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International conference on Neurology and Neurological Disorders

September 21-22, 2023



Alan Wang

Auckland Bioengineering Institute, University of Auckland, Auckland
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Title: Intelligent Neuroimaging Quantification for Post-stroke Recovery Prediction and Precision Rehabilitation

Stroke is the second leading cause of death and a significant cause of disability worldwide. Its incidence is increasing because of the aging population. A key challenge in stroke rehabilitation is identifying an individual's recovery potential to make personalized neurorehabilitation decisions, avoiding a "one-size-fits-all" approach because stroke is a vascular disease with highly heterogeneous effects on injury and recovery. The recent advances in artificial intelligence technologies will be introduced in the talk for generating intelligent computational models that enable precision prediction of post-stroke outcomes and precision rehabilitation.

Post-stroke outcomes, e.g., motor function, can be predicted using structural and functional biomarkers of the descending corticomotor pathway, typically measured using magnetic resonance imaging and transcranial magnetic stimulation, respectively. However, the precise structural determinants of intact corticomotor function are unknown. Identifying structure–function links in the corticomotor pathway could provide valuable insight into the mechanisms of post-stroke motor impairment. This talk will introduce the supervised machine learning approach to classify upper limb motor evoked potential status using MRI metrics obtained early after stroke.

Based on the intelligent post-stroke recovery prediction, the optimal multi-target electromagnetic nerve stimulation system will be introduced in this talk for achieving personalized precision rehabilitation. Temporal interference magnetic stimulation can stimulate deep targets without activating superficial non-target areas. However, at present, the stimulation target of this technology is single, and it is challenging to realize the coordinated stimulation of multiple brain regions, which limits its application in the modulation of multiple nodes in the brain network. This talk will introduce a multi-target temporal interference magnetic stimulation system with array coils. Multi-target temporal interference magnetic stimulation with array coils can simultaneously stimulate multiple network nodes in the brain region and realize accurate stimulation of multiple targets in the brain area.

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Biography

Alan Wang is a principal investigator and Associate Professor at The University of Auckland. He has more than ten years of research experience in bioengineering informatics and integrated medicine, especially in advancing the role of medical informatics in health care. His research interests include bioengineering, data informatics, neurocomputing, and biomedical statistics and simulation. He has developed medical data analytics methods for mobile health and personalized diagnosis and prognosis based on intelligent computing theories. He has experience analyzing huge cohorts of patient data with applications of early diagnosis, disease understanding, and effective treatment of patients with different disorders. He serves as an Editorial Board Member and an Active Reviewer for several international journals

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Yue Tian

Peking Union Medical College Hospital, Beijing 100730, China

Title: Insulin-degrading enzyme: Roles and pathways in ameliorating cognitive impairment associated with Alzheimer's disease and diabetes

Alzheimer's disease (AD) and diabetes cognitive impairment (DCI) exhibit similar pathological characteristics, specifically the excessive accumulation of β -amyloid ($A\beta$) in the central nervous system (CNS). Insulin-degrading enzyme (IDE) is an enzyme of degrading both insulin and $A\beta$, prompting extensive investigation into the mechanisms through which IDE can improve these two cognitive disorders.

In terms of basic research, several potential mechanisms have been identified by which IDE improves AD and DCI. These mechanisms include increased expression of IDE in the CNS, facilitating the degradation of $A\beta$ and thereby reducing its accumulation in the brain. Furthermore, IDE may ameliorate AD-related cognitive impairments by alleviating neuronal damage, suppressing excessive activation of glial cells, and inhibiting the excessive release of inflammatory factors. In relation to AD-related pathways, IDE may decrease the accumulation of $A\beta$ in the CNS, subsequently improving AD-related cognitive impairments through activation of the PI3K/Akt/GSK3 β , PPAR γ , and AMPK pathways, or inhibition of the ERK/JNK/p38 MAPK and NF- κ B pathways. Additionally, in the study of DCI, IDE may improve this condition by activating the PI3K/Akt/GSK3 β pathway or inhibiting the Cdk5/p35 and cAMP/PKA pathways, and reducing $A\beta$ accumulation and neuronal apoptosis in the brains.

In conclusion, considering the shared pathological characteristics of AD and DCI, as well as the involvement of IDE in $A\beta$ degradation, IDE emerges as a promising therapeutic target for improving both conditions. We anticipate more innovative research findings regarding IDE in the treatment of AD and DCI, which will potentially expand the range of scientifically effective candidate drugs for clinical treatment.

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Biography

Yue Tian, aged 28, is currently pursuing a doctoral degree in Integrative Clinical Medicine at Peking Union Medical College. His research primarily focuses on the use of traditional Chinese medicine (TCM) in the prevention and treatment of Alzheimer's disease and cognitive impairments associated with diabetes. He has published three academic papers in this area. In the future, he intends to continue his research, with a specific emphasis on the fundamental and clinical studies of TCM for age-related cognitive impairments. His goal is to promote new developments in the field of foundational scientific research and clinical treatments related to TCM.

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Mary Anbarasi Johnson

Professor and Head, Pediatric Nursing Department, CMC Vellore

Title: Spirituality and Child Care -nursing Perspective

Children are the future of any family, community and nation and world at large. They are not miniature adults but individuals with sensitivity. They have a lot of challenges due to the stages of growth and development and the various demands related to that. Children may have stress of various levels as they go through the process of growth and development and it is very essential that the nurses are sensitive to their needs. Spiritual strengthening of children will certainly enable them to cope with the challenges and stress. Pediatric nurses need to spend adequate time not only in catering to their physical and emotional needs but also to their psychosocial and more importantly their spiritual needs.

Biography

I am Mary Anbarasi Johnson (My grand parents from a hindu back ground), I lost my father and in an accident and few siblings as well when I was five years old. It was the miraculous touch of Lord Jesus Christ shared by that nurse in CMC which enabled a spiritual healing in my life. If a single nurse can influence a child for life time, how much more can be done by pediatric nurses in mentoring for spiritual care of children who can get spiritual healing besides the physical healing when they visit the hospital. I strongly believe that Lord Jesus Christ is the only true living God who can heal and restore anyone on earth and for eternity.

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Kimia Moiniafshari

PhD, Exercise Physiology

Title: Effect of Combined Exercise Training on Alzheimer's Disease Quality of Life

Aging, may affect brain in several aspects including structure and function, which can be considered as an indicator for the risk of neurological impairments including Alzheimer's disease. It has been suggested that the blood flow to the brain will decrease by the age, the structure of brain may change and cognition impairment may occur as a result. Several studies have focused on the effect of lifestyle interventions as physical activity on the Alzheimer's disease progression and management. It was assumed that aerobic exercise even as a leisure activity may improve patient's condition via improving brain network plasticity and neural empowerment. On the other hand, other investigations have suggested that strength training may be effective due to the increase in physical fitness parameters including muscle strength and increase in BDNF serum level. In this study, we aimed to assess the effect of aerobic and strength training on a 73 years old patient diagnosed with Alzheimer's quality of life and independency. After medical assessment, the physical activity program was prescribed under physiotherapist and exercise physiologist supervision. The physical activity intervention lasted for 8 weeks, 3 days per week and 30-45 minutes for each session. Each session followed 5 minutes warm up, combined aerobic and strength training for 30 minutes and 10 minutes of cooling down. The physical activity protocol consisted of treadmill walk with progression in slope and Dumble press according to 1RM. The results showed improvement on muscular strength and independency which may indicate better quality of life.

Biography

Kimia Moiniafshari, has been graduated from BSc in nutrition science and PhD of exercise physiology. Since 2015, she became interested in neuroscience and its relation with nutrition, physical activity and lifestyle. Since 2018, she started to investigate more about neuroscience, neurodevelopmental and neurodegenerative disorders and also their underlying mechanisms from cells to organ. Her main interest of research, is to finding out more about the lifestyle and environmental factors effect on quality of life in public health with more emphasize on neurodevelopmental and neurodegenerative disorder in order to plan and recruit more effective health intervention to improve public health status.

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Joao Rafael Rocha da Silva

Connect Life Rehabilitation and Performance

Title: Evaluation of the abdominal transverse muscle in individuals with low back pain: a literature review

Low back pain is the leading cause of years lived with disability in the world. Despite the relevance of the subject in the literature, some authors have criticized and conducted studies without methodological criteria for the evaluation of the transverse abdominis muscle, creating a gap in knowledge and divergences in evidence-based practice. Objective: The aim of the study was to carry out a literature review, looking for studies that observed changes in the Transverse Abdominal muscle in individuals with low back pain. Methods: The following keywords were used as methodology: Low back Pain, Lumbago, Transverse Abdominal, Transversus Abdominis, Transverse Abdominals, In the following databases: Pubmed 137 studies, Web of Science 625 studies, Scopus 228 studies. Inclusion criteria: Studies that evaluated the Transverse Abdominal muscle in individuals with pain were selected for analysis of the results. Exclusion criteria: Studies that evaluated only healthy individuals, studies that addressed treatment or therapeutic intervention, studies conducted before 2016, duplications by authors, or those that did not use evaluation as methodology were excluded. Results: Finding a total of 990 studies, after elimination for duplication, 725 articles remained. After being analyzed and selected by the inclusion and exclusion criteria, 18 studies were selected. Conclusion: The Transverse Abdominal muscle showed changes in its muscle thickness, neuromuscular activation, motor control, between healthy individuals and individuals with low back pain, being evaluated in different postures and populations. It is suggested that the evaluation of the transverse abdominal muscle should be performed in patients with low back pain, as an important dysfunctional diagnostic tool for these patients.

Biography

Physical Therapist João Rafael Rocha da Silva, Postgraduate Degree in Sports Rehabilitation Sports Orthopedics and Traumatology CETE Federal University of São Paulo, Improvement in Pain Assessment and Interdisciplinary Treatment Hospital das Clinicas, USP Medical School. Published two works in 2022 “Manual Therapy in the Treatment of Pain” Revista Neuro Ciencias and “Assessment of the Transversus Abdominal Muscle in Individuals with Pain” Med Crave Neurology Journal, Scientific Reviewer.

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Ayşe Özaydın Özkaraman

Associate Professor Ayşe Özkaraman, Nursing Department, Eskisehir,
Turkey

Title: Education Material for Nurses: Application of Smart Telephone

Background: Today, developments in science and technology affect every occupational group as well as the nursing profession which is an important part of the health sector. In order to provide continuous and high quality care and to follow the developments in care, there should be continuity in the care education. However, reasons such as notably the shift working conditions of the nursing profession, intensive work tempo and the lack of educational tools make it difficult to sustain these educations. For this, nurses have begun to prefer e-learning programs which can give flexibility to their lives.

Objective: In this project, it was aimed to develop mobile training material on the smartphone to provide nurses a continuous education and to create an appropriate environment, time and innovative learning tool in the learning process.

Method: The research methodology was carried out in two stages. First stage; The development of Turkish mobile training material, the second stage is the evaluation of the validity of the mobile training material in terms of information quality and reliability, and visual design suitability. The information quality, reliability, readability and visual design of the mobile training material developed for use on Android and IOS smartphones was assessed by 10 experts(nursing education specialist, distance education specialist, nurse, computer engineer), twice, by means of the Discern Measurement Tool and Visual Design Control Scale. After the first expert evaluation, the content was updated and a second evaluation completed.

Results: The Discern Measurement Tool's total score for the training material configured for smartphones was calculated at 70.80 ± 2.57 out of 75. According to the calculations, the statistical concordance of the expert opinions with each other was moderate (Kendall's $W= 0.664$). The mobile training material was evaluated in terms of visual design suitability, which experts scored "very good" in all sub-dimension, except for multimedia use(Kendall's $W= 0.672$).

Conclusion: The information quality and the reliability of the training material configured for smartphones is high and this training material is validated.

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Brandon Lucke-Wold

Department of Neurosurgery, University of Florida

Title: Mechanisms of Mitochondrial Oxidative Stress in Brain Injury: From Pathophysiology to Therapeutics

Mitochondrial oxidative stress has been implicated in various forms of brain injury, both traumatic and non-traumatic. Due to its oxidative demand, the brain is intimately dependent on its mitochondrial functioning. However, there remains appreciable heterogeneity in the development of these injuries regarding ROS and their effect on the sequelae. These include traumatic insults such as TBIs and intracranial hemorrhaging secondary to this. In a different vein, such injuries may be attributed to other etiologies such as infection, neoplasm, or spontaneous hemorrhage (strokes, aneurysms). Clinically, the manner of treatment may also be adjusted in relation to each injury and its unique progression in the context of ROS. In the current review, then, the authors highlight the role of mitochondrial ROS in various forms of brain injury, emphasizing both the collective and unique elements of each form. Lastly, these narratives are met with the current therapeutic landscape and the role of emerging therapies in treating reactive oxygen species in brain injuries.

Biography

Dr. Brandon Lucke-Wold was born and raised in Colorado Springs, Colorado. He graduated magna cum laude with a BS in Neuroscience and distinction in honors from Baylor University. He completed his MD/Ph.D., Master's in Clinical and Translational Research, and the Global Health Track at West Virginia University School of Medicine. His research focus was on traumatic brain injury, neurosurgical simulation, and stroke.

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Gbayisomore Tolulope Judah

University of Benin Teaching Hospital, Benin City, Nigeria

Title: Unraveling the Nexus of Neuroinflammation and Chronic Diseases: Insights and Implications for Prevention and Treatment

Chronic diseases, including neuroinflammatory conditions like Alzheimer's disease (AD) and Parkinson's disease (PD), have been associated with inflammation, a fundamental component of the innate immune response. The aim of this study is to investigate the impact of neuroinflammation on chronic diseases, with a specific focus on diabetes, IBS, and myocarditis. A comprehensive review of relevant literature was conducted to gather information on the relationships between inflammation and chronic diseases, particularly diabetes, IBS, and myocarditis. This review included epidemiological data, mechanistic studies, and investigations into potential therapeutic agents. Additionally, we examined signaling pathways implicated in inflammation, such as nuclear factor- κ B (NF- κ B) and mitogen-activated protein kinase (MAPK), to understand their roles in disease progression. We also explored the anti-inflammatory properties of natural compounds, including *Phyllanthus amarus* and *Aframomum melegueta*, through a review of their bioactive components and reported effects on inflammation. Our review revealed compelling evidence of the interconnectedness between inflammation and chronic diseases, particularly in the context of neuroinflammatory conditions like AD and PD. Diabetes was found to share molecular and cellular features with AD, emphasizing the significance of insulin in both conditions. Furthermore, IBS displayed a strong association with neuroinflammation via the "gut-brain" axis, affecting neuroendocrine pathways. Myocarditis emerged as a key contributor to heart diseases, with environmental factors such as Lipopolysaccharide (LPS) playing a substantial role in its pathogenesis. Signaling pathways like NF- κ B and MAPK were identified as potential targets for anti-inflammatory drug development. Natural compounds like *Phyllanthus amarus* and *Aframomum melegueta* demonstrated promising anti-inflammatory properties, offering potential therapeutic options for mitigating inflammation in chronic diseases. In conclusion, Inflammation plays a pivotal role in the development and progression of chronic diseases, including neuroinflammatory conditions like AD and PD. The shared molecular and cellular features between diabetes and AD underscore the importance of understanding their intricate connection. We suggest several key recommendations. First, there is a need for further research into the development of anti-inflammatory drugs that target specific signaling pathways like NF- κ B and MAPK, which play critical roles in chronic diseases. Second, exploring the therapeutic

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potential of natural compounds present in plants such as *Phyllanthus amarus* and *Aframomum melegueta* for treating chronic diseases should be considered as a priority. Additionally, continued investigation of the “gut-brain” axis and its relevance in neuroinflammatory conditions holds promise for understanding and managing these complex diseases. To advance our knowledge, the development of advanced animal models and sophisticated in vitro systems that accurately replicate human disease processes, considering immune responses and environmental factors, is essential. Lastly, comprehensive epidemiological studies, especially in regions like Africa, are crucial for gaining insights into the prevalence and impact of chronic diseases. In conclusion, unraveling the intricate relationship between neuroinflammation and chronic diseases is vital for developing effective prevention and treatment strategies, ultimately improving the quality of life for those affected by these conditions.

Biography

Tolulope Gbayisomore, a rising star in neuroscience, graduated with distinction from the University of Medical Sciences in Nigeria at just 19 years old. His groundbreaking research, including his thesis titled “Anti-inflammatory, anticholinesterase, antioxidant, and memory enhancement potential of *Phyllanthus amarus* in potassium-dichromate induced neurotoxicity of male Wistar rats”, demonstrates exceptional precision and innovation. Beyond his academic achievements, Tolulope chaired the Local Organizing Committee for the 4th Eco Award and Neuro-Quiz organized by the neuroscience society of Nigeria (NSN), fostering undergraduate growth in neuroscience. He is the visionary founder of ResearchBro, an institution dedicated to nurturing the talents of budding researchers. In his role as Research Operations Supervisor, he has made significant contributions to and mentored over 120 research projects, cultivating an ethos of inquisitiveness and exploration. He also contributed as a peer reviewer for the JSciMed Central Journal of Pediatric Neurology. As a Sustainable development Solutions network Nigeria advocate for the UN’s Sustainable Development Goals, he champions health and well-being. With a research focus on neuroepidemiology, Tolulope’s multidimensional contributions make him an inspiring keynote speaker for the Neurology Conference.

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Jean Davison

Clinical Associate Professor of UNC- Chapel Hill, NC, USA

Title: Transforming Health Outreach to the NC Farmworkers Project by Nurse Practitioners Utilizing Telehealth during the COVID 19 Pandemic 2020-21 with Follow-up Screening and Vaccination Clinics

President Donald Trump declared the novel coronavirus pandemic a National Emergency. This declaration allowed CMS and every hospital to go into emergency preparedness plans. The National Emergency Declaration presented the U.S. healthcare delivery system unprecedented challenges, but also encouraged rapid adoption of telehealth that transformed healthcare delivery (JAMiA, 2020). During that presidential news coverage, the White House Task Force discussed increasing diagnostic testing, removing restraints to testing and beginning social distancing, but being mindful of the fact there was a shortage of personal protective equipment (PPE) with N95 mask, goggles and gloves reserved only for essential healthcare workers.

North Carolina's Governor Roy Cooper Issued Statewide "Shelter-in-Place" Proclamation; to begin 3/30/20 to protect against the spread of COVID-19. This was during the time when many H2A workers were arriving in NC. Many outreach workers that assist agricultural / farmworkers were lacking PPE as NC agricultural season began.

Biography

Jean is a Clinical Associate Professor in the Nurse Practitioner program at the UNC School of Nursing and Public Health where she teaches DNP and MSN courses as well as the Enhanced Role RN Physical Assessment of Adults and STD Training at the N.C. Institute for Public Health.

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Maria. Morello

Department of Experimental Medicine, Faculty of Medicine, Tor Vergata University, Rome, Italy

Title: Inflammatory Proteins and Neurodegeneration: From Clinical Significance to Quantification

Background: Neuroinflammation is a common effect of neurodegenerative diseases such as Alzheimer's disease (AD), Parkinson's disease (PD) and Multiple sclerosis.

Several Inflammatory mediators (cytokines and specific proteins) are synthesized during neuronal loss that characterizes the neuroinflammatory processes.

Some inflammatory proteins can be detected in cerebral blood fluid (CSF) that is in direct contact with the nervous system.

Objective: In order to evaluate: i) relationships between inflammation molecules and specific biomarkers for AD, PD and MS ii) and whether the measure of specific markers levels and inflammatory molecules, correlate to the different stage of severity of neurodegenerative diseases, we assayed pro-and anti-inflammatory cytokines, end neurofilaments in CSF and serum of patients affected by AD, PD and MS.

Results: Our preliminary data shows a widespread involvement of inflammation during the progression of neurodegeneration in AD, PD and MS. In particular, in MS, a more evident increase of CSF inflammatory molecules was observed.

Conclusion: The analysis of inflammatory molecules and specific biomarkers for AD, PD and MS were extensively studied in biological fluids and CSF, although very few investigations reported the alteration of inflammatory molecules in the early stages of neurodegenerative diseases. To date, only few investigations showed the changes of inflammatory molecules at the onset of the neurodegeneration. The creation of a sort of "inflammatory panel" related to specific diagnostic biomarkers for AD, PD and MS, and together to neuroimaging, could support clinicians to formulate a better diagnosis and personalized pharmacological choices.

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Biography

Maria Morello, PhD, is a full-time senior researcher and adjunct professor at University of Tor Vergata, Rome. She performs hospital care activities at University Hospital and also, she carries teaching activity in Clinical Biochemistry to medical students and biotechnology students. Her research activity has been focused mainly on the study of biochemical markers in neurodegenerative diseases as well as cytokines and vitamins in autoimmune diseases and the evaluation of cytokine and inflammatory markers in Covid. She is the author of several publications in international scientific journals and has given several oral presentations at national and international congresses, conventions and meetings.

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Melaku Tadesse

University of Gondar Hospital, Gondar, Ethiopia

Title: Determinant of post stroke depression among stroke survivor at University of Gondar Hospital Case-Control study

Background: Stroke is one of the most common causes of disability among adults. Post-stroke depression (PSD) is a frequent neuropsychiatric complication in stroke patients. Despite the increasing prevalence of stroke, there is a paucity of data on PSD and its determinants among stroke survivors in developing countries like Ethiopia.

Method: A case-control study was among stroke survivors. A diagnosis of PSD was made using the Patient Health Questionnaire (PHQ-9). Bivariate and multivariate logistic regressions were fitted to identify associated variables. The adjusted odds ratio (AOR) with 95% confidence interval (CI) and p-value 0.05 were used to determine the significance of the association.

Result: A total of 240 stroke survivors were included (80 cases and 160 controls). The mean age was 60.8 years (SD \pm 14.3) with an equal sex distribution. sub-cortical location of the largest lesion (AOR = 2.42, 95% CI: 1.06– 5.56, p-value = 0.036), severity of the stroke (AOR = 52.34, 95% CI:10.64-256.87, p-value = 0.000), physical disability (AOR = 5.85, 95% CI:1.94–17.65, p-value = 0.002), previous history of stroke or transient ischemic attack (AOR = 5.90, 95% CI:2.04–17.10, p-value = 0.001) and ischemic heart disease (AOR = 9.97, 95% CI:3.4-29.22, p-value = 0.000).

Conclusion: Important factors in the occurrence of PSD include prior history of stroke, physical disability, severity of the stroke, sub-cortical location of the lesion, male gender, and ischemic heart disease. Stroke patients' needs routine screening for PSD, particularly in LMICs with uncoordinated post-stroke care, a shortage of neurologists and mental health practitioners.

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Biography

I am a highly accomplished professional with a strong background in research and clinical expertise. Renowned for their exceptional research knowledge and advisory skills, I have made significant contributions to the field of healthcare. In addition to my clinical expertise, I have consistently demonstrated a passion for research and a commitment to advancing medical knowledge. With a blend of research acumen, clinical excellence, and training proficiency, I continues to impact the healthcare industry positively. My dedication to scientific inquiry, patient care, and education makes me a highly sought-after professional in the field.

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Sambardhan Dabadi

Department of Biomedical Engineering, Annapurna Neurological Institute and Allied Sciences. Kathmandu, Nepal

Title: Customized Cranial Implant With 3d Printing Technology and Polymethyl Methacrylate (Pmma): a Low Cost Option for Patients in Developing Country

Cranioplasty is one of the most common neurosurgical procedure performed to repair cranial defect. Many materials and fabrication technique are used to prepare cranial implant in cases where autologous bone is not available. Polymethyl Methacrylate (PMMA) is one of the most common polymer used as bone substitute. PMMA fabricated using 3D printed models have shown better fit, symmetrical shape and restore aesthetic looks of patients. The use of 3D printed implants in medical procedures has several advantages over traditional manufacturing methods. 3D printing allows for greater precision, customization, and quicker implant time. Fabrication of custom shape and sized PMMA implants are shown to have promising results in our study. This has helped to reduce the financial burden to patients as they are way too cheaper in comparison to other customized implants. In country like Nepal, where patient have to pay out of their pocket for treatment, this 3D printing technology is proven to be a best option for cranioplasty.
