)-alkanes and \(n\)-alkyl benzenes were detected. Even though the time-temperature profile and flaming characteristics indicated that porcine tissue had undergone auto-ignition, the result obtained in this work is proof that during burning, the accelerants with lower flash point was the one experiencing auto-ignition and not the bone, or the key volatile indicators of both accelerants have masked those of porcine bone.

\textbf{Keywords}: Key volatile indicator; Petrol; Kerosene; Porcine bone, Activated carbon tablet (ACT); Gas chromatography- mass spectrometry (GC-MS)
Cheiloscopy is recognised as a tool for personal identification because of its strength in criminalistics. In this study, the lip print of Malaysian Chinese population in Klang Valley was used for sex determination using lipstick-cellophane technique. Lipstick was applied on the lips and the lip print was lifted using cellophane tape, pasted onto a plain A4 paper and then analysed using a magnifying glass. Six topography areas of lip prints were classified using Suzuki and Tsuchihashi’s classification, and they are upper left, upper middle, upper right, lower right, lower middle and lower left. 412 subjects (203 males and 209 females) were selected conveniently. Chi-square test showed all lip sections were significantly different where \( p < 0.05 \). Type II was the dominant pattern in four lip sections for both sexes: Upper left (male 81.3%, female 57.4%), upper right (male 71.9%, female 42.9%), lower left (male 98.0%, female 90.0%) and lower right (male 96.1%, female 86.1%). Type IV was the dominant pattern for both middle parts of the lips; upper middle (male 56.2%, female 50.7%) and lower middle (male for 62.6%, female for 50.2%). This finding is considered could be suggested to aid in personal identification in forensic investigation.

**Keywords:** Cheiloscopy, Malaysian Chinese, Sex Determination, Lip Print, Lipstick-cellophane technique
FSP-04
Screening of Single Nucleotide Polymorphisms (SNP) Using Allele Specific PCR for The Development of Human Mitochondrial DNA Typing Method

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Detection of variations or polymorphisms in human DNA are concerned for the purpose of medical reports, molecular genetic analysis, haplogroup variations, forensic search and many others. In this project, the selected loci were from coding and control region. The main objective of this project was to produce a simple, cost effective yet robust method for human identification and specifically designed for Southeast Asian (SEA) population. A total of 30 Single Nucleotide Polymorphisms (SNPs) from several SEA haplogroups were selected. The general machaplogroups involved were M, B, F, E and N. A total of 25 primers were designed with 10 SNP regions shared similar primers. The Polymerase Chain Reaction (PCR) that was carried out using the designed 25 sets of primers and it was classified as first round PCR. Next, the amplified PCR products were visualized and purified. The purified PCR products were sequenced and used for allele specific PCR (asPCR) that was classified as second round PCR. In second round PCR, two types of allele specific primers (ASP) called wild type ASP(wtASP) and mutant type ASP (mtASP) were used to trace the occurrence of mutations. A total of 30 ASP were designed and paired with either forward or reverse primers from first round primers. However, only 20 SNPs were successfully amplified through asPCR. Selected amplified products were sent for sequencing for comparison purpose. From sequencing, the results of the mtDNA variations turned out to be same. Generally, in real situation, individual polymorphisms traced using asPCR technique may narrow down the individual identification especially in cases such as mass disaster or plane crash.

Keywords: mtSNP, mtDNA polymorphisms, haplogroup, mtDNA variations, allele specific PCR
No-Show Rate in Diet Clinic, Hospital Sultan Ismail, Johor Bahru: A Clinical Audit

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Introduction: No-shows or missed appointments are common occurrences in healthcare that interfere with quality patient care including dietetics outpatient services. This can negatively affect patient’s short term and long term well-being to due missed opportunity to address patient’s nutrition issue in a timely manner. This study aims to identify the no-show rate in diet clinic and investigate the reasons for no-show occurrences. Methods: The study was conducted from June to September 2017 at Hospital Sultan Ismail’s diet clinic. No-shows were identified using Total Hospital Information System (THIS). No-showers or their guardians were contacted to record the reason for missing the appointments. Analysis of the data is reported descriptively. Results: The result shows that the no-show rate in Diet Clinic, Hospital Sultan Ismail was 40.7%. From 300 no-show appointments, 102 patients were able to be contacted (34%, n=102). Paediatric patients aged 1 to 3 years contributed the highest percentage of no-shows (49%, n=50). The major reasons identified for no-shows are forgetting and remembered wrong appointment date (35.3%, n=36), followed by ill or admitted to ward (13.7%, n=14) and others (12.7%, n=13) such as personal issues and school exam. Conclusion: No-show appointments are found to be prevalent. Remedial measure using automated text messaging reminder service (MySMS) was implemented to target the major reason for no-shows. Continuous monitoring and reaudit is needed to ensure effectiveness of the remedial action.

Keywords: no-shows; dietetics service; missing appointments; quality patient care
Nitrogen Balance (NB) Assessment In Burn Patient

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INTRODUCTION:
Most burn patients will experience muscle protein catabolism due to the hormonal and pro-inflammatory response that results in negative nitrogen balance (NB) even with high protein diet. Maintaining positive NB is crucial to determine an appropriate amount of protein intake required for burn patient to prevent muscle catabolism.

METHODS:
A case of 25 years old, male with 22.5% BSA was chosen. We prospectively evaluated the clinical files and scrutinized the clinical variables of interest. Protein requirement was prescribed at 2.0g/weight (kg). Nutritional support was given to ensure adequacy of energy and protein intake. Urine Urea Nitrogen (UUN) was collected over 24 hour for NB assessment. Then, NB was estimated according to modified NB formula for burn. The parameter associated with nutritional improvement of a burn patient was evaluated after post burn days (PBD) 14.

RESULTS:
The nitrogen balance was maintained at +4. The weight after PBD14 was maintained at 80kg (pre-burn weight). The lab data has shown improvement in creatinine value from 50mmol/l to 55mmol/l, total protein and albumin from 54g/l and 22g/l to 60g/l and 25g/l respectively after PBD14. The dependency towards ventilator setting was PBD13. Patient was discharged after PBD17 with remaining 3% residual BSA only.

CONCLUSION:
Maintaining positive NB improved nutritional status of patient with > 20% BSA by preventing weight loss, facilitate recovery and shorten days of hospital stays. Thus, NB assessment is one of key parameter associated with nutritional improvement of a burn patient.

Related keywords: nitrogen balance (NB), urine urea nitrogen (UUN), Muscle protein catabolism, burned surface area (BSA), post burn days (PBD)
DP-03

Traditional Malaysian vegetables (*ulam*) consumption related to better cognition using comprehensive neuropsychological batteries: cross-sectional study

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*Ulum* is traditional Malaysian vegetables which normally consumed in raw form with fermented sauces. It contains antioxidant and polyphenol properties which might be able to prevent cognitive decline. This is a cross sectional study aimed to determine the relationship between *ulam* intake with cognitive function among 252 Malay middle-aged and older adults (45-75 years old) from low income residences in Klang Valley using convenient sampling. Socio-demography, dietary intake, total *ulam* intake and cognitive status information were obtained. Dietary and *ulam* intake were obtained using validated Dietary History Questionnaires and Food Frequency Questionnaires. Cognitive function was assessed using Mini-Mental State Examination (global cognitive function), Digit Span (working memory), Rey Auditory Verbal Learning Test (RAVLT) (verbal memory) and Comprehensive Trail Making Test (CTMT) (processing speed). The median of *ulam* intake among total subjects per day was 23.2 g. Total *ulam* intake was significant positively correlated with all the cognitive tests except CTMT using Spearman correlation (p<0.05). In multiple regression analysis, total *ulam* intake was a significant predictor for Mini-mental State Examination (R²=0.35, beta=0.02, p<0.05), Digit Span (R²=0.26, beta=0.03, p<0.01), RAVLT-Immediate recall (R²=0.43, beta=0.12, p<0.01) and RAVLT-Delayed recall (R²=0.43, beta=0.04, p<0.001), controlled by age, gender, years of education, household income and occupation. *Ulum* contains antioxidant properties which could attenuate apoptosis, reduce reactive oxygen species and prevent oxidative stress that cause cognitive decline. This study has successfully showed that *ulam* was related to better cognition, however, the mechanism of bioactive compounds of *ulam* in neuroprotection is yet to be investigated.

(243 words)

Keywords: *ulam*, cognitive, antioxidant
The effects of intensive nutritional intervention on nutritional status of post-acute rehabilitation stroke patients: A Randomized Controlled Trial

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Good nutritional status is more likely to contribute to the successful rehabilitation of the stroke patients. However, malnutrition is highly prevalent among stroke patients and may worsen throughout hospitalization. To date, there are no studies investigate the effect of nutrition intervention on stroke rehabilitation patients in Malaysia. Therefore, we conducted a single-blinded, randomized controlled trial in a tertiary teaching hospital to investigate the effect of intensive nutritional intervention on nutritional status of the post-acute stroke patients. From 167 patients who have been screened for eligibility, 45 patients were recruited and randomized into two groups, in which control group (n=22) received standard rehabilitation care and intervention group (n=23) received standard care plus 12-weeks intensive nutritional intervention using individualized nutritional care approach and call-recall strategy. Nutritional assessment was performed using Mini Nutrition Assessment and 24-hour diet recall. The patients were reviewed twice at week 6-8 and week 11-12. Data analysis was performed using Generalized Estimating Equations. Result demonstrated that the intervention group had shown a significant improvement for nutritional status (p<0.001), though no treatment effect as compared to control group (p=0.258, OR 1.85, 95% CI 0.64-5.4). The intervention group had higher dietary and protein intake than control group (p<0.01). Within the intervention group, the percentage of patients with good nutritional status was significantly increased from 17.4% to 68.2% (p<0.001). The mean dietary intake was significantly increased from 1469 ±66 kcal/day to 1600 ± 44 kcal/day (p<0.001). In conclusion, our study suggests that intensive nutritional intervention strategy can improve nutritional status of the post-acute stroke patients. Stroke patients may benefit even more from a longer period of nutritional intervention.
A Case Study Of Home Enteral Nutrition: Dealing With Feeding Adequacy And Regime Compliance

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PEG or percutaneous endoscopic gastrostomy is a type of enteral nutrition route which a flexible feeding tube is located through the abdominal wall to the stomach. This procedure is beneficial to patients who have difficulty in swallowing or inability to consume adequate nutrients orally. On early initiation of PEG tube feeding in outpatient setting, a periodic monitoring is required as to ensure patients able to follow feeding regimen and achieve optimal requirement. A 67-year-old Malay gentleman was referred to the outpatient FSK Dietetic Clinic in PPUKM for underweight. He was diagnosed with left Vocal Cord Palsy secondary to Vagal Schwannoma and currently on PEG tube feeding. His weight during his first visit to dietitian was 48.1kg and height was 166.5cm with BMI 17.4 kg/m². Patient had experienced severe weight loss of 34% in 1 month postoperatively associated with swallowing difficulty. He presented with hoarseness of voice and pooling of saliva but still able to spit out the secretion himself. Currently his feeding regimen was 6 scoops Enercal Plus + 300 ml water + 60 ml flushing, 3 hourly, 6 times feeding a day. Nutrition Diagnosis: Underweight (NC-3.1) related to increased energy needs as evidenced by BMI for older adult ≤22 and history of malnutrition postoperatively. Objective: 1) to provide adequate energy and protein intake as to minimize further decline of nutritional status 2) to achieve desirable body weight. Estimated energy and protein requirement were prescribed at 2200 kcal and 72 g respectively. Motivation and encouragement should be given to patient as to ensure that he is able to achieve energy and protein requirement consistently. Monitoring on formula concentration, feeding time and problems encountered during feeding should be addressed and discussed. In conclusion, significant weight gain was achieved after 4th visit and patient gained more confidence in handling PEG tube feeding.
Determination of Salty and Umami Taste Thresholds among Primary School-Aged Children in Klang Valley

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Introduction: In children, high savoury food intake could contribute to elevated blood pressure and development of hypertension. Salty and umami taste are the two basic taste sensations that provide savoury flavour to food. However, individual differences in taste perception may influence children’s food preferences and energy intake. Using a validated procedure, this study aimed to determine the salty and umami taste thresholds among primary school-aged children in Klang Valley.

Methods: Children aged 9 – 11 years from three main ethnic groups were recruited. Measurements of body weight, height, waist circumference and body fat percentage were carried out. A total of 18 concentrations of sodium chloride (NaCl) and monosodium glutamate (MSG) solutions ranging from 0.056mM to 1.0M were prepared to investigate the salty and umami taste thresholds by using two-alternative, forced-choice staircase procedure.

Results: The average threshold for salty and umami taste in children was 1.01 ± 0.71 mM and 1.21 ± 1.03 mM, respectively. Umami threshold in boys (1.49 ±1.39 mM) was significantly (p<0.05) higher than girls (1.06±0.74 mM), but no sex difference was observed for salty taste threshold (p=0.830). Salty taste threshold was significantly different among the three ethnicities (p<0.05). Chinese children had the highest salty taste threshold (1.21 ± 0.53 mM), followed by Malays (1.13 ± 1.13 mM) and Indians (0.67 ± 0.72 mM). No ethnic differences were found in umami threshold (p=0.832).

Conclusion: Girls have higher umami taste sensitivity than boys, but no difference was found for salty taste threshold between sexes. There were ethnic differences among children for the salty taste sensitivity, with Indians having the highest sensitivity, followed by Malays and Chinese; but no differences were found for umami taste among ethnicities. Future studies could explore the relationship between taste sensitivity and blood pressure to prevent the development of hypertension.

Keywords: threshold, umami, salty, children
This purpose of the study was to determine validity and reliability of NEI VFQ-25 Malay version, to ensure that it is equivalent to the English version. The cut-off point score for this questionnaire was also determined. The questionnaires were administered on 110 normal healthy subjects, 41 patients with primary open angle glaucoma (POAG) and 100 patients with age-related macular degeneration (ARMD). Subscale and composite scores were calculated based on the method set by Mangione (2009). Mean composite score for normal healthy subjects was 92.82 ± 3.91. No statistically significant difference (p = 0.095) was observed between the composite scores of normal health subjects with the scores from the study by Mangione (2009). Significant differences (p < 0.05) were found between composite scores of ARMD group (66.91) and POAG group (86.2) with normal subjects (92.82). Subscale scores of distance and near activities for the normal subjects were higher than ARMD group (p < 0.05). The peripheral subscale vision scores for normal subjects was higher than POAG group (p <0.05). Cronbach’s alpha ranged from 0.569 to 0.761, indicating satisfactory reliability. Cross tabulation analysis revealed the composite score cut-off point of 89.00. In conclusion, NEI VFQ-25 Malay version is valid and reliable to be used.

Keywords: NEI VFQ-25 Malay version, validity, reliability.
Eyeball shape analysis in myopic school children using Magnetic Resonance Imaging (MRI): A case report

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Introduction:
Recent studies showed that apart from axial elongation, there are variations in eyeball shape, which directly influences the ocular refractive changes. We examined the eyeball shapes of 3 children using three-dimension Magnetic Resonance Imaging (3D MRI).

Methods:
Two myopes and 1 emmetrope children were involved in this study. Their refractive error was determined using subjective refraction and VA was taken using Snellen chart. Eyeball shape was assessed qualitatively using three-dimension Magnetic Resonance Imaging 3.0 Tesla (3T) and was measured quantitatively using the longitudinal axial length, horizontal width, and vertical height along the cardinal axes obtained.

Results:
Mean refractive error of subjects (2.75 ±25D) and mean age was 9 years old. Variations in the eyeball shapes and sizes were found in this study. Myopic eyes showed equatorial elongation with oblate shape and posterior pole elongation with prolate shape. Emmetropic subject showed global elongation with spherical shape.

Conclusions:
MRI can be used to analyze the eye shape. The eye shapes are different even though the degree of myopia is equal. More data is needed to confirm these findings.

Keywords: Eyeball shape, myopic, school children, Magnetic Resonance Imaging (MRI)
Visual Acuity Demand in Primary School Classrooms in Kuala Lumpur

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Background: Visual demand for children in schools is seldom being investigated. Thus, this study was conducted to determine the distance and near visual acuity demand in primary school classrooms in Wilayah Persekutuan Kuala Lumpur.

Method: This study looked at 16 classrooms from three schools in Wilayah Persekutuan Kuala Lumpur. Dimensions of each classroom (length x width) and the maximum distance from whiteboard to the centre of student’s table were measured by using laser measuring tape. Distance visual acuity demand was measured using the height of small letter Latin alphabet written by teacher and maximum distance from whiteboard to the centre of student’s table. Near visual acuity demand was measured using printed learning materials and a standardised near working distance of 26cm. Acuity reserve of 2.5 was taken into consideration in the calculation for near visual acuity.

Results: Mean distance visual acuity demand in primary school classroom was 0.19±0.09 logMAR (6/9.3), while median of near visual acuity demand was 0.36 logMAR (N6 – N8). Analysis showed that there is no significant difference between the distance and near visual acuity demand and the learning stage of primary schools in Kuala Lumpur (p > 0.05).

Conclusions: This study provided a guideline for distance and near visual acuity cut off point in developing paediatric vision screening protocols and referral criteria in Malaysia.

Keywords
Visual acuity; Demand; Children's vision; Learning; Vision
Mental Health Assessment and Serum BDNF Analysis among Traffic Police Officers from the Federal Territory of Kuala Lumpur

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Police officers are exposed to a lot of stressors including traumatic events in their working life. Therefore, policing is considered to be a high-risk profession for the development of mental health problems. Mental health has been proven to be associated with the level of brain-derived neurotrophic factor (BDNF) in the body. This study aims 1) to assess the mental health of traffic police officers in Kuala Lumpur, and 2) to measure the serum level of BDNF among the traffic police officers. Sixty-six traffic police officers and 36 administrators (control subjects) from the traffic police station located in Jalan Tun H. S. Lee, Kuala Lumpur were recruited for the study. A set of questionnaires including demographic information survey, Malay-version of the Depression Anxiety Stress Scale (DASS-42), Malay-version of the Police Stress Questionnaire (PSQ) and Malay-version of the Post-Traumatic Stress Disorder screening questionnaire (PTSD) was administered to them. Serum were collected to measure the BDNF level using immunoassay method. It was found that most of the police officers and the control subjects were in the category of unaffected for depression, anxiety, stress and PTSD. There were no significant differences shown in the level of depression, anxiety, stress and PTSD between traffic police officers and the control subjects (p>0.05). The serum BDNF level was significantly higher in traffic police officers as compared to the controls (p<0.05). In summary, Malaysian traffic police officers seemed to be mentally healthy although suffering from various work stressors. The serum BDNF level was higher among traffic police officers and this may be related to the relatively higher physical activity level among the traffic police officers due to their active working nature.

**Keywords:** Mental Health; Traffic Police; BDNF; DASS; PTSD
Hearing-aid Fitting Management Profile for Adults in Klinik Audiologi & Sains Pertuturan, Universiti Kebangsaan Malaysia

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Introduction. Hearing aid (HA) fitting is one of the audiological services offered to patients who came to Klinik Audiologi & Sains Pertuturan (KASP), Universiti Kebangsaan Malaysia (UKM) since its establishment in year 1997. It is important to know whether the HA fitting process at KASP complies with the general framework of the hearing aid fitting management (HAFM). The purpose of this study was to compare the HA fitting components for adult patients in KASP, UKM to the HAFM framework through retrospective review of patients’ case files.

Methods. This study involved two stages. Stage I involved the collection of general information of patients who came to KASP between 1st January 2014 to 30th December 2016. Stage II involved further review of adult hearing-aid fitting case, based on the HAFM framework that consists of eleven components. Frequency of the components performed on adult patients at KASP was determined. The tools frequently used during validation were also determined.

Results. A total of 38 from 1150 case files being reviewed met the inclusion criteria for Stage II. Nine of the 11 HAFM components were reported in the case files. Two components not reported in the case files were auditory training and comprehensive report. Frequency of the nine components being conducted ranges from 39% to 95%. Counselling and validation (39%) components were the least being conducted. The two most frequently used validation tools were Hearing in Noise Test (18%) and Speech Spatial Quality of Hearing Scale questionnaire (13%).

Conclusion. Overall, the results showed that there was inconsistency in terms of frequency between hearing aid fitting components conducted in KASP as compared to the general framework of HAFM. A proper guideline or checklist needs to be created and used as a reference for student clinicians or Audiologists involved in HA fitting management in KASP.

Keywords: Hearing aids; Retrospective review; Hearing aid fitting; Hearing aid management.
Relative Contributions of Auditory and Cognitive Functions on Speech Recognition in Quiet and in Noise among Older Adults

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Introduction: Hearing acuity, central auditory processing and cognition contribute to the speech recognition difficulty experienced by older adults. Therefore, quantifying the contribution of these factors on speech recognition problem is important in order to formulate a holistic and effective rehabilitation. Objective: To examine the relative contributions of auditory functioning and cognition status to speech recognition in quiet and in noise. Methods: We measured speech recognition in quiet and in composite noise using the Malay Hearing in Noise Test on 72 native Malay speakers (60—82 years) older adults with normal to mild hearing loss. Auditory function was assessed using pure tone audiogram, gaps-in-noise, and dichotic digit tests. Cognitive function was assessed using the Malay Montreal Cognitive Assessment. Results: Linear regression analyses using backward elimination technique revealed that the better ear four frequency average (0.5—4 kHz) (4FA), high frequency average and Malay Montreal Cognitive Assessment attributed to speech perception in quiet (total r² = 0.499). On the other hand, high frequency average, Malay Montreal Cognitive Assessment and dichotic digit tests contributed significantly to speech recognition in noise (total r² = 0.307). Whereas the better ear high frequency average primarily quantify the speech recognition in quiet, the speech recognition in noise was mainly quantified by cognitive function. Conclusion: Hearing acuity, central auditory processing and cognition contribute to the speech recognition in quiet and in noise among older adults.

Keywords: Speech recognition; Hearing threshold; Auditory; Cognition; Elderly
**A Systematic Review of Socio-Emotional Development of Children with Cochlear Implants**

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**Background:** Attaining socio-emotional competence is a challenge for hearing-impaired children. Some of them have opportunities to access sound by having cochlear implantation and digital amplification systems. Although children with cochlear implants (CI) were extensively recognized to show significant improvement in their speech and language abilities, there were many factors restricting their chance for having reciprocal interactions. The significant improvement of speech and language do not automatically predict the quality of social interaction. The present review addressed a more current representative population of children with hearing loss who have benefitted from cochlear implantation.

**Methods:** Guided by PRISMA Statement review method, a systematic review of the Scopus and PubMed databases identified 38 related studies. Keywords used for the search process were socio-emotional, children and cochlear implants. Only article journals with empirical data, English and timeline from 2010 to 2019 were set as inclusion criteria. The initial search generated a total of 189 abstracts were identified. A total of 105 studies were listed after criteria included. After remove duplication, 70 studies remained. Lastly, 38 eligible studies met the inclusion criteria were chosen.

**Results:** 19 studies showed comparable socio-emotional skills with peers in social interaction, empathy, emotion theory of mind and comprehension skills. Meanwhile, 19 studies were testified underprivileged results of socio-emotional functioning mainly in identifying facial expression, regulating emotion, emotional cues in auditory domain.

**Conclusions:** Socio-emotional development among CI children neither preschool-aged or school-aged was not able to be justified mainly due to their heterogeneity group, measurement and small sample size. Extensive cross-referencing, mixed-mode research design, distinguish socio-emotional functioning in details, and identify diversity groups of hearing impairment population are recommended to provide empirical evidences level of socio-emotional functioning in future.

**Keywords:** socio-emotional, children, cochlear implants
Test-Retest Stability Of Contralateral Suppression Of Transient Evoked Otoacoustic Emission: Comparisons At Two Masker Levels

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Introduction: Transient evoked otoacoustic emission (TEOAE) is a well-known test for various applications in the field of audiology. When a contralateral noise is presented, TEAOE amplitudes will decrease reflecting the auditory efferent function. As such, TEOAE suppression has been found to be useful in identifying subjects with various pathologies involving the auditory brainstem. The test-retest stability of this testing has been studied but the results are inconclusive, possibly due to the use of different test parameters. The aim of the present study was to compare the test-retest stability of TEOAE suppression when tested with low and high masker levels.

Methods: In this repeated measures study, 30 healthy young adults (aged from 20-24 years, 12 males and 18 females) were recruited. They underwent the contralateral suppression of TEAOE testing with two broadband noise levels, 45 dBHL and 65 dBHL. After two weeks, the testing was repeated.

Results: The contralateral suppression of TEAOE results obtained are consistent with the findings from the previous studies. Since no significant differences were found between the ears (p>0.05), the data for left and right ears were then pooled (n=60). When the results were compared between the first and second sessions, no significant differences were found for both masker levels at each tested frequencies (p>0.05). These outcomes were further supported by small effect sizes (0.08-0.28 and 0.05-0.27 for low and high masker levels, respectively), indicating good stability of this testing. Additionally, smaller effect sizes were noted at lower frequencies than at higher frequencies.

Conclusions: The contralateral suppression of TEOAE recorded at different masker levels was found to be stable when tested over time. Its test-retest stability is more prominent at lower frequencies. The possible reasons for this are discussed accordingly. The clinical pertinence of contralateral suppression of TEOAE is further supported by revealing its temporal stability.
Prevalence of Hearing Loss among Children with Complex Disabilities Attending Intensive Rehabilitation

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Introduction: There is little information on hearing loss (HL) among children with multiple complex disabilities attending intensive rehabilitation. Therefore, this study aimed to determine hearing status of these children at Hospital Rehabilitasi Cheras (HRC).

Methods: Using a retrospective descriptive design, we reviewed records of children aged up to 18 years old, with audiology assessments from January 2016 to December 2017 on all cases referred to the Audiology Unit, HRC. A series of hearing tests (subjective and objective) was conducted to determine the HL. Variables of interest included demographic, type and severity of hearing loss and present of speech-language disorders. Descriptive statistics were generated and proportions of children with hearing loss were compared to demographic data.

Results: Of 196 children assessed, 57.1% (mean age= 6.87) male and 42.9% female (mean age= 6.76). We encountered HL prevalence rate of 21.9%. Highest number of referrals were Malay children (71.9%) and in the preschool age group (56.1%). Most of the HL were sensorineural type (R= 10.2%, L= 9.7%) with mild hearing loss was the most prevalent level of loss for both right and left ears. 59.7% of the children had speech-language disorders. Hearing loss was significantly associated with gender ($\chi^2$ (1, N= 196) = 5.25, $p < .05$) but not with ethnicity. No significant difference between hearing loss and age ($p > .05$).

Conclusion: This study results could be used as a guideline for the treatment, and future research work.
Development of Digitized Materials for a Mandarin Nonsense Word Speech Perception Test

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Introduction: There is limited digitized Mandarin speech perception test material in Malaysia despite the increasing demand for such test, due to increasing number of individuals with hearing loss and Chinese ethnic as the second largest population in Malaysia. Mandarin speech perception tests developed in other Chinese-speaking countries are not suitable to be use in Malaysia due to vocabularies and dialectal differences. Therefore, the purpose of this study is to develop digitized materials for a Mandarin nonsense word speech perception test. Methods: In total, 400 vowel-consonant-vowel (VCV) nonsense words containing 20 Mandarin initial consonants were recorded from a female and a male Malaysian Mandarin speaker. The selection of items was based on subjective sound quality judgment by professionals and objective evaluations that includes acoustic analysis and identification testing to validate the test items. Acoustic analysis was performed to ensure the digital audio stimuli were free from idiosyncrasies such as (i) uneven pitch contour, (ii) long pauses between the initial vowel and the following consonant, (iv) unclear release burst waveform for plosives and affricate consonants, and (iv) the presence of click sound. Results: A total of 229 VCV words fulfilled the acoustic analysis criteria and were free from idiosyncrasies. These VCV words were validated by 10 Malaysian Mandarin-speaking adults with normal hearing. A total of 50 best VCV exemplars were selected for each talker-gender to develop two digitized speech perception test lists. Conclusion: Objective and subjective evaluations are crucial to select the best exemplars in developing digitized test materials for the Mandarin nonsense word speech perception test. Future direction includes establishing performance-intensity (PI) function of the test lists for individuals with normal hearing. The digitized speech perception test that has the potential to be used in local Audiology clinics to examine the speech perception performance of Malaysian Mandarin-speaking adults.

Key words: Acoustic analysis; Mandarin; Nonsense words; Performance-intensity function; Speech perception test.
Introduction: Participation in hearing screening has been suggested to cause an undue level of worry among mothers of newborns. Therefore, this study aimed to determine the level of maternal anxiety associated with a newborn hearing screening program (NHSP) in a university hospital setting in Malaysia.

Methods: A cross-sectional survey study was conducted on mothers whose babies had undergone NHSP at Hospital Canselor Tuanku Mukhriz, Universiti Kebangsaan Malaysia (HCTM, UKM). Two questionnaires, State-Trait Anxiety Inventory (STAI) and Infant Health Concern Scale (IHCS), were used to measure the mothers’ worry on a 4-point Likert scale. Irrespective of the hearing screening test results, participating mothers were required to complete the questionnaires prior to discharge from the hospital.

Results: 105 mothers participated in the study. The worry level among mothers whose babies failed the screening (mean score = 89.8) was significantly higher than those whose babies passed (mean score = 45.8). Moreover, hearing was ranked as the second aspect to cause worry among mothers when their babies failed the screening.

Conclusion: NHSP contributes to maternal worry, especially among mothers whose babies failed the screening. Revision and modification of the NHSP should be developed to minimize these adverse effects.
Introduction: Newborn hearing screening programs (NHSPs) are being implemented as part of the public healthcare system in Malaysia. However, there have been no published studies on the status of NHSPs in Malaysian private healthcare institution. The objectives of the present study were three-fold: (i) to determine the characteristics of NHSPs, (ii) to identify the screening approaches implemented, and (iii) to describe the outcomes of NHSPs from the private healthcare institution in Malaysia.

Methods: A descriptive, cross-sectional online survey was used in this study. The questionnaire contains 28 items measuring three domains: characteristics of NHSPs (7 items), screening approaches (15 items), and outcomes associated with NHSPs (6 items). 101 private healthcare institutions that are registered with the Association of Private Health Hospital Malaysia were invited to participate. A total of 22 (21.8%) private health care institutions responded to the survey.

Results: Of the 101 private healthcare institutions, 59 centres (58.5%) reported providing NHSPs. The majority of private healthcare institutions had implemented NHSPs for more than 10 years (63.2%), and 85% of the participating centres have a full-time audiologist. Concerning the screening approaches, 21 institutions (95%) offered universal newborn hearing screening using the recommended technology. The estimated prevalence of hearing loss was 3 in 1000 babies with the age of detection and intervention of hearing loss were about five months and one year old, respectively.

Conclusion: NHSPs should be offered as part of standard care in Malaysian private healthcare institution. The lack of data management and tracking system of the existing NHSPs lead to late identification and intervention of hearing loss.
The Effects Of Gender And Stimulus Frequency On Bone Conduction Thresholds Obtained With Sensorineural Acuity Level (SAL) Method

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Introduction: Pure tone audiometry (PTA) is the gold standard test for hearing diagnosis. During PTA testing, masking is commonly required to obtain the true air conduction (AC) and bone conduction (BC) thresholds, so that an accurate diagnosis could be made. However, masking problems (e.g., overmasking and masking dilemma) are commonly encountered, in which the true thresholds could not be obtained. To overcome these masking problems, an alternative method known as Sensorineural Acuity Level (SAL) was introduced by Jerger & Tillman (1960). As reported consistently, this method has been found to be accurate in estimating the BC thresholds. The present study aimed to determine the effects of gender and stimulus frequency on BC thresholds obtained with the SAL method. Additionally, it was also of interest to establish preliminary normative data for the SAL test among the Malay population.

Methods: In this repeated measures study, 30 healthy Malay adults (aged 23-51 years, 15 males and 15 females) were recruited among students and staff members of Universiti Sains Malaysia (USM). All participants underwent the SAL test as described by Jerger & Tillman (1960).

Results: Means and standard deviations of BC threshold were 34±7.6 dB, 45.0±8.6 dB, 46.2±8.7 dB, 42.7±8.6 dB and 47.7±8.3 dB at 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz frequencies, respectively. A two-way mixed ANOVA found the BC thresholds to be comparable between males and females (p=0.140). In contrast, the BC thresholds were significantly affected by the stimulus frequency (p<0.001).

Conclusions: While no notable influence of gender was found on the BC thresholds obtained with the SAL technique, the BC thresholds were significantly different across the stimulus frequencies. The preliminary normative data gathered from the present study are useful as guidelines for clinical and further research purposes.
Development of a Role Play Test for Children with Autism Spectrum Disorder and their Parents

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Introduction: Social skills training is widely used for children with autism spectrum disorder (ASD). However, most of the outcome measures are self-reported questionnaire, clinical interviews and observational measures. The role play test is efficient to assess both verbal and non-verbal social skills observed in a simulated setting. However, the existing role play tests was developed for people with schizophrenia and adults with ASD. The purpose of this study is to introduce the development of a role play test for children with ASD and their parents (RPTCP).

Methods: The RPTCP was developed based on a role play test for schizophrenics. It evaluates social skills of participants through interaction with the examiner. The RPTCP consists of five scenarios of a practice item and four skills such as listening to others, making requests, expressing positive feelings, and expressing unpleasant feelings for each child and their parents. The evaluation items consist of 15 items such as cognition of the location, coping skills, expressions and self-efficacy. We investigated the inter-rater reliability and construct validity of RPTCP from the results of an evaluation by six occupational therapists on a role play by a child with ASD and his parent. Results: The inter-rater reliability (κ=0.594) and construct validity of the RPTCP was acceptable. The construct validity evaluated by factor analysis showed three factors; i) receptive and expressive skills, ii) subjective evaluation of skills, and iii) coping skills. The internal consistency and criterion-related validity are currently being investigated. Conclusion: The RPTCP can be acceptable to be use in testing the social skills for children with ASD and their parents.

Keywords: Autism Spectrum Disorder, Social skills, Parent and child
Introduction: If someone gets difficult to eat by him/herself, s/he need dietary assistances. At that time, it is necessary to estimate the appropriate amount of bite size for the case. Therefore, we examined the differences between the bite amount of self-meal and the bite amount when assuming assistance.

Methods: This research is an exploratory observational study. The subjects were 46 healthy adults. Condition 1: The examiner instructed the subject to "Please help yourself as usual". Condition 2: Examiner shows the photographs of elderly people to the subject, "Please scoop up a bite amount assuming that this person will be assisted," and weigh each time. Three size spoons were used, and the differences of one bite amount was examined.

Spoon size are as follows; Large: 62.8X41.8X8.8mm(11.2mL), Medium: 56.6X35.8X5.0mm(5.0mL), Small: 45.1X29.9X5.1mm(3.8mL). The data was analyzed by Wilcoxon signed rank test and Kruskal–Wallis test.

Results: In condition 1&2, a significant result was obtained that the large spoon had the largest amount, followed by the medium and the small spoon, and the small spoon had the smallest amount (p<0.001). Comparing the sips of conditions 1&2 using three types of spoons, a single large amount at the time of self-meal was significantly larger, regardless of whether a large, medium or small spoon was used (p<0.001). One sip of each of the large, medium and small spoon at the time of assistance showed mutual significant to moderate correlation (r = 0.80-0.64).

Conclusion: Both condition 1&2 revealed that when the spoon is large, the bite amount increases. Gourmands tend to have more bite amounts even if they assist others. This shows that if a caregiver cannot scoop a suitable bite amount, changing the size of the spoon is effective.

Keyword: bite amount; spoon size; self-eating; assisted eating
Organizational Climate and Workplace Environment of Rehabilitation Professionals in Japan: A Literature Review

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Introduction: Increasing the number of rehabilitation professionals is desired to cope with the super-aging society in Japan. It is becoming extremely important to understand how organizational climate and work environment will affect the proficiency of these newcomers. The purpose of this study is to investigate the organizational climate and work environment surrounding rehabilitation professionals in Japan.

Methods: Database were searched using the key terms of "rehabilitation" and "organizational climate" (Thesaurus: "organizational culture") or "workplace environment". We screened the titles and the abstracts of the acquired articles, in addition, excluded duplications and those not related to rehabilitation. Considering the influence of the medical system and social system, we only analyzed Japanese articles. Furthermore, we chose those included mentioning about organizational climate and workplace environment of the therapists.

Results: Thirty-two articles were selected. Most of them mentioned work-life balance, work environment for women, workplace satisfaction, stress management, and multi-disciplinary collaboration. We could not find any article focusing on education for newcomers based on the organizational climate for therapists.

Conclusion: It is necessary to place more emphasis on studying organizational climate and workplace environment for rehabilitation professionals from the viewpoint of human resource development, and to further cultivate therapists' skills. We believe that this will be a good reference for other countries facing an aging society.

Keywords
Organizational climate; Rehabilitation professionals; Human Resource Development
Transition of Functional Training Services by Municipalities in Japan: A Literature Review

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Introduction: The Japanese government enacted the Health and Medical Service Law for the Aged in 1983. According to this law, services such as functional training are necessary to promote health. Correspondingly, the municipalities began offering functional training services. After that, the long-term care insurance was enacted, and the welfare system and medical system in Japan have been altered.

Method: A literature review was performed to explore the meaning and advantages obtained from the remaining functional training services. We searched the Japan Medical Abstracts Society database using the key term “functional training service”.

Result: 201 papers corresponded to the search term, all the papers were classified according to year of publication. Functional training was done in many municipalities in Japan after the enforcement of the Health and Medical Service Law for the Aged. Many reports on the effectiveness of the functional training were found. The long-term care insurance was enforced in 2000, and priority to this service was given for those who were eligible instead of the functional training service. Therefore, many reports rethink the meaning to the existence of functional training services have been made there after. Subsequently, reports on functional training decreases. Services continued in a few municipalities for those who cannot receive service and functional training to live in the community, (e.g. people with multiple disabilities, and those who needed rehabilitation since childhood and became adults).

Conclusion: It was suggested that municipalities should continue the functional training projects according to individual circumstances of people living in the area.

Keywords: Functional training services; Municipalities; Japan
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Relationship between Sociodemographic Characteristics and Frailty among Older Adults in Selangor

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Introduction: Elderly people are subject to the development of geriatric syndromes that can lead to frailty. In the year 2020, it is estimated that the population of elderly people will be 10% of Malaysia’s population. Identification of frailty phenotypes and its association with sociodemographic characteristics at an early stage is crucial for the development and planning of prevention by healthcare providers. Thus, this study aims to identify the sociodemographic characteristics that are strongly related to frailty and the prevalence of frailty phenotype components according to sociodemographic characteristics. Methods: A total of 249 participants were randomly selected from 10 different areas in Selangor by multistage random sampling. Frailty was categorised by using Fried Frailty Phenotype. Chi-Square test was used to examine the relationships between sociodemographic factors and frailty phenotype. Results: Frailty in elderly people was associated with age, gender and race. No association was found between marital status and frailty phenotype (p>0.05 for all parameters). In terms of age, weakness (p<0.05) and low physical activity (p<0.05) was the most predominant subdomain. While based on race, low physical activity (p<0.05) was the only predominant subdomain. In gender, the predominant subdomain of frailty phenotype is slowness (p<0.05) and low physical activity (p<0.05). Conclusion: The most common frailty phenotype in elderly people in Selangor is weakness, low physical activity and slowness. There is a need to identify these phenotypes at an earlier stage to prevent further impairment.

Keywords: Frailty; Fried Frailty Phenotype; Elderly; Sociodemographic characteristics
Profile of Sensory Processing, Praxis, and Social Participation in Children with Autism Spectrum Disorder

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Introduction: Difficulties in sensory processing, praxis (planning and ideas), and social participations may impede the developmental performance of children with autism spectrum disorder (ASD) in various aspects. Children with ASD may prefer to play alone, avoid eye contact, show little facial expression when communicating, dislike being touch, and exhibit repetitive behaviors in play. Difficulties in sensory processing have been included in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM 5). This study aims to investigate the profile of sensory processing, praxis, and social participations of children with ASD. Methods: The profile of sensory processing, praxis, and social participations among children diagnosed with ASD was assessed using the Sensory Processing Measure Home Form-Malay Version (SPM-MV). Parents or caregivers were recruited and interviewed. The form’s total sensory systems has high internal validity with cronbach’s alpha of 0.92 and high test-retest reliability with intraclass correlation coefficient of 0.98. Results: A total of 111 (89 males and 22 females) children with ASD were assessed. The aspect of social participation, planning and ideas as well as visual and auditory were reported as ‘definite dysfunction’ among children with ASD in this study. Conclusion: Findings of this study provide understanding regarding sensory processing, praxis, and social participation abilities among children with ASD. Definite dysfunction in the processing of visual and auditory senses corresponds with the inclusion of these challenges in the newly revised DSM 5 for ASD diagnosis.

Validity and Reliability of Children’s Playfulness Scale – Malay Version (CPS-M)

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Introduction: Children’s Playfulness Scale (CPS) is an informant-based scale that measures pre-school children’s disposition towards play. The scale consists of five playfulness factors, namely: Physical Spontaneity, Social Spontaneity, Cognitive Spontaneity, Manifest Joy and Sense of Humor. The CPS is an effective outcome scale, widely used and known to have a good cross-cultural validity thus may be appropriate for the Malaysian population.

Objectives: This study aims to: (i) translate CPS into Malay Language (CPS-M); (ii) evaluate its content validity (CVI); (iii) determine its internal consistency; and (iv) assess the test-retest reliability and the inter-rater reliability of CPS-M among pre-school children in Kuala Lumpur Federal Territory.

Method: Using a systematic translation approach, the English language version of the CPS was translated into Malay version (CPS-M). Ten expert panels was invited for reviews and comments on face and content validity of the CPS-M. The scale was then administered by two teachers on pre-school children in a selected school. Statistical analysis was performed to test the internal consistency, test-retest and inter-rater reliability of the CPS-M.

Results: Forty-two pre-school children consisted of 21 boys and 21 girls with the mean age of 5.76 ± 0.431 years old participated in the study. The outcome of the study supports CPS-M as a scale with an excellent content validity (I-CVI = 0.94 – 1.00 and S-CVI = 0.74 – 0.99) and internal consistency (α = 0.91–0.97). Inter-rater and test-retest reliability testing indicated that CPS-M was reliable (ICC 0.67 – 0.80).

Conclusion: The results supports the Malay version of the Children’s Playfulness Scale as a valid and reliable instrument that can be used to assess the playfulness quality among pre-school children in Malaysia.

Keywords: Children’s Playfulness Scale, translation, content validity, test-retest reliability, inter-rater reliability
The effect of Kinesio taping in addition to McKenzie exercise on lower back muscle strength in CMLBP

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Introduction: The objective of this study is to determine the effect of Kinesio Taping in addition to McKenzie exercise on muscle strength of the lower back muscles in chronic mechanical low back pain (CMLBP) patients.

Methods: This study was a randomized controlled trial pre and post test design. There were 30 subjects with chronic mechanical low back pain, age between 25-40 years. This study was conducted at Murai Installation Rehabilitation Building dr. Kariadi Hospital, Semarang on August 2017-September 2017. The subjects were randomly divided into 2 groups, the intervention group received the McKenzie exercise and Kinesio Taping while the control group received only the McKenzie exercise. Each group consists of 15 subjects. Both groups received McKenzie exercise 3 times a week for 4 weeks. The intervention group received kinesio taping 7 times in 4 weeks. Muscle strength of the lower back muscles was assessed by lifting the back dynamometer prior to intervention and the 4th week of intervention.

Results: There was a significant increased in muscle strength values at the end of the 4th week of intervention in each group. There was a difference of muscle strength delta values between both group after intervention.

Conclusion: There was a positive effect of kinesio taping in addition to McKenzie exercise on muscle strength of lower back muscles in patients with chronic mechanical low back pain.

Keywords: Chronic Low Back Pain; McKenzie Exercise; Kinesio taping; Muscle strength; Back dynamometer
Effect of Low Resistance Exercise on Baroreflex Sensitivity Function

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INTRODUCTION
Baroreflex sensitivity (BRS) has been known to decrease in patients with hypertension, diabetes and ischemic heart disease. According to the cardiovascular trial database ‘Autonomic Tone and Reflexes After Myocardial Infarction,’ BRS is said to be useful for predicting sudden death in individuals having had a myocardial infarction. The aim of this study was to examine the influence of low intensity resistance exercise on BRS function.

METHODS
The participants were 30 sedentary healthy men with a mean age of 21.0 years, mean body mass of 62.5kg, mean height of 171.1cm and a body mass index of 21.3kg/m^2. The machine used for the low intensity resistance exercise was placed on the distal end of the tibia and analogue loaded. The participants performed 20 alternate knee extensions in sitting with a 20% load of one-repetition maximum, each excursion consisting of a five-second contraction and 5-second rest. Using impedance cardiography, the autonomic nervous activity and BRS were examined during low intensity resistance exercise. Measured were heart rate, systolic BP, diastolic BP, stroke volume, cardiac output and total peripheral resistance. From the continuous R-R series taken of the heart rate from the electrocardiogram, spectral powers were quantified for the regions of high frequency (HF) and low frequency (LF). LF/HF of the R-R interval variability power ratio and HF normalised unit (HFnu) were calculated as indicators for sympathetic and parasympathetic nerve activity, respectively.

RESULTS
There was a significant post-exercise decrease in LF/HF (P=0.023), but a significant post-exercise increase in HFnu and BRS (P=0.043 and P=0.043, respectively).

CONCLUSION
Low intensity resistance exercise may improve BRS function.
Respiratory Function and Core Muscles Stability among Undergraduate Students

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Introduction: There is an association between respiratory function and core muscles. However, information regarding correlation between respiratory function and core muscles stability among undergraduates is limited. This study aimed to examine the correlation between respiratory function and core muscles stability among undergraduates. Methods: In this cross-sectional study, we recruited 60 undergraduates with mean age of 22.08 ± 1.15 years from the Universiti Kebangsaan Malaysia Kuala Lumpur campus (UKMKL). Participants’ respiratory function which included FEV₁, FVC and FEV₁/FVC were measured using a spirometer. Core muscles stability was evaluated using the Mc Gill’s core endurance test. Results: The results revealed a significant positive correlation between FEV₁ and right side bridge test (r = 0.326), and left side bridge test (r = 0.318), p < 0.05. Male undergraduates performed significantly better than females in the right side bridge test (U= 288.5, z = -2.578) and left side bridge test (U = 256, and z = -2.083), p < 0.05. However, trunk flexor and extensor test did not yield any significant correlation with the respiratory function parameters (p>0.05). Conclusion: Our study findings suggest that increase in core muscles stability may lead to increase in respiratory function. Core muscles training should be promoted among healthy young adults to improve respiratory function.
Profiles of Patients with Parkinson Disease Receiving Physiotherapy at Universiti Kebangsaan Malaysia Medical Centre

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Introduction: Parkinson’s disease (PD) is the second most prevalent neurodegenerative disorder which cause physical impairment and disability. Early and well-planned physiotherapy is required to combat impairment and disability. To enable this, sound understanding of the patients’ characteristics is important. This study was conducted to assess the profiles of patients with PD who receive physiotherapy at Universiti Kebangsaan Malaysia Medical Centre. Methods: This was a retrospective descriptive survey involving databases of 70 patients with PD who were referred for physiotherapy from January 2015 to March 2018. The variables of interest were demography (age, gender, ethnicity), disease profiles (stage of disease, co-morbidities, medication and physical ability level at the time of referral) and living arrangement. A proforma was used in retrieving required data from the patients’ record. Data were analysed descriptively. Results: The mean age of the patients was 68.93± 11.00 years, majority were women (n=37, 53%) and of Chinese ethnicity (n=36, 52%). Most of the patients (n = 52, 74.3%) have not been classified for disease stage at the time of referral to physiotherapy. With regard to co-morbidities, a total of 26% (n=18) has hypertension, and 14% (n=8) has both hypertension and diabetes, and consumed medications for three times or more per day (n =49, 70%). Although majority of the patients were still able to ambulate without aids (n =48, 68.6%), more than 30% has moderate or moderately severe physical disabilities with Modified Rankin Scale score 3 or more when starting physiotherapy. High percentages of the patients live with a caregiver and receive adequate family support (n = 67, 95.7%). Conclusion: The study findings enable greater understanding of the patients with PD at initiation of physiotherapy. Data from the study may be used to improve referral system by relevant authorities.

Keywords: Parkinson disease; profile; physiotherapy
Knowledge, Attitude And Practice Of Pulmonary Rehabilitation For Patients With COPD Among Physiotherapists In Malaysia

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Background and objectives: Chronic obstructive pulmonary disease (COPD) is an important cause of morbidity worldwide, which requires comprehensive rehabilitation. Pulmonary rehabilitation program (PRP) is a proven management program that significantly improves the lives of people with COPD and reduces hospital re-admission. However, despite the known benefits of PRP, the implementation of this program remains low in Malaysia for unknown reasons. This study is proposed to assess the knowledge, attitude and practice (KAP) of the program among physiotherapists managing patients with COPD.

Methods: A survey using self-administered questionnaires was conducted involving 70 physiotherapists (mean age = 33.03, SD = 8.35 years), mean work experience =10.31, SD= 7.47 years) working in medical areas at 12 public state hospitals in Peninsular Malaysia. The questionnaire was developed based on a questionnaire used in a previous KAP study and was validated prior to its usage.

Results: Majority of the respondents (>70%) were knowledgeable and answered 10 of 17 items in the knowledge section correctly. 84.3% of the respondents (n=59) have positive attitude towards the PRP implementation. However, 7.1% (n=5) and 10% (n=10) of the respondents implemented PRP for inpatients and outpatients COPD cases, respectively. The three main factors identified as the main barriers of PRP implementation were insufficient manpower (n=51, 73%), lack of rehabilitation skills (n=49, 70%) and limited space to run the program (n=44, 63%). No significant relationship was found between years of working experience and the practice of PRP (X²=2.371, p > 0.005).

Conclusion: A very small number of physiotherapists implemented the PRP despite having good knowledge and positive attitude on PRP. Physiotherapy managers should take appropriate action to overcome the barriers in order to increase the implementation of the PRP.
Gender Specific Physical and Psychological Health Status among Malaysian Community Dwelling Older Adults

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Introduction: Maintaining optimum physical and psychological health is important for prevention of geriatric health issues among older adults. There is limited information regarding gender specific physical and psychological health status among older adults attending primary care clinic in our local population.

Objective: The aim of this study was to examine gender specific physical and psychological health status and its correlation among older adults attending primary care clinic at Cheras, Malaysia.

Method: A cross sectional study was conducted at primary care clinic at Cheras, Malaysia. A total of 106 participants who met the inclusion and exclusion criteria were required to perform a battery of physical performance test that included 30secs chair stand (30sCS), chair sit and reach (CSR), back scratch (BS), timed up and go (TUG), single leg stance (SLS) and 2minutes walk (2MWT) tests. Satisfaction with Life Scale (SWLS) and General Health Questionnaire-28 (GHQ-28) were administered.

Results: Although not significant (p>0.05), 30sCS (lower limb muscle strength; M= 13.0, SD= 3.8), TUG (functional mobility; M= 8.6sec, SD= 1.7), SLS (balance; M= 17.9sec, SD= 8.8) and 2MWT (aerobic endurance; M= 131.8metres, SD= 33.4) was higher in males compared to females (30sSC:12.7 ± SD 3.1, TUG: 9.4sec ± SD 1.7, SLS: 15.9sec ± SD 9.2 and 2MWT:120.5metres ± SD 35.3 respectively). Women had significantly (p<0.05) higher lower body flexibility compared to men. SWLS and GHQ28 were similar between gender. There was a significant (p<0.05) weak correlation between 30sCS (r=-0.311), 2MWT (r= -0.234) and TUG (r=0.209) with GHQ-28.

Conclusion: Physical and psychological health status were similar between gender among older adults attending primary health care clinic except for lower body flexibility. Both physical and psychological health status should be promoted for maximum functional independence among older adults.

Keywords: Physical Health; Psychological Health; Older Adults; Primary Care; Malaysia
PTP-10

Oral Health Improvement and Oral Health-Related Quality of Life Improvement Following Oral Intervention for Post-Stroke Patients In A Primary Health Care Clinic

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Introduction: Stroke is a disease which results in permanent physical disability in almost one third of stroke survivors. This study aimed i) to improve patient’s oral health-related quality of life changes and patient’s oral health status after an oral health care intervention and ii) identify the type of toothbrush (powered toothbrush or modified toothbrush) in improving oral hygiene status. Methods: The stroke survivors was assessed for overall quality of life using the Euroqol EQ5D5L, and oral health-related quality of life using the Oral Health Impact Profile -14 (OHIP 14) questionnaire. Oral examination included Decayed/Missing/Filled Teeth (DMFT) index, basic periodontal examination (BPE), and the Silnes and Loe Index for plaque scores and bleeding scores. A total of 47 subjects were recruited. Results: There were no significant changes in the EuroQol EQ5D5L between groups (P > 0.05). No significant changes were also reported in the OHIP-14 item values between groups (P > 0.05). Lastly, there were no significant changes in dental plaque and bleeding percentage levels between groups (P > 0.05). Conclusion: This research shows that post-stroke patient have a low quality of life and a low oral health-related quality of life which were likely due to poor oral hygiene habits.
Objective quantification of speech performance has been an issue in the speech-language-pathology field, due to the lack of equipment and software. Often, subjective methods were used to judge one’s speech performance. Subjective measurements on speech performance would depend on the clinician’s experience and have shown low interrater reliability. To solve this issue, this paper introduces the SpeQ, a newly developed software using Matlab® to objectively quantify speech performance. The SpeQ has two functions: (1) as a visual presentation for subjects while doing dual tasks (i.e., speech and manual tasks, speech and cognitive tasks, speech and linguistic tasks), and (2) records and calculates the speech response reaction time (RRT) and duration of sentence (DoS) production by a subject. We present a demo/showcase of a trial session on a healthy adult using the SpeQ. The potential use of the clinical protocol based on SpeQ will be illustrated. The SpeQ could be implemented in research and clinical settings to better understand speech performance between normal speakers and motor speech disorders speakers (i.e., Parkinson's disease, stroke, stuttering).

**Keywords:** software; speech; dual-task condition; duration; reaction time.
Challenges and Potential Strategies for Improving Aphasia Management: Perspectives of Malaysian Speech-Language Therapists

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Aphasia is an acquired disorder caused by brain damage, resulting in difficulties with comprehending and producing language despite preserved sensory, motor, and intellectual abilities (Hallowell, 2017). Speech-language therapists (SLTs) play a major role in aphasia management in regions of the world where their expertise is recognized. In Malaysia, the first university program to educate SLTs was founded in 1995 (Ahmad, Ibrahim, Othman, & Vong, 2013) and much has been done to further the national standing of the field. As is common in the development of programs in underserved regions of the world, there has been a much greater focus on addressing the needs of children relative to adults (Hallowell, 2017). To date, much of the SLT curriculum in the area of adult neurogenic language disorders emphasizes an impairment-based understanding of aphasia and means of aphasia rehabilitation. The current study is part of a larger initiative to gather evidence regarding the perception of Malaysian SLTs regarding opportunities and challenges in supporting life participation needs of PWA. Our objectives were to: (a) identify challenges faced by Malaysian SLTs in providing services to people with aphasia (PWA) and (b) explore SLTs’ suggestions for improving aphasia management. We interviewed 32 SLTs who provided services to PWA at least for the past year. Based on thematic content analysis, Resource Limitation was found to be a central theme related to challenges faced by SLTs. Resource Limitation can be parted into four categories: Human Resources, Financial Resources, Structural Resources, and Impacts of Resource Limitation. Two themes were identified as potential strategies for improving SLT services for PWA and others affected by aphasia: Expanding Workforce and Enhancing Collaborative Efforts. Findings are useful in planning for further development of service capacity and support for PWA relevant to their local contexts.
Pilot Study: The Accuracy of Language Environment Analysis System (LENA) in Estimating Speech-language Segments for Native Malay Speakers

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Automated methods of sampling are currently more available to researchers, with the advantage of better facilitating them in the analysis of speech, language and communication samples; one of which is the Language ENvironment Analysis (LENA) System. LENA is designed to capture and process spontaneous speech-language samples of children in their natural environments, providing automated measures of speech produced by the child and overheard speech. The aim of the present study is to examine the accuracy of LENA in analyzing Malay language samples, compared to the traditional human manual counts. Spontaneous speech-language samples of six native Malay speaking-children ranging from 4 to 8 years old were obtained. Recording sessions ranged from 30 to 45 minutes per session, from which a total of 15 samples were selected for analysis (each comprised of 5-minute segments). Prior to analysis, samples were transcribed using a Transcriber Software. Subsequently, statistical correlation and agreement tests were run to determine the relationship between LENA and human manual counts measures of adult word counts (AWC) and child vocalization counts (CVC). Measurements of AWC and CVC within these selected speech-language segments were highly similar for both LENA and human manual counts (AWC, $r = 0.70$ and CVC, $r = 0.89$). However, the Bland Altman plots showed proportional biased for AWC. In contrast, there is no proportional biased for CVC. LENA is able to capture Malay language in a spontaneous free play. There is a strong correlation for both AWC and CVC in Malay language, however the limits of agreement were wide for both parameters. Thus for the given samples, LENA was affected by differences between samples which did not give rise to similar effects for human manual counts. We are still unable to conclude within which limits LENA’s parameters are comparable to human manual coders. Clinical implications are further discussed.

Keywords: Automatic speech recognition; Adult word count; Child vocalization count; Human manual counts; Malay
Improving Care for Patients with Dysphagia: Monitoring Sustainability of Patient’s Compliance towards Diet Modifications

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Introduction: Our previous study had shown that compliance rate towards diet modifications and liquid consistencies were 60% to 82.5% amongst inpatients with dysphagia during pre and post-remedial measures. This study aimed to examine whether the compliance rate was sustained or reduced amongst inpatients with dysphagia at Hospital Rehabilitasi Cheras (HRC) undergoing rehabilitation and to identify factors associated with non-compliance.

Methods: A descriptive, non-experimental cross sectional study was conducted. 25 patients with dysphagia on diet modification and liquid consistency were identified. Data was collected and analyzed through observation for every meal (breakfast, lunch, afternoon tea and dinner) within five consecutive days.

Results: 434 meals were recorded. The compliance rate of modified consistencies diet and liquid consistencies was 79% (n=345). The most contributing factors of non-compliance were dissatisfaction to taste and texture (47%), followed by served wrong diet consistencies (19%), patients took outside food (9%), and greater difficulty in swallowing (7%). However, there was high percentage of non-compliance (18%) due to other factors such as patients had gum bleeding, loss of appetite and had their meals late due to extended therapy sessions. There was a significant association between i) ethnicity; ii) age group with compliance rate (p<0.05). Chinese was more complied than Malay and Indian whilst younger group (aged 18-40 years old) showed reduced compliance rate compared to middle and older age group. No significant association was found between gender and compliance rate (p=0.670).

Conclusion: Continuous monitoring patient’s compliance towards diet modifications and liquid consistencies, betterments of food texture and taste along with patient education proved in sustaining compliance rate for quality health care.

Keywords: Dysphagia, compliance rate, diet modifications, liquid consistencies, inpatient rehabilitation
Pilot Study Findings Of Screen Time Usage Towards Language Development Between Typically Developing Pre-School Children And Autism Spectrum Disorder (ASD)

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With technological advancement, young children have been increasingly exposed to various handheld devices. Data vary on the amount of time preschool children spend with screen media, but even the most conservative findings showed that children between the ages of two and five spend an average of about 2.2 hours per day on screen. Previous literature have shown detrimental effects of screen time on child development including language. However, these studies are limited and have not been extended to the Malaysian population. The purpose of this study is to present the results of our pilot study findings that compared screen time usage towards language development between pre-school children who are typically developing (TD) and children with Autism Spectrum Disorder (ASD). This is a cross-sectional pilot study that involved a total of 20 pre-school children (10 TD and 10 ASD). Sociodemographic data were obtained and parents filled in a set of questionnaire assessing screen viewing time (SVT) and the contents of SVT. Each child was further assessed using Developmental Assessment of Young Children 2nd Edition comprising 5 domains (communication, adaptive behaviour, cognitive, social emotional and physical development). The results show that children with ASD (mean: 4.33 hours) spend more time than TD children (mean: 3.72 hours) on SVT. Results of bivariate Pearson’s product-moment correlation coefficient between SVT and language development was r (18) = -0.510, p>0.01. Results further indicate a moderately negative relationship between SVT and language scores. Further data is needed to ascertain our pilot study findings in order to recommend accurate guideline and advocacy efforts regarding SVT and its impact on language development in young children.

Keywords: Screen time, language development, communication, pre-school children, ASD
Development and Validation of a Preschool Teachers’ Knowledge, Attitudes and Practices toward Children with Communication Disorders Questionnaire

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Previous studies have reported that there is a lack of knowledge and skill among teachers in managing children with communication disorders. To date, little is known about knowledge and skill of teachers in managing children with communication disorders in Malaysia. The current study is aims to collecting information about Malaysians’ preschool teachers’ knowledge, attitudes, and current practices as well as challenges that the preschool teachers faced in managing children with communication disorders. A questionnaire will be developed and distributed to all teachers at Prasekolah Masalah Pembelajaran in Malaysia. The results of this study will be described and discussed. The results of this study may help preschool teachers who lack of skill and knowledge on the communication disorders to fulfill the needs of their students.