JOINT EVENT

12TH EDITION OF INTERNATIONAL CONFERENCE ON

NEUROLOGY AND BRAIN DISORDERS

&

6TH EDITION OF GLOBAL CONFERENCE ON

ADDICTION MEDICINE, BEHAVIORAL HEALTH AND PSYCHIATRY

OCT 20-22, 2025 | ORLANDO, FLORIDA, USA

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BOOK OF ABSTRACTS

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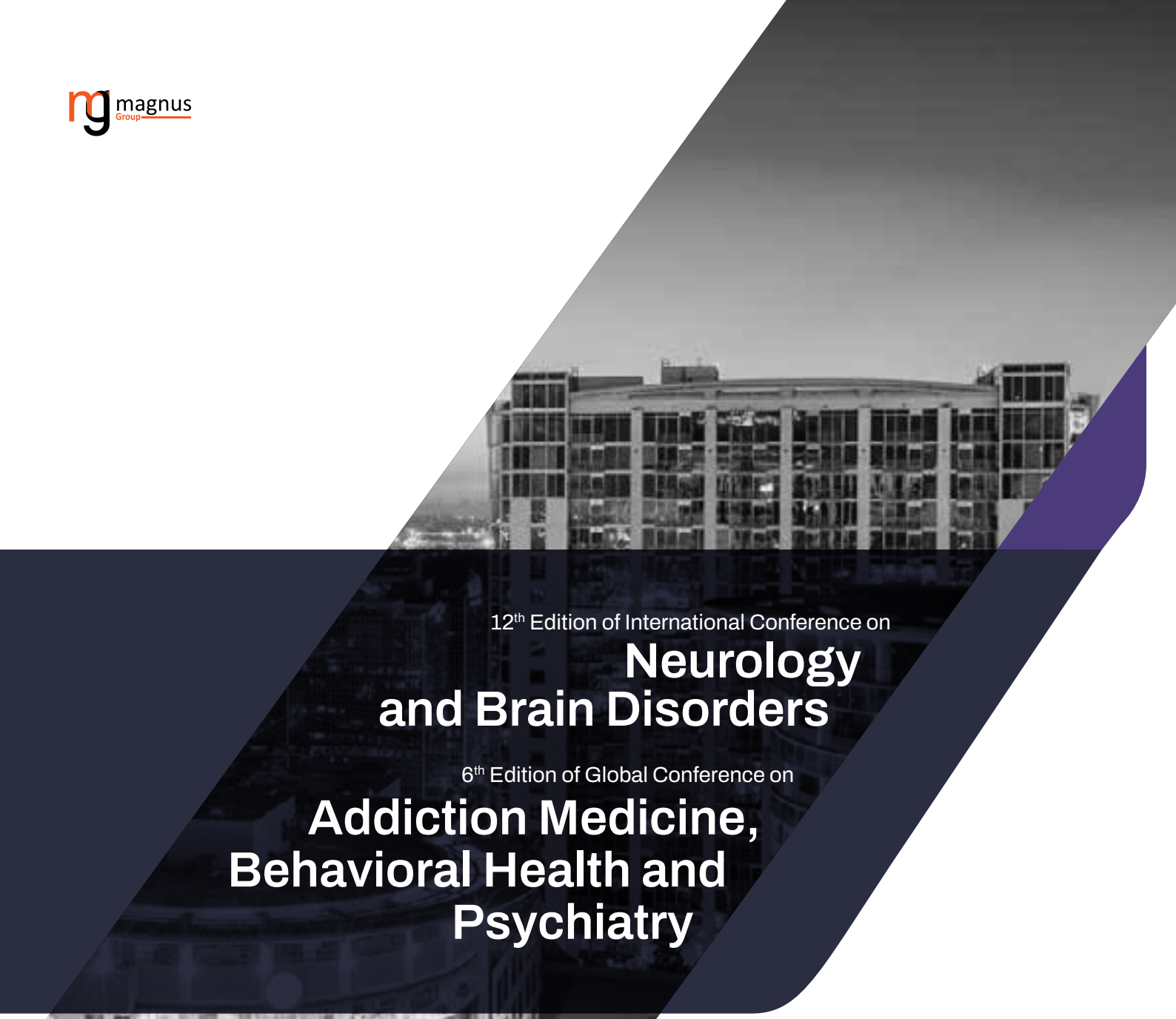

12th Edition of International Conference on

Neurology and Brain Disorders

6th Edition of Global Conference on

Addiction Medicine, Behavioral Health and Psychiatry

OCT

20-22

BOOK OF

ABSTRACTS

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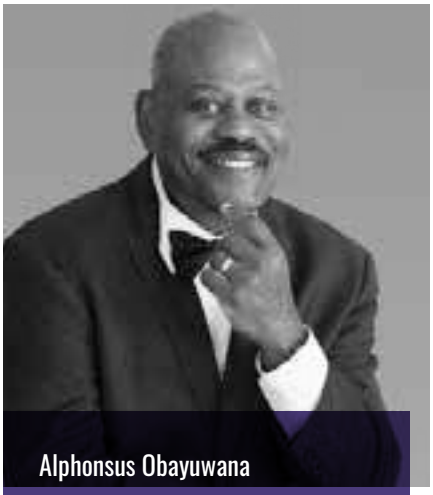
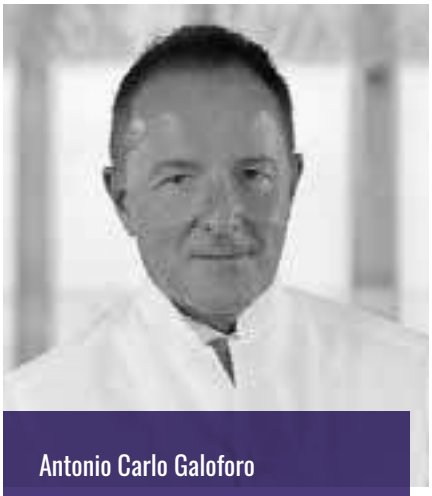


Alphonsus Obayuwana
Triple-H Project LLC, United States

Ann Marie Leonard Zabel
Curry College and NEALAC Clinic, United States



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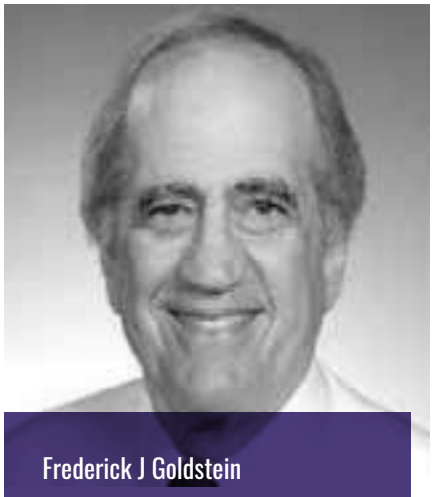

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Philadelphia College of Osteopathic Medicine, United States

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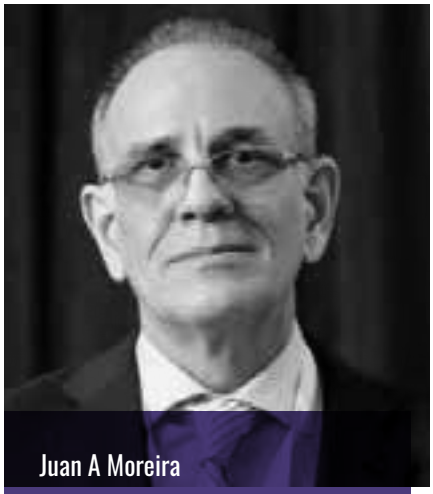
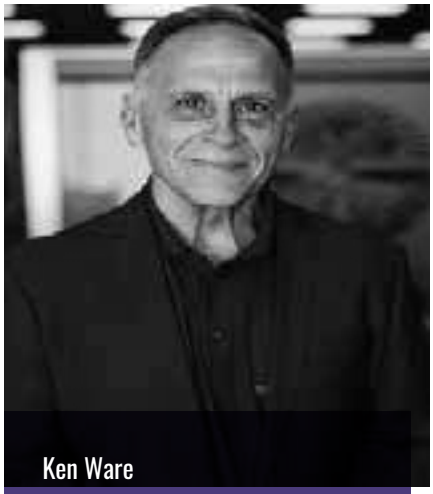
Joe Sam Robinson
Georgia Neurosurgical Institute, Mercer University, United States

John Giordano
Life Enhancement Recovery Center, United States

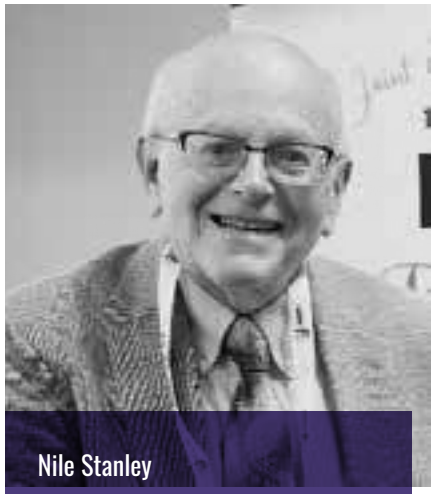
Jonathan Eskenazi
Cedars Sinai/UCLA, United States



Juan A Moreira
Centro Neurointegrativo Gnosis, Puerto Rico



Ken Ware
NeuroPhysics Therapy Institute, Australia



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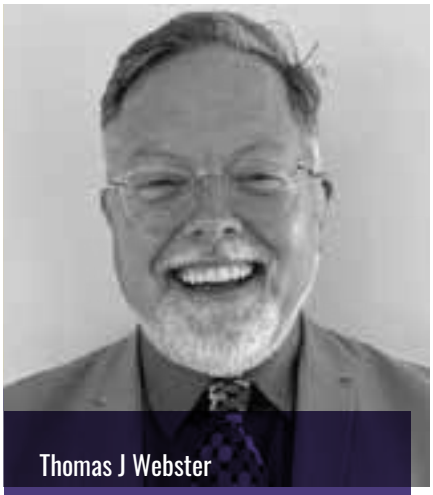

Thomas J Webster
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Vaswani Meera
All India Institute of Medical Sciences (AIIMS), India

W S El Masri
Keele University, United Kingdom

Yong Xiao Wang
Albany Medical College, United States

Zhenhuan Liu
Guangzhou University Chinese Medicine, China

Thank You All...

Welcome Message

Dear Conference Attendees,

It is an honor and great pleasure to welcome you to the 6th Edition of Global Conference on Addiction Medicine, Behavioral Health, and Psychiatry. In an era where mental health challenges, addiction issues, and behavioral health concerns are increasingly prevalent, the need for a multidisciplinary approach to address these issues has never been more urgent. Our sessions are designed to explore a variety of crucial topics, including addictions and substance abuse, mental health disorders and treatment, neuroscience of addiction, public health strategies for mental health and addiction, psychological interventions and therapies, and clinical research in mental health and addiction. This conference is a wonderful opportunity for all participants, including early career and senior researchers, scientists, clinicians, and academicians, to gain knowledge and stay abreast of the latest research and advancements in the fields of addiction medicine, psychiatry, and behavioral health.

Dr. Ann Marie Leonard-Zabel

Professor of Psychology–Curry College

President and Owner–NEALAC Clinic, United States

Welcome Message

Dear Conference Attendees,

It is an honor and great pleasure to write a few welcome notes for the session entitled “Oxygen-ozone therapy and cognitive frailty: a non-pharmacological approach to potentially resolve immune and inflammatory dysfunctions”.

Cognitive frailty and more or less disabling neurodegenerative diseases are configured as a crucial issue for our social health system as we are witnessing an increase in the average age of the elderly population, Italy is the second country in the world for longevity after Japan and, the WHO, by 2050 in the world 1 every 5 people will be 60 years or older.

Neurodegenerative diseases do not only affect the elderly, but they can also affect younger people such as Alzheimer's disease or multiple sclerosis, compromising their quality of life and their future.

Thanks to scientific research, a new hope has opened up in the field of regenerative medicine and in the treatment of these neurodegenerative diseases and is represented by ozone therapy.

In the more specific sphere of neurodegeneration and cognitive frailty, this recent study, conducted by me and my team of researchers from Fatebenefratelli di Brescia in collaboration with the University of Modena and Reggio Emilia, the Scuola Normale Superiore di Pisa and the EBRI European Brain Research Institute (EBRI) I) Rita Levi-Montalcini., highlighted the ability of oxygen-ozone to activate the processes of regeneration and repair of cells at the neuronal level, representing an absolute innovation in terms of cell regeneration.

Prof. Antonio Carlo Galoforo

Surgeon, Master Oxygen Ozone Therapy Professor

University of Pavia, Italy

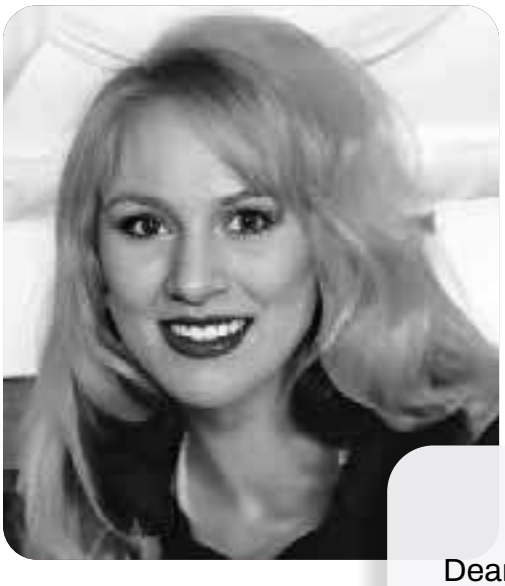
Welcome Message

Dear Fellow Colleagues,

I am grateful for this opportunity to welcome you to the GAB 2025 conference on addiction. Addiction, as you know, is a national affliction, with nearly 100,000 people dying each month due to drug overdose. The role of research-basic, clinical, and public health-in overcoming this scourge is an indispensable one Thanks to your research, the prospect for a significant reduction in addiction is much improved from even a decade ago. Insights into the biological, sociological, and psychiatric factors have emerged that provide direction to the prevention of addiction in susceptible populations and diminished recidivism in those who have previously been addicted. Much work continues to be needed, however. Biologically, for example, neuronal receptors are increasingly well studied, but the circuits they participate in and the glial cells that contribute to circuit functioning remain enigmas. And while sociological circumstances facilitating exposure are being addressed, factors leading to these circumstances remain embedded in the societal fabric. This conference aims to address these issues and more. I look forward to learning from your many presentations and the insights that they offer for confronting our national epidemic.

Denis Larrivee

University of Navarra, Spain



Welcome Message

Dear Conference Members:

As both a psychologist and a scientific committee member for the Global Conference on Addiction Medicine, Behavioral Health and Psychiatry, I am always excited to share and receive the most current research data on underlying neurogenetic and neurobiological syndromes which are causal influences for mental health disorders, including addictions.

At this year's conference, I shall share progress notes on years 4 and 5 for Elle Foundation Case Study 101's longitudinal study of Reward Deficiency Syndrome Solution System treatment planning. Genomic interventions were informed by genetic testing. This patient is enjoying neurological stability after experiencing 6 decades of life altered by dopamine and serotonin neurotransmission disruption. She has developed Reward Deficiency Syndrome symptom self-management skills. I am also eager to bring continuing education forums regarding the genomic era of addiction medicine to the conference.

Elizabeth Gilley

The Elle Foundation, United States

Welcome Message

Dear Colleagues and Guests,

It is my great pleasure to welcome you to this important conference dedicated to brain and neurological disorders. Today, we gather as clinicians, researchers, and advocates united in advancing the understanding of neuroscience as it relates to human health and physiology.

Primary CNS vasculitis remains one of the most challenging diagnoses in neurology—its subtle presentations, complex pathology, and potentially reversible nature demand both vigilance and collaboration across specialties. When it occurs in young individuals, the impact is profound—affecting not only their health, but their families, education, and futures.

This meeting provides a valuable forum to share new insights into diagnosis, neuroimaging, pathology, and treatment strategies, while also highlighting the importance of early recognition. Through open dialogue and shared expertise, we can advance our understanding of stroke in the young and foster better outcomes for our patients.

I want to extend my gratitude to all speakers, organizational staff, panelists, and attendees for contributing your knowledge, time, and passion. I hope this conference inspires continued research, deeper collaboration, and renewed commitment to the care of those affected by CNS vasculitis and stroke in the young.

Thank you for joining us and welcome.

George Diaz, MD

Director, Satellite Neurology Clinics
Associate Program Director, Neurology Residency
Memorial Neuroscience Institute
Hollywood, Florida, United States

Welcome Message

Dear Conference Attendees,

I have the honorable privilege of welcoming all the participants and guests to the 2025 meeting of the International Conference on Neurology and Brain Disorders. Obviously, the world careens along on a difficult path. Happily, however, great progress is taking place in many medical issues. Importantly among them is the extension of life expectancy with broader use of statins and on a worldwide basis the ability to monitor and control infectious disease outbreaks. Hopefully, another area of progress is the evolution and improved treatment of cognitive decay. Preservation of higher intellectual capabilities would be the natural partner of increased life expectancy. At this meeting we will do our best to take fulsome steps in that direction, and I am quite pleased to be a part of this discussion.

Joe Sam Robinson, Jr., M.D.

President, Georgia Neurosurgical Institute

Mercer University, United States

Welcome Message

Doctor John Giordano Highly recommends GAB 2025 in Orlando. This is going to be a very exciting time for all of us to share pertinent information that can improve treatment outcomes. This is an opportunity for all to learn the latest Evidence based science on how to improve treatment approaches. This knowledge is based on Science years of experience Relating to Alcoholism, drug addiction, mental health, and other addiction Issues. I highly recommend you attend, whether it be on Zoom or in person. Do not miss this opportunity to learn and grow as a profession.

Doctor John Giordano

Life Enhancement Recovery Center, United States

Welcome Message

Dear colleagues

Welcome to the 12th Edition of the International Conference on Neurology and Brain Disorders.

During the following days, we're going to hear lectures on the Brain and the myriad of Neurological Disorders that affect the brain's performance. The conference will cover a wide variety of pioneering research on neurological conditions such as Alzheimer's disease, Addiction, Stroke, Pain, Traumatic Brain Injury, and others. Our colleagues may enrich and enlighten our understanding of neurological disorders and expand on what may be, the future's therapeutic modalities.

What I hope for, is that professionals attending this conference- whether a researcher, neurologist, or neuroscientist- can not only use the knowledge that they will be gathering in the upcoming days, but also appreciate whatever routine work they might have to complete in the future in the neurological field.

"Always work on one or more projects; it will make the daily routine more meaningful."

Juan A. Moreira MD. FAAN

Centro Neurointegrativo Gnosis, Puerto Rico

Welcome Message

Dear Participants,

On behalf of the organizing committee and the esteemed members of the scientific committee for INBC 25, it is my great pleasure to extend a very warm welcome to each and every one of you to this ground breaking global scientific event.

For the past seven years, I have had the privilege of serving as a member of the scientific committee for these conferences. Each year, INBC has drawn a remarkable array of distinguished researchers and scientists, showcasing cutting-edge innovations and presenting transformative scientific insights. Like many of you, I have found these conferences to be a source of profound learning and inspiration, ignited by the unwavering dedication of the presenters and their passion for advancing science.

This year, INBC 25 continues to uphold this tradition of excellence, but with an expanded vision. By design, this event will amplify the reach of high-quality research and presentations, broadcasting to a wider global audience and fostering greater international recognition for the outstanding contributions of every participant.

As we embark on this exciting journey together, I wish to express my deepest gratitude to all participants for their invaluable contributions to this event. Your dedication and commitment to your research enrich this platform and inspire countless others.

Wishing you all the very best for your presentations and a fruitful, engaging conference experience.

Ken Ware

Scientific Committee Member, INBC 2025

Founder of Neurotricional Sciences and NeuroPhysics Therapy

Gold Coast, Queensland, Australia

Welcome Message

Dear Conference Visitors,

Welcome to this global gathering of minds, united in the common goal of advancing addiction medicine and behavioral health. It is an honor to be part of this momentous event, where we share knowledge, explore innovations, and work toward improving the lives of individuals and communities affected by addiction. In today's rapidly evolving landscape, we find ourselves at the intersection of science, technology, and healing. As part of this exciting dialogue, I am thrilled to share a forward-thinking approach to addiction treatment Tailoring Biblio-Poetry Therapies Using AI and Biofeedback. This presentation will explore the convergence of therapeutic literature, cutting-edge AI, and biofeedback technologies in the context of addiction recovery. Biblio-poetry therapy whether through poetry, stories, or guided reflective writing has long been a powerful tool for emotional expression and personal healing. With the integration of artificial intelligence and biofeedback, we can elevate this practice, offering individuals tailored content, real-time emotional insights, and personalized recovery experiences. This method holds great promise for building resilience, enhancing emotional regulation, and supporting long-term recovery. Through case studies and firsthand experiences from Hope at Hand, a nonprofit organization dedicated to using poetry therapy for healing (where I have had the privilege of serving for the past ten years as a founding board member), this presentation will illustrate how these advanced tools are helping individuals regain control, reflect deeply, and develop the protective factors necessary for overcoming addiction. We will also explore how AI can assist in crafting content that responds dynamically to each individual's unique emotional and physiological needs, creating a personalized and engaging therapeutic journey.

Nile Stanley, PhD

University of North Florida, United States

Welcome Message

Dear conference participants and visitors, I am honored to offer these brief notes of welcome for you concerning my presentation.

Functional Seizures (FS) [also known as Psychogenic Nonepileptic Seizures (PNES)] are involuntary paroxysmal episodes that are frequently misdiagnosed and mistreated as epileptic seizures. Many patients with FS have a history of sexual, physical, or emotional abuse or other traumatic experiences. Cultural influences, a family code of silence, or a personal sense of shame may inhibit patient communication about their overwhelming experiences.

FS is a communication disorder in which distress is expressed somatically in a pathological way instead of an adaptive and verbal manner. A seizure-like event may provide distraction from an overwhelming situation or experience but at a terrible cost to the patient. Narrative Medicine (NM) is a communication therapy that engages and integrates the patient's life story and overwhelming experiences through interactive conversations and writing exercises. NM helps patients work through the biographical disruption of their condition that threatens their coherent sense of self. NM helps patients communicate more effectively about unspeakable distress and discover a narrative antidote to the communication disorder of FS.

Robert B. Slocum

University of Kentucky Healthcare, United states

Welcome Message

Not in the right environment to innovate and commercialize your neurological research? MOVE!

Without a doubt, recent advances in neurological research including drug delivery, genetic therapies, nanotechnology, cancer, infection, and more have revolutionized medicine over the last several decades. But, where are the products? While some of these wonderful advances have made it to the market helping real patients, many have not. Are we doing enough to translate neurological research into real products and benefits for humans? Are companies not paying attention to this wonderful research? Are Universities not doing enough to license academic research or start new companies? What about federal funding agencies? Are they supporting the commercialization of neurological research? And, most importantly, are you in the right environment to commercialize your neurological research?

Well in my own experience, above all else, it takes a supportive environment. It takes a proper mind set to translate lab research into commercial products. It takes determination and fortitude to see it through. You need to surround yourself with the right positive people – and if you are currently not around a supportive optimistic environment, leave! Leave the University you are at - I did! Leave that company that is stifling your advances. I did! Once I found a truly supportive environment, I was able to not only start a company on my neurological research, but commercialize my over 25 years of University research into medical devices now in over 30,000 humans with no implant failures. No infection. No chronic inflammation. No implant loosening. No failures. No cancer. Better brain health, undoubtedly.

So I encourage everyone to find that right environment. Attend the INBC 2025 conference at the heart of innovation and commercialization! Meet the right people! Be energized by optimistic people! At INBC 2025, we will not only discuss the next neurological research breakthrough, but more importantly, we will discuss how to commercialize it to help real people!

I look forward to seeing everyone!

Thomas J. Webster, Ph.D.
Interstellar Therapeutics, United States, H-index: 129
Fellow, AANM, AIMBE, BMES, FSBE, IIAM, IJN, NAI, and RSM
Nominated for the Nobel Prize in Chemistry (2025)

Welcome Message

Dear friends, colleagues, delegates, presenters and sponsors

I would like to welcome you on behalf of the members of the Organising Committee of 12th Edition of International Conference on Neurology and Brain Disorders The success of previous conferences would have been experienced by many of those of you who have attended. The conference will be held in the Lively city of Orlando Florida between the 20th & 22nd October 2025.

Today the pace of progress in the management of the various conditions affecting the Central and Peripheral Neurological System is not easy to keep up with. Our understanding of the basic science is also improving at unprecedented speed. Evidently it is difficult for the clinician to keep abreast of all these developments. Furthermore the changes in demography and epidemiology as well as the increasing limitations of resources for health care in both developing and developed countries often require constant review and update of practice.

Clinicians and scientists from the five continents will have the choice to attend in person or online to acquire and exchange information, update their knowledge, develop new strategies for the management of their Service and perhaps discover areas of research, collaborate and contribute.

I am confident the scientific program together with the various attractions offered by this beautiful, buzzing and easily accessible city of Orlando, its rich cultural history, attractive landmarks, outdoor adventures, natural springs, Theme Parks, potential for stunning outdoor adventures, generous choice of cuisine, not to mention Disney World if you are accompanied by your family will ensure added value and enhance attraction to attend the and enjoy the conference.

I am looking forward to welcoming you and enjoy the Collegiality of this truly International Community.

Professor Wagih El Masri FRCS Ed, FRCP, PHF
Emeritus Consultant Surgeon in Spinal Injuries Clinical
Professor of Spinal Injuries - Keele University, United Kingdom

Welcome Message

Dear participants of the 12th Edition of the International Conference on Neurology and Brain Disorders 2025, it is an honor and pleasure to write a few welcome notes. The central theme of INBC 2025 is “Innovations in Neuroscience: Bridging Research and Patient Care”. The healthcare paradigm advanced from empiric and phenomenological through evidence-based and person-centered medicine to personalized, preventive, predictive, participative precision medicine (P5M). Thereby, we must consider and understand the individual health status, conditions and genetic and genomic dispositions in personal social, occupational, environmental and behavioral context. This requires the inclusion of actors from multiple domains with their own methodologies, languages, ontologies, education and skills as well as the subject of care. In this context, communication and cooperation must advance from data level to the knowledge level. Therefore, the highly dynamic, complex, context-aware, multi-disciplinary transformed healthcare ecosystem must be represented as system of systems, using a system-theoretical, ontology-based, policy-driven approach. The related model and framework has been standardized in ISO 23903 Interoperability and Integration Reference Architecture. Because of its formal and foundational nature, the methodology is not restricted to health and social care, but has been successfully deployed already in many other domains. We look forward to an exciting and productive conference.

Prof. Dr. Habil. Bernd Blobel

Former Head of the German National eHealth Competence Center and the International Interdisciplinary PhD and PostDoc College at the University of Regensburg, Medical Faculty, Regensburg, Germany

Welcome Message

Dear Congress visitors

As the Chair, I am very honorable and pleasurable to write these welcome notes.

The current conference, the 12th Edition of International Conference on Neurology and Brain Disorders (INBC 2025), will showcase groundbreaking developments in neurology and brain science under the theme of "Innovations in Neuroscience: Bridging Research and Patient Care". The conference will offer both in-person and virtual participation options, ensuring a comprehensive and inclusive experience for all attendees. As expected, it will bring together leading researchers, scientists, clinicians, and industry professionals from the neurology field around the world to discuss the latest, energizing, and innovative basic, translational, and clinical developments as well as discoveries in every facet of dementia.

More than 55 million people have dementia worldwide with that number to triple by 2050. The cost of dementia is $1.3 trillion globally and is projected to increase to US$ 2.8 trillion by 2030 (who.int/news-room/fact-sheets/ detail/dementia). There is no cure for this disease, and the current treatments are neither specific nor always effective. Moreover, the molecular mechanisms underlying dementia are not fully understood.

This conference will include outstanding keynote sessions, fantastic plenary lectures, invited speeches, research presentations, technical demonstrations, and panel discussions around the world. One can expect that all these latest cutting-edge presentations and demonstrations will significantly advance almost all aspects of dementia including molecular geneses, signaling pathways, cellular processes, basic and clinical technologies, new drug discoveries, clinical manifestations, laboratory and clinical diagnoses, treatment options, and predictive prognosis.

Prof. Dr. Yong-Xiao Wang
Albany Capital of New York State, USA

ABOUT
MAGNUS GROUP

Magnus Group, a distinguished scientific event organizer, has been at the forefront of fostering knowledge exchange and collaboration since its inception in 2015. With a steadfast commitment to the ethos of Share, receive, grow, Magnus Group has successfully organized over 200 conferences spanning diverse fields, including Healthcare, Medical, Pharmaceutics, Chemistry, Nursing, Agriculture, and Plant Sciences.

The core philosophy of Magnus Group revolves around creating dynamic platforms that facilitate the exchange of cutting-edge research, insights, and innovations within the global scientific community. By bringing together experts, scholars, and professionals from various disciplines, Magnus Group cultivates an environment conducive to intellectual discourse, networking, and interdisciplinary collaboration.

Magnus Group's unwavering dedication to organizing impactful scientific events has positioned it as a key player in the global scientific community. By adhering to the motto of Share, receive, grow, Magnus Group continues to contribute significantly to the advancement of knowledge and the development of innovative solutions in various scientific domains.

ABOUT

CPD Accreditation

Continuing Professional Development (CPD) credits are valuable for INBC & GAB 2025 attendees as they provide recognition and validation of their ongoing learning and professional development. The number of CPD credits that can be earned is typically based on the number of sessions attended. You have an opportunity to avail 1 CPD credit for each hour of Attendance.

Some benefits of CPD credits include:

Career advancement: CPD credits demonstrate a commitment to ongoing learning and professional development, which can enhance one's reputation and increase chances of career advancement.

Maintenance of professional credentials: Many professions require a minimum number of CPD credits to maintain their certification or license.

Increased knowledge: Attending INBC & GAB 2025 and earning CPD credits can help attendees stay current with the latest developments and advancements in their field.

Networking opportunities: INBC & GAB Conference provide opportunities for attendees to network with peers and experts, expanding their professional network and building relationships with potential collaborators.

Note: Each conference attendee will receive 26+ CPD credits.

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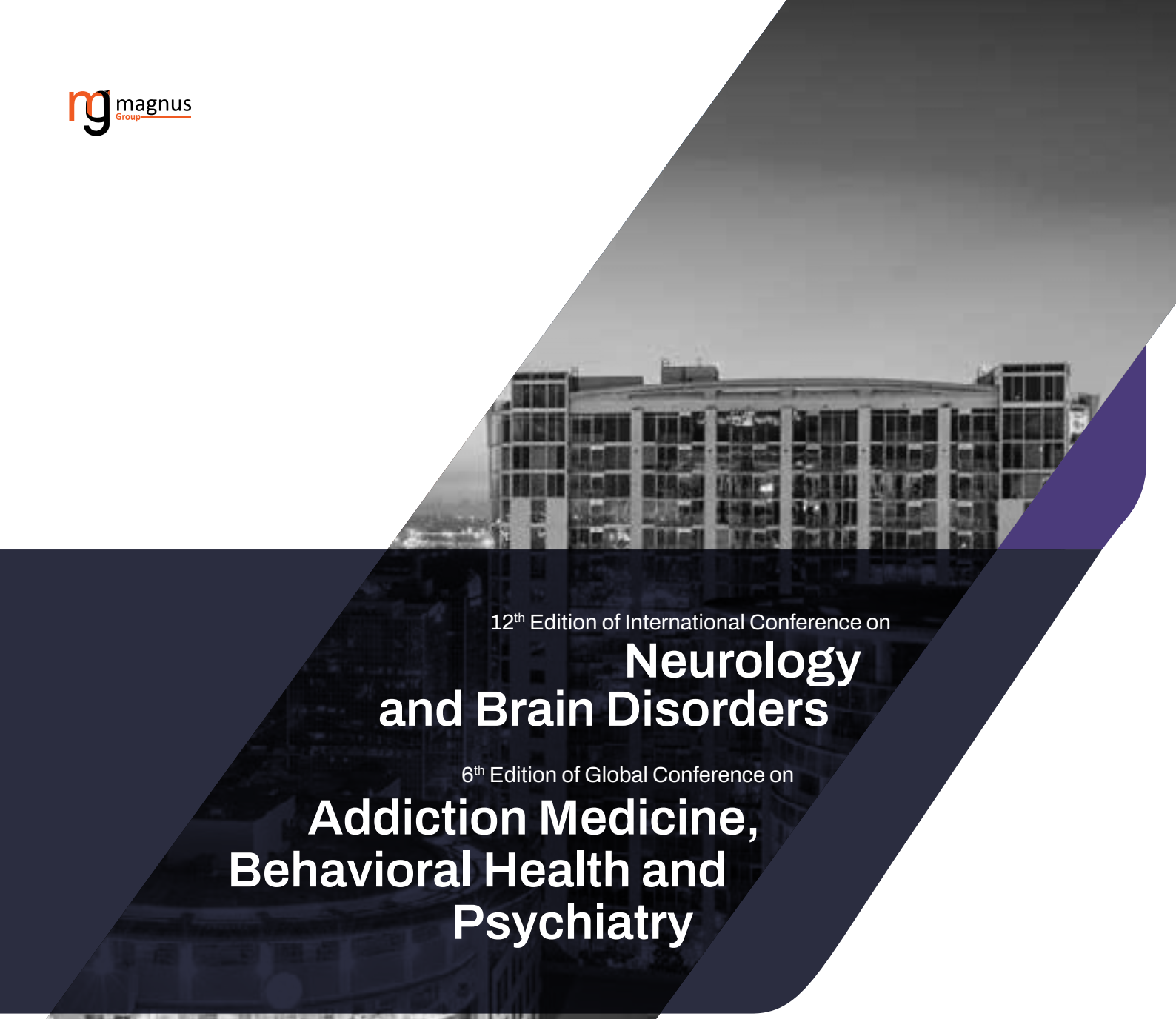

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KEYNOTE PRESENTATIONS

Alphonsus Obayuwana MD, PhD, CPC

Founder & CEO, Triple-H Project, USA

The A-B-C of happiness coaching

As a behavior, ADDICTION is essentially the pursuit of HAPPINESS gone awry. Consequently, happiness coaching is a skill that every addiction therapist needs—in addition to whatever other treatment modalities are employed.

The science and the art of happiness coaching are best explained and precisely summarized by the equation: H1/H2=H3 where H1 is hope; H2 is hunger, and H3 is happiness. This equation, the culmination of a three-decade of research, is dubbed the Triple-H Equation. It presents the theory, explains the science, and illustrates the role of a happiness coach.

During this presentation (or workshop), the Triple-H Equation will be deconstructed and all participants will learn why, when, where, and how to provide happiness coaching.

Biography

Alphonsus Obayuwana is a physician-scientist, Titan Literary Award-winning author, founder, and CEO of the Triple-H Project, USA. —an entity that trains and certifies happiness coaches. He was on the teaching faculty at the Johns Hopkins School of Medicine, University of Maryland College of Medicine, Eastern Virginia Medical School, Ohio University College of Osteopathic Medicine, and lastly at the University of Toledo before his retirement in 2020. Dr. Obayuwana is also a retired Major in the US Air Force Reserve. and has been a contributor to Psychology Today. His latest book, The Happiness Formula, was named One of the Five Must-Read Books of 2024, by Forbes.

Dr. Ann Marie Leonard-Zabel

Department of Psychology (Department Coordinator), Curry College, Milton, Massachusetts, USA President and Owner of NEALAC Clinic, Cape Cod, Massachusetts, USA

Decoding aggression, violence, and substance use in adolescents with conduct disorders: Neurochemical pathways and interventions

Current trends indicate a rise in aggressive and violent behaviors among conduct disordered adolescents, often compounded by co-occurring substance use disorders. Understanding the neurochemical pathways involved in these conduct disorders is crucial for developing effective interventions. This presentation delves into the interconnected issues of aggression, violence, and substance use in adolescents with conduct disorders, focusing on key brain systems and neurotransmitters such as dopamine, serotonin, glutamate, and GABA., among others.

Disruptions in these neurotransmitter systems can lead to heightened aggression, impaired decision-making, and increased vulnerability to addiction. For instance, dopamine dysregulation is associated with heightened reward sensitivity and risk-taking behaviors, while serotonin imbalances are linked to mood disorders and emotional instability. Additionally, glutamate and GABA play critical roles in cognitive functions and impulse control, which are often impaired in adolescents with conduct disorders.

Effective evaluation procedures that combine neurocognitive and socio-emotional-forensic tools are essential to providing a comprehensive assessment

Biography

Dr. Ann Marie Leonard-Zabel is a Full Professor of Psychology and Department Coordinator at Curry College in Massachusetts, USA. She received awards from Curry College involving Person of the Year, Excellence in Teaching, Excellence in Research, Excellence in Partnership Collaboration, Woman of Inspiration, and an invited three-time presenter at the Curry Authors event. She is a frequent speaker and keynote at national and international conferences involving Addictions, School Psychology, School Neuropsychology, Vrain Health Trainer, Disability Analysis, Homeland Security, Violence-Aggression, Forensic Examining, Autism, Trauma, A-D/HD, COVID-19/ Long COVID and Post COVID-19 conditions among children and youth, Ethics. In addition, she owns a private international practice specializing in evaluations, consultation, and in-service trainings for neuro-behavioral learning disabilities, neuro-developmental disorders, emotional-behavioral disorders, forensic examiner evaluations and substance use/abuse disorders. She has served as a senior clinical supervisor/clinical instructor for the School Neuropsychology Institute training psychologists in School

framework. Neuropsychological assessments can evaluate cognitive functions related to aggression and substance use. Tools such as social and emotional competence assessments measure socio-emotional skills and the impact of substance use, providing a holistic view of the adolescent's behavioral and emotional state.

Addressing these issues in a school setting requires careful consideration of legal and ethical implications. Manifestation determination assesses whether aggressive behavior influenced by substance use is a manifestation of the student's disability or not. Distinguishing between behaviors stemming from emotional disturbance/disability and those exacerbated by substance use and social maladjustment is vital for appropriate intervention and ensuring the student receives the necessary support and resources.

The presentation explores strategies and interventions to reduce violence and aggression, and substance use disorder among youth. School-based programs focused on conflict resolution, anger management, and social skills training are essential components of a comprehensive intervention strategy. Family involvement is also critical in addressing both aggressive behavior and substance use, helping to create a supportive home environment that reinforces positive behaviors. Additionally, community resources, such as counseling services and substance abuse programs, can provide further support and aid in the recovery process.

Neuropsychology. Dr. Leonard-Zabel has published chapters and training programs in the areas of Autism, Mental Health, Learning Disabilities, Telepractice Therapy, Diversity-Equity-Inclusion, as well as chapters in Ethics, TBI, Addictions, and Forensics. Dr. Leonard-Zabel is a Board of Director for the Learning Disabilities Worldwide Congress, is a member of the United Nations Association (UNA-USA) and is one of a group of Global Goodwill Ambassadors-USA for the Global Goodwill Ambassador Foundation (GGAF) focusing on the UN SDG 3-Good Health and Well-Being (strengthen the prevention, assessment and treatment of substance use disorder) and SDG 4-Quality Education (disabilities and human rights) and SDG 16-Promote Peaceful and Inclusive Societies (decrease violence and abuse of children and youth). Dr. Leonard-Zabel received the Lifetime Achievement award in School Neuropsychology and the Distinguished Lifetime Career Achievement award from the American Board of Disability Analysts.

Antonio Carlo Galoforo[3*], Miriam Ciani[1], Catia Scassellati[2], Roberta Zanardini[1], Cristina Geroldi[4], Cristian Bonvicini[1]

[1]Molecular Markers Laboratory, Irccs Istituto Centro San Giovanni Di Dio Fatebenefratelli, Brescia, Italy

[2]Biological Psychiatry Unit, Irccs Istituto Centro San Giovanni Di Dio Fatebenefratelli, Brescia, Italy

[3]Oxygen-Ozone Therapy Scientific Society (Sioot), Gorle, Italy University Of Pavia, Pavia, Unicamillus Rome, Italy

[4]Alzheimer Unit, Irccs Istituto Centro San Giovanni Di Dio Fatebenefratelli, Brescia, Italy

Oxygen-ozone therapy and cognitive frailty: A non-pharmacological approach to potentially resolve immune and inflammatory dysfunctions

As the world's population ages, Cognitive Frailty (CF) is becoming one of the most serious health problems and elucidating its biological mechanisms along with prevention and treatments becomes increasingly important also considering the associated health costs. We thus performed a clinical randomized trial where CF subjects received a non-pharmacological therapy based on the regenerative properties of Ozone (O3) known to act on immune/inflammation processes, strongly altered in CF.

Biography

Prof. Antonio Carlo Galoforo graduated in Medicine and Surgery in Brescia, one of the most accredited experts in oxygen and ozone therapy, of which he has been a member of the Scientific Society since 1992. Head of oxygen ozone therapy at excellent polyclinics where he works daily and contact person for the Lombardy Region for hearings on the use of ozone in medicine and the environment. Speaker at various national and international conferences. Author of numerous national and international works, Master Professor in oxygen ozone therapy at the University of Pavia and Unicamillus International Medical University in Rome. He is reference person accredited by the WHO for studies relating to the use of Ozone for Buruli Ulcer treatment; Founder and President of O3 FORAFRICA Onlus; Head of Oxygen Ozone Therapy of Affidea Italia Centers and Bianalisi Group; Academician of European Academy for Economic and Cultural Relations. Winner of two Research Projects from Minister of Health.

A cohort of 75 patients was stratified in non-, mildly- or severely frail rate and treated with placebo, Oxygen (O_2) or O_2-O_3. The serum levels of 27 peculiar pro- and anti-inflammatory cytokines and chemokine cell signalling molecules were measured by using the Bio-Plex Pro Human Cytokine 27-plex immunoassay. The student's t-test and Analysis of Variance (ANOVA) followed by Tukey's post hoc test were used for comparison of means between the groups.

Preliminary analyses evidenced the implication, at different levels, of some molecules in relation to the frailty rate. Noteworthy, we observed modulations of immune (i.e interleukin, IL-9) and inflammation (i.e IL-1β) biomarkers at baseline and after treatment. Correlations between clinical CF profiles and peripheral levels of the considered biomarkers are ongoing in order to predict the response to O_2-O_3 therapy.

Although preliminary, these results confirm that the immune-inflammation systems are involved in the aetiopathogenetic mechanisms of CF, and that the related molecules could be potential therapeutic targets/biomarkers for the O_2-O_3 therapy. These data will further permit to validate a potential new non-pharmacological treatment approach for this condition.

Ashton Christostopher & Denise Duffie*

TeDDs on Chapel, Center for Recovery, Canada

Step one therapy

In 1939, Alcoholics Anonymous (AA) World Services Inc. published its text which, remarkably, is still in broad use today and shows no signs of losing popularity. Within the profession of caring for people suffering from addictions of all types in residential and ambulatory care sites, the Twelve Steps still remain a gold or, at minimum, a comparison standard. On the other hand, the field of addiction counselling is emerging in response to significantly growing population needs. Addiction Counsellors have developed professional certifications and licensing through embracing well developed therapeutic modalities and the scientific method. For the most part, the two approaches are believed to complement each other.

Nonetheless, the two predominant approaches to care for persons, counselling and twelve step programs differ significantly from each other and do not directly reinforce one another. This presentation outlines the neurobiological veracity of Step One, which gives a robust and comprehensive novel understanding of addiction and unites the two approaches. We have developed a remarkably successful educational program which employs proven counselling methods to help clients integrate science with their experience. Additionally, the science of recovery helps clients navigate the characteristic challenges through early and later recovery.

Biography

For over 3 decades, Chris has worked as a healthcare and interdisciplinary professional as a primary care practitioner, innovation research consultant and current program designer and lead at TEDDs On Chapel Recovery Residence. Educated in engineering physics, medicine and business (BEng, MD, MBA (Finance) and CE (Harvard)), Chris brings a unique perspective and personal story to the understanding and treatment of substance use disorder and assessing what is truly evidence-based and best practices.

Prof. Dr. Habil. Bernd Blobel, FACMI, FACHI, FHL7, FEFMI, FIAHSI

[1]Medical Faculty, University of Regensburg, Regensburg, Bavaria, Germany

[2]First Medical Faculty, Charles University Prague, Staré Město, Czech Republic

[3]Faculty European Campus Rottal-Inn, Deggendorf Institute of Technology, Deggendorf, Bavaria, Germany

Managing the transformation towards intelligent and ethical health and social care ecosystems

Healthcare systems around the world are undergoing an organizational, methodological and technological transformation towards personalized, preventive, predictive, participative precision (5P) medicine ecosystems. These ecosystems consider individual health status, conditions, genetic and genomic dispositions in personal social, occupational, environmental, and behavioral contexts. Thereby, we have to consider and fully understand the clinical case from the perspective of all involved disciplines from elementary particles up to the society. For designing and managing the resulting highly interdisciplinary, complex, distributed and dynamic ecosystem, we must formally and consistently represent the system and its components at necessary granularity levels from the perspective of all actors including the subject of care. As those actors from different domains have different education, skills, and experiences, using different methodologies, languages and terminologies, communication and cooperation, i.e. interoperability, must advance from the data level (data sharing) to the knowledge level (knowledge sharing). To understand

Biography

Dr. Bernd Blobel received a multi-disciplinary education, covering mathematics, physics, systems engineering, electronics, medicine, informatics and medical informatics, including habilitations in medicine and informatics. He was Head of the Institute for Biometrics and Medical Informatics at the University of Magdeburg, and then Head of the Health Telematics Project Group at the Fraunhofer IIS in Erlangen. Thereafter, he acted until his retirement as Head of the German National eHealth Competence Center as well as of the International Interdisciplinary PhD and PostDoc College at the University of Regensburg. He was leadingly involved in many countries health digitalization as well as electronic health record strategy. He was and is still engaged in international standardization at ISO, CEN, HL7, OMG, IEEE etc. Furthermore, he is still engaged in international higher education and member of several international academies. He published more than 600 international papers and many books.

the business system, it must formally represent each considered use case structurally and functionally. Therefore, the design, implementation and management of intelligent and ethical transformed ecosystems must be realized, using a system-theoretical, architecture-centered, ontology-based and policy-driven approach, developed by the author over the last 30 years. The related model and framework has been meanwhile standardized as the ISO 23903 Interoperability and Integration Reference Architecture, defined as mandatory for any specification or project at ISO, CEN, IEEE, OMG, etc., addressing more than one domain. Thereby, it manages also security, privacy and trust in detail. The Keynote introduces necessary standards and methodologies for designing and managing 5P medicine ecosystems as well as practical examples.

Denis Larrivee

Mind and Brain Institute, University of Navarra Medical School, Spain

Sensoria driven genetic decoupling and impaired areal integration in diseases of agency

Whole genome studies of diseases of agency, like schizophrenia, have thus far failed to identify gene candidates exerting more than a marginal influence on behavioral symptoms. Affected Single Nuclear Polymorphisms (SNPs) number well above 12,000 indicating likely pool sizes of risk alleles running potentially into the thousands. The indiscriminate and massive number of affected alleles seen in these studies implicates a higher order, organizational and regulatory impairment, rather than one involving specific genetic factors, which affects self-recognition and the ability to execute actions. Such a substrate is likely to be embedded within the interactive properties of large cell clusters such as those comprising neural circuits or even large-scale networks of the brain, which adopt top down regulatory control over behavioral and motor actions. This process of decoupling regulation from genetic oversight to one entailing a systemic and top down supracellular organization raises questions regarding whether the decoupling process itself or the systemic organization are impaired in these diseases. A failure in epigenetic mechanisms, for example, could affect the development of top down neural control, given that decoupling processes involve developmental events. Experience dependent, gene ontology experiments, however, are consistent with a primary defect in the neural regulatory structure itself. Consistent with this latter possibility, impaired body representations are correlated with the inability to attribute actions to oneself. Such representations are

Biography

Dr. Denis Larrivee is a visiting scholar at the Mind and Brain Institute, University of Navarra Medical School and Loyola University, Chicago. He has held professorships at the Weill Cornell University Medical College, NYC, and Purdue University, Indian. A former fellow at Yale University's Medical School, Dr. Larrivee received the Association for Research in Vision and Ophthalmology's first place award for studies on photoreceptor degenerative and developmental mechanisms. His maintains an active interest in medical imaging technology and recently published an edited volume on current advances in magnetic resonance imaging. Dr. Larrivee is the editor of six additional texts on clinical neuroscience and neurotechnology and is an editorial board member of the Annals of Neurology and Neurological Sciences (USA) and EC Neurology (UK). Dr. Larrivee is the lead author of more than one hundred papers and book chapters in such varied journals/venues as IEEE Xplore, the Journal of Neuroscience, Frontiers Human Neuroscience, and the Journal of Religion and Mental Health, including a recent article in the Journal of Responsible Innovation on the integration of ethics in medical neurotechnology

built from sensorial input during development, which appears to drive genetic decoupling and the generation of top down control. Several leading proposals link the sensorial representation of the body to the self/agent- and could offer a model for investigating the etiology of the disease. The inability to attribute actions to the self indicates a lack of self recognition, which is likely to represent a failure in sensorial input from the body to drive the formation of a global regulatory structure, points which will be discussed in this talk.

design. In 2018, he was a finalist for the international Joseph Ratzinger Expanded Reason award sponsored by the Francis Vittorio University of Madrid. He is currently a member of the USA based IEEE BRAIN Task Force on value based design of medical neurotechnologies.

Elizabeth D Gilley[1,2*], Rajendra D. Badgaiyan[3], Kai Uwe Lewandrowski[4,5,6], David Baron[7,8], Alireza Sharafshah[9], Panayotis K. Thanos[10], Kenneth Blum[7,11]

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[5]Department of Orthopaedics, Fundación Universitaria Sanitas Bogotá, Colombia

[6]Department of Orthopaedics, Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, Brazil

[7]Division of Addiction Research & Education, Center for Sports, Exercise, and Mental Health, Western University of Health Sciences, Pomona, California, USA

[8]Department of Psychiatry, Stanford University School of Medicine, Palo, ALTO, California, USA

[9]Cellular and Molecular Research Center, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

Biography

Elizabeth Dale Gilley earned a Bachelor of Science in Business Administration from Wake Forest University, in 1983, while lettering in Women's Varsity Tennis. She also holds a paralegal degree in corporate law, with a bankruptcy specialty. After serving as Assistant to the Chairman her father, James Gilley, she left his tutelage to incorporate The Elle Foundation, in 1995, in Dallas, Texas. The original mission statement was to help stop the generational cycle of addiction.

After years of studying the financials of treatment centers and psychiatric hospitals, she established the Elle Foundation Award of Excellence, in 2000, to showcase innovation and novel contributions of those who are raising the bar above the 1950's Minnesota Model industry standard. This award is still given today, not for the scientists or doctors, but for those who are still suffering to offer hope that solutions are forthcoming.

She returned to academia in her 50's earning a Masters in General Psychology (2017) and a Post Masters Specialty in Addictions from North Central University

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[11]Department of Psychiatry, Boonshoff School of Medicine, Wright University, Dayton, Ohio, USA

Positive outcome of adherence to the reward deficiency syndrome solution system treatment plan: A longitudinal study

The purpose of this editorial is to update the progress of Elle foundation case study 101, for whom a Reward Deficiency Syndrome Solution System (RDSSS) treatment plan was created in 2020, and her progress tracked daily during phase one in 2021. Analysis of phase one of this longitudinal study has been reported in more than one journal submission and published in peer review. However, we have not yet reported the results of phase 2 or 3 in peer review.

The case study's daily progress during each phase is tracked for 9 months, with three months off in between phases. Phase two was observed in year 2 of the study, which was 2022. Phase 3 was observed in year 3, 2023. Phase four is currently in progress, in 2024. In review, the RDS treatment plan developed by Blum's group which was created for this participant began with Genetic Addiction Risk Severity (GARS) Screening. Test results found: 1) one risk allele (C/T), in the single nucleotide polymorphism DRD4; 2) 2 risk alleles in the variable tandem number repeats and insertions/deletions of the 5-HTT-linked gene (S/S); and 3) risk alleles (4R/4R) of the variable tandem number repeats of MAOA.

(2019), both with a GPA higher than Magna Cum Laude. She is presently a Ph.D candidate at National University, where her focus is upon the neuroscience and neurobiology of addiction. She has created psychological applications: therapy and psychoeducation for the new Reward Dysfunction Syndrome paradigm, and the RDS Severity of Symptom measurement tool, which may prove to be a behavioral marker for recovery and/or reinstatement.

In 2004, she unincorporated the Elle Foundation, making it a private nonprofit, and considers it her personal altruism. She as created two new divisions, Elle Research and Elle Resource. While still conducting longitudinal research from the 100s series, Elle Research is developing its 200s series: Qualitative Exploratory Multiple Case Study to investigate the experiences of dually diagnosed patients, in the substance use disorder/ psychological/psychiatric industry which services one size fits all treatment, with pharmaceutical trial and error. The 200s series will also include quantitative study of the same participates to investigate the effectiveness of Psychiatric/ Psychological Genomics, RDS solution focused brief therapy and the RDS SOS.

Elle Resource will deliver these therapeutic advancements to the public, both locally and internationally through teletherapy, focusing upon psychological genomics for patients with dopaminergic RDS mental health clusters. The Elle Foundation's Dragon Slayer and Bridge Builder Ministry is reopening, in the fall of 2024, in Palm Beach Country to provide children's and family

The following tracks her remarkable progress in physiological, neurological, psychological social, and spiritual realms, attesting to the reward deficiency syndrome solution system, and the impact this has on individuals with complex mental disorders clusters.

services, introducing the new RDS paradigm, in a psychoeducation art therapy format.

She has published consistently in peer review for the past 7 years and has presented at the past 3 global conferences on addiction medicine, behavioral health and psychiatry. She also serves as a global conference scientific committee member.

Frederick J Goldstein PhD, FCP

Professor of Clinical Pharmacology,
Philadelphia College of Osteopathic Medicine,
United States

Clinical pharmacology of marijuana: Update 2025

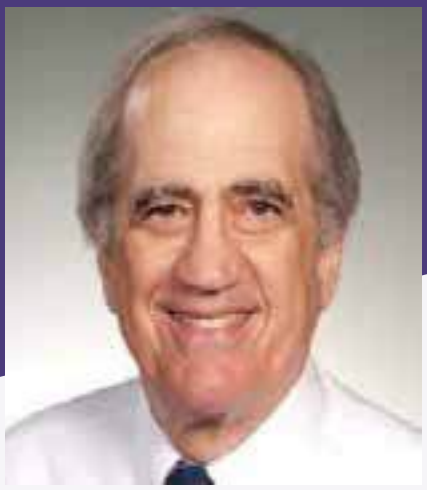
Over the past decade, marijuana use throughout the world has increased including within the United States where it remains a federally-banned substance. According to a 2024 Newsweek Report, cannabis sales worldwide may be approximately $61 billion this year, and much higher by 2028.

Many conditions are being self-treated with marijuana including anxiety, posttraumatic stress disorder, and chronic pain. In regard to the latter condition, advanced clinical research is needed to document such applications.

In an ongoing pilot study led by Dr. Goldstein, daily oral doses of a defined dose combination of THC-CBD combination over a four-week period have been shown to reduce pain scores and use of other analgesic medications in patients with chronic neuropathic pain; these data will be shown.

In addition, other topics to be presented are clinical pharmacological aspects of THC: Endogenous cannabinoid receptor system, mechanisms of action, adverse effects, addiction liability, physical dependence, withdrawal reactions and drug interactions.

Biography



Dr. Goldstein is Professor of Clinical Pharmacology in the Department of Bio-Medical Sciences at PCOM,. His research interests have focused on pharmacologic methods to reduce pain in post-operative, cancer and hospice patients. He currently conducts a research study using THC to improve analgesia in patients presenting with chronic neuropathic pain. He created the term "Suicidogen": Any factor that causes a person to think about and possibly commit suicide [can be searched on the internet] In addition to his teaching and research at PCOM, he lectures in pharmacology at the University of Pennsylvania School Of Dental Medicine. Dr. Goldstein serves on the editorial board of, and reviews submissions for, the Journal of Opioid Management. He is an active member of the National Board of Osteopathic Medical Examiners where he writes and reviews questions for the COMLEX Level 1 test.

Jonathan Eskenazi MD

Assistant Professor in Neurology at UCLA School of Medicine

Clinical Faculty Cedars Sinai Medical Center

Board Certified Neurologist

Board Certified Brain Injury Specialist, United States

TBI updates in 2025

1. **Definition and Types:** TBI is an injury to the brain caused by external force, resulting in a range of effects. It can be classified as mild (concussions), moderate, or severe based on symptoms and impact.
2. **Causes:** Common causes include falls, vehicle accidents, sports injuries, and violence.
3. **Symptoms:** Symptoms can vary widely and may include headaches, confusion, memory issues, mood changes, and loss of consciousness.
4. **Diagnosis:** Diagnosis often involves physical exams, imaging tests like CT or MRI scans, and neuropsychological assessments to evaluate cognitive function.
5. **Treatment:** Treatment approaches may involve rest, rehabilitation therapies (physical, occupational, speech), medication for symptoms, and in severe cases, surgery.
6. **Long-term Effects:** Some individuals may experience lasting cognitive, physical, and emotional challenges, requiring ongoing support and management.

Biography

Dr. Jonathan Eskenazi is a well-rounded, Double Board-Certified Neurologist with in-depth training in Traumatic Brain Injury, Vascular, and Neurocognitive disorders. He has received training in clinical neurophysiology, neuro-stimulation for Parkinson's disease, and epilepsy. Dr. Eskenazi holds the position of Clinical Assistant Professor at UCLA School of Medicine and serves as a Clinical Neurology attending at Cedars Sinai. He played a key role in establishing Acute Neurology programs at Hollywood Presbyterian Medical Center and California Medical Center in Downtown Los Angeles. With many years of training followed by several years of clinical practice experience, Dr. Eskenazi covers all aspects of neurology, including trauma, stroke, epilepsy, multiple sclerosis, brain tumors, sleep disorders, and botulinum toxin (Botox) injections for migraine, dystonia, and spasticity in hemifacial spasm patients. Additionally, he specializes in Neurostimulation for Parkinson's disease, electroencephalogram studies, and Vestibular Disorders.

7. **Prevention:** Strategies for preventing TBI include wearing helmets, using seatbelts, and fall-proofing homes, especially for vulnerable populations like the elderly.

The lecture will emphasize the importance of early intervention and a multidisciplinary approach to care.

Traumatic Brain Injury (TBI) remains a leading global cause of disability, and new data highlight a shift toward precision neurotrauma. In 2024–2025, rapid blood biomarker tests (GFAP, UCH-L1) gained FDA clearance in whole-blood and automated formats, enabling point-of-care triage and safe CT reduction for mild TBI. In the ICU, hypertonic saline is increasingly favored over mannitol for intracranial pressure crises, while the NIH BOOST-3 trial is testing whether combining ICP with brain oxygen monitoring improves outcomes. Single-cell brain atlases and large consortia studies (CENTER-TBI, TRACK-TBI) are mapping the biological and psychosocial heterogeneity of injury, laying the groundwork for personalized treatment. Together, these updates mark a turning point: from generic protocols to tailored, biomarker-driven and multimodal strategies that aim to improve survival and long-term recovery.

For Mild Traumatic Brain Injury (mTBI), 2024–2025 updates emphasize earlier, more precise diagnosis and tailored follow-up. Blood biomarkers GFAP and UCH-L1 have now been validated and FDA-cleared in whole-blood, point-of-care formats and automated lab platforms, allowing emergency teams to safely rule out CT-detectable injury within minutes and reduce unnecessary imaging. Studies show GFAP rises within 30 minutes of injury, making ultra-early triage feasible. Large cohort data (CENTER-TBI, TRACK-TBI) highlight how outcomes vary by biological and psychosocial factors, including genetic vulnerability to persistent post-concussion symptoms and mental health challenges, supporting a move toward risk-stratified follow-up. The field is moving from a “rest and discharge” model toward precision mTBI care, where biomarker-guided triage, individualized monitoring, and targeted rehab interventions aim to prevent chronic symptoms and improve recovery trajectories.

Baumann E, Shaffer S, Kendall T, Diaz G*

Memorial Neuroscience Institute, United States

A case of vile vindictive primary CNS vasculitis

Introduction/Objective: Primary Angiitis of the Central Nervous System (PACNS) is rare and causes inflammation of the small and medium vessels of the brain, leptomeninges and spinal cord. We present a case of PACNS, demonstrate the diagnostic challenges, and appreciate outcomes with and without treatment in a young patient.

Case: A 29-year-old male with no past medical history presented with a week of non-migrainous headaches, vertigo, slurred speech, and unsteady gait. Neurological exam was significant for dysarthria, mild dysmetria, wide-based ataxic gait, and inability to walk tandem. A brain CT revealed a hemorrhagic cerebellar lesion with mass effect. A brain MRI demonstrated numerous foci of hemosiderin. He was treated with pulsed steroids and improved, was transitioned to an oral steroid taper, and discharged.

A few months later the patient was admitted for recurrent headaches, dysarthria, and gait ataxia. An interval CT brain showed resolution of the cerebellar hematoma; however, brain MRI indicated an increase in small vessel infarcts. The patient underwent a frontal lobe biopsy compatible with CNS vasculitis. He was acutely treated with pulse steroids with dramatic improvement and bridged to cyclophosphamide.

His condition was controlled for about five years when he felt well and self-discontinued cyclophosphamide. He then presented with altered mental status, aphasia, increased ataxia, and right sided weakness. He, again, received pulse steroids followed by a steroid taper

Biography

Dr. George Diaz is a neurologist at Memorial Healthcare Systems in Hollywood, Florida Dr. Diaz has promoted improved stroke care in South Florida since 1998. In addition to Vascular Neurology, Dr. Diaz is also board certified in Neurology, Brain Injury Medicine, and Neuromuscular Medicine. Dr. Diaz has lectured on multiple neurological issues, such as acute ischemic stroke, neurological emergencies, and neuromuscular diseases. Dr. Diaz earned his Bachelor of Science degree in chemistry at Florida International University and his medical degree at the University Of Miami School Of Medicine. He interned and completed his neurology residency at the University of Miami-Jackson Memorial Hospitals. Dr. Diaz also completed a Neuromuscular Fellowship at the University of Texas Medical Center-MD Anderson and Herman Hospitals. Dr. Diaz and his partners at Memorial Healthcare are dedicated to the advanced treatment of patients with neurological diseases.

and mycophenolate was initiated. The patient was followed in the clinic and transitioned to rituximab. His aphasia and weakness have resolved.

Discussion: Primary Angiitis of the Central Nervous System (PACNS) results in vascular inflammation of the small and medium vessels isolated to the brain, leptomeninges and spinal cord. A rare disorder, it is present in 2.4 cases per 1 million person-years, disproportionately affects males compared to females (2:1), and remains of unclear etiology. Given the non-specific and variable symptomatology, mimicking pathologies, and imperfection of investigative modalities, PACNS poses a diagnostic challenge.

Conclusion: Primary Angiitis of the Central Nervous System (PACNS) is rare and causes inflammation of the small and medium vessels of the brain, leptomeninges and spinal cord. Prognosis appears to be favorable with treatment, but without treatment, PACNS has a vile and vindictive progressive course, as occurred in this case.

Biography

Joe Sam Robinson is President of the Georgia Neurosurgical Institute and Chief of Neurosurgery at Atrium Navicent The Medical Center and Mercer University, all in Macon, Georgia. He is an alumnus of Harvard University and the University of Virginia Medical School. Dr. Robinson received his neurosurgical training at Northwestern University with rotations at the National Institute of Health and Sloan-Kettering Hospital, New York City. He has served on numerous government commissions, has widely published, and presented scientific papers in numerous academic locations.

Joe Sam Robinson* MD, Harold E. Groce MIP

Georgia Neurosurgical Institute, Macon, GA, USA

Cervical stenosis-induced chronic cerebrospinal fluid flow restriction as a contributing cause of dementia

Statement of the Problem: Obvious CSF flow obstruction is a well-established cause of acute and subacute dementia, as well as a host of other neurological dysfunction processes. Unfortunately, the less-obvious vagaries of CSF production and absorption remain relatively unexplored and, logically, could play a role in neuronal destruction.

The Purpose of this Study: The complexity and multitude of neuronal feedback mechanisms, as well as the difficulty in measuring subtle neurological defects, makes probing the etiology of cognitive decline a vexing process. The purpose of our inquiry is to demarcate processes (particularly cervical stenosis) by which restricted (often episodic), CSF circulation subtly damages neuronal tissue, and to propose studies and arrangements to track and prevent the onset of such difficulties.

Methodology and Theoretical Orientation: To assess the impact of recent new understandings of CSF flow dynamics, and on the possible etiology of dementia, a substantial literature review was conducted, and new suggestions proposed.

Findings: A systematic literature review suggests the elevated prevalence of cervical stenosis, concomitant CSF flow obstruction and dementia, in an elderly population. The literature further suggests that cervical stenosis can significantly, often discreetly, chronically compromise CSF circulation, thereby injuring neuronal tissue by direct untoward pressure, by restriction of cerebral CSF bulk flow retarding beta-amyloid clearance, and by ventricular ependymal cell damage allowing transependymal flow neuronal damage. Moreover, such restriction could

contribute to the development of sleep apnea, thereby causing concomitant respiratory and circulatory dysfunction, promoting the development of a vicious cycle in which widespread direct neuronal injury as well as further increase in ICP occurs.

Conclusion & Significance: We conclude that, among other obstructive possibilities, cervical stenosis could play a largely unappreciated role in the development of dementia. Recognition of subtle, chronic CSF alterations (in some ways comparable to chronically abnormal blood pressure) calls for the development of, preferably non-invasive, technology to measure CSF circulation on a 24-hour basis. If the parameters of episodic abnormalities could be better adjudicated, optimistically, prevention of such events could reasonably be effectuated by cervical decompression, therapeutic drug regimen, and altered sleep position. Such hopeful interventions could be instituted in the large, identified cohort of elderly patients presently undergoing evaluation and treatment for traditional cervical stenosis-engendered clinical problems. Patients in this established population could easily be assessed for the impact of dementia.

Dr. John Giordano PhD

Life Enhancement Recovery Center, United States

Integrative addiction and mental health wellness lecture

Demonstrates the integration of the most current evidence based holistic modalities Along with the best of traditional treatments. Discussions will feature information about amino acid therapy, Hyperbaric oxygen therapy for brain repair. Microbiome Repair, Acupuncture and Sauna detoxification The 12-step program. The pros and cons of psychedelic medicine. It will also talk about. Different testing, for the gut For nutrient deficiencies and methylation deficiencies, also heavy metals that cause neurotransmission interruption.

Biography

John Giordano, D.H.L C.A.P., M.A.C., C.C.J.S. is former owner of G & G Holistic Addiction Treatment center in North Miami Beach, Florida a 62 bed JCAHO accredited inpatient treatment center. He has received the Martin Luther King Award and the Homeless Humanitarian Award. He is also the author of the book How to Beat your Addictions and Live a Quality Life. He co-authored the book Molecular Neurobiology of Addiction Recovery the 12 Steps Program and Fellowship along with Dr. Kenneth Blum and Dr. Mark Gold, professor of psychiatry and neuroscience. He is also a contributor in 70 published medical and scientific journals.

Juan Moreira

Centro Neurointegrativo Gnosis, Puerto Rico

Alzheimer's disease counteracted by intravenous antioxidants biosupplements administration

Background: Alzheimer's disease is the most common form of dementia, accounting for 60% to 70% of cases. (1) Current research indicates that oxidative stress is the principal cause of pathology linked to alzheimer's disease. (2-6) Neuronal degeneration in this disorder is considered to be caused by the secondary effects of an increase in oxidation and lower mitochondrial bioenergetics with the lack of energy ending in neuronal death (2-6).

A reduction in ATP levels is caused by mitochondrial malfunctions that are characterized by decreased electron transport rates in complex I, III and IV of the mitochondrial respiration, increased oxidative stress–reactive oxidative species, decrease in glucose utilization associated to decrease activity and expression of Pyruvate Dehydrogenase Complex (PDH), elevation in glycolysis and loss in metabolic capabilities are early AD pathophysiological findings (2-6).

Rationality: Infusion therapy of intravenous and/or intraspinal cranio-cervical injections of antioxidant biosupplements may serve to counteract the oxidation and inflammation that occurs in alzheimer's disease by increasing the redox potential inside the mitochondria, which facilitate the production of neurotransmitters and reverse the loss of brain energy production at the chemical level, halting the cognitive deficit progression.

Methodology: In the first month, fifty (50) patients received two initial infusion treatments, which was then followed by a monthly infusion per year. Intravenous

Biography

Dr. Juan Moreira is a board-certified neurologist with dual fellowship training in vascular neurology and neuroimaging. With over 25 years of experience, he has consistently demonstrated a commitment to delivering top-quality healthcare across hospital, emergency room, and ambulatory care settings. From 1995 to 2022, he successfully operated a private neurology practice, earning a reputation for clinical excellence and patient-centered care. His expertise includes advanced treatments such as Botox therapy, Transcranial Magnetic Stimulation (TMS), and Laser Photobiomodulation. In addition to his clinical practice, he has a growing interest in clinical research and seeks to contribute to an institution dedicated to innovation, academic excellence, and cutting-edge neurological care.

biosupplements (NAD, alpha lipoic acid, vitamin C, glutathione,) were administered. MOCA and ADAS- cog were measured at baseline and after one year receiving treatment.

Results: Twenty-seven (27) of the fifty patients showed no signs of deterioration, eighteen (18) showed mild improvement at the end of the year on MOCA and ADAS-cog. Five (5) patients showed mild deterioration. No side effects were observed.

Conclusion: Clinical symptoms of alzheimer's disease can be medically controlled with an appropriate intravenous bionutritional antioxidant combination as a treatment by improving the energy production of the brain. A clinical trial with a larger population should be considered.

Ken Ware

Department of NeuroPhysics Therapy/ Treatment, Neurotricional Sciences Institute, Gold Coast, Australia

The role of beliefs, perception, and behavioural patterns in the evolution of psychophysical disorders

In accounts of the development and progression of psychophysical disorders such as Hereditary Spastic Paraplegia (HSP) and Facioscapulohumeral Muscular Dystrophy (FSHD), the role of beliefs, perceptions, and behavioural patterns has often been overlooked in favour of a genetically determinist paradigm. This paper explores the impact of Neuro Physics Treatment (NPT) on patients with HSP and FSHD. Through a series of clinical case reports, I demonstrate how intensive four-day NPT sessions can lead to rapid restoration of lost functions, challenging the conventional view of these disorders. I hypothesize that, by modulating the patient's perceptual and behavioural frameworks, NPT facilitates the emergence of healthier patterns, suggesting that environmental and psychological factors significantly influence the manifestation and management of these conditions. These findings indicate that the role of genetic inheritance may be overstated and that beliefs and perceptions could play a crucial role in the evolution of psychophysical disorders. The implications of this research extend beyond the traditional treatment paradigms, advocating for a more holistic approach that integrates the psychophysical dimensions of health and challenges the deterministic perspective of genetic inheritance.

Keywords: NeuroPhysics Therapy/Treatment, Emergence, Psychophysical Conditions, Perception, Beliefs, Behavorial, Inheritance, Genetics.

Biography

Ken Ware is the founder of Neurotricional Sciences Pty Ltd and NeuroPhysics Therapy and Research and he had been in private practice for almost 30 years, while doing independent and collaborative research. He also presented unique research at more than 35 major International Science Conferences including neuroscience, Physics, Psychology and Life Sciences, which covers a very broad scientific audience. He had published relative publications in 'Frontiers in Clinical Physiology' - 'World Journal of Neuroscience' – 'World Journal of Cardiovascular diseases' – 'Journal of Behavioural and Brain Sciences'- 'Complexity Science in Human Change'. He is Former Mr. Universe 1994, National powerlifting and Bodybuilding champion and record holder. He is recipient of Her Majesty, Queen Elizabeth's' 'Australian Sports Medal' - in 2000, in recognition for personal contributions to the development of the Australian Sporting Culture.

Nile Stanley

University of North Florida, United States

Tailoring biblio-poetry therapies using AI and biofeedback for addiction treatment

Biblio-poetry therapy, often called bibliotherapy or poetry therapy, is a therapeutic approach that uses literature—particularly poetry—as a tool for emotional expression, self-reflection, and personal healing. The integration of Artificial Intelligence (AI) and biofeedback into therapeutic practices has the potential to significantly enhance the effectiveness of biblio-poetry therapy, particularly for individuals struggling with addiction. This presentation explores multiple dimensions of how AI can support therapists and clients, drawing on a comprehensive literature review and firsthand experiences from therapists and clients at hope at hand, a nonprofit organization dedicated to using poetry therapy for healing. Recent studies indicate that biblio-poetry therapy develops individuals' crucial protective factors for addiction recovery. However, challenges such as personalization of content, accessibility, and engagement persist. This presentation will outline key applications of AI, including personalized content generation, sentiment analysis, accessibility enhancements, and data-driven insights. Case studies will highlight the experiences of therapists and clients utilizing these advanced tools and their impact on treatment outcomes. The aim is to demonstrate that the intersection of AI technology and biblio-poetry therapy represents an innovative frontier for enhancing addiction treatment efficacy, providing practitioners with a more engaging and individualized therapeutic approach. While these therapies may not directly prevent addiction, they contribute to overall well-being and equip individuals with valuable tools to navigate life's challenges.

Biography

Dr. Nile Stanley is an Associate Professor of Literacy Education and the Arts at the University of North Florida, His has 36 years of experience as a reading specialist, poetry educator, artist in residence, educational diagnostician, and visiting scholar of narrative psychology in China, Germany, and Vietnam. Dr. Stanley has published research in the Journal of Poetry Therapy, Reading Psychology, and Language Magazine. He is an editorial board member of the Journal of Poetry Therapy and a past editor of the Florida Reading Journal. Dr. Stanley is a founding board member of Hope at Hand, Inc., a non-profit center that provides art and poetry interventions for underserved youth. The AETNA Insurance Company awarded Hope at Hand, Inc, as one of the best non-profit mental health providers in North Florida.

Robert B. Slocum, Ph.D.

Narrative Medicine Program Coordinator, University of Kentucky HealthCare, Lexington, Kentucky, USA

Narrative medicine: A communication therapy for the communication disorder of Functional Seizures (FS) [also known as Psychogenic Non-Epileptic Seizures (PNES)]

Patients with Functional Seizures (FS) (also known as Psychogenic Non-Epileptic Seizures (PNES), have involuntary paroxysmal episodes that resemble epileptic seizures but without organic etiology. Many patients with FS have a history of sexual, physical, or emotional abuse or other traumatic or overwhelming experiences. FS is a communication disorder in which distress is expressed somatically in a pathological way instead of a healthy verbal manner. The patient's body may seem to enact a communication of its own as the patient cannot or will not communicate directly about an overwhelming and unspeakable subject.

Patients with FS are frequently misdiagnosed and mistreated for epileptic seizures. Accurate diagnosis may be delayed for many years. FS may cause severe disruption of the patient's quality of life in terms of employment or schooling as well as relationships, and activities of daily living. Some patients with FS have been accused of faking symptoms or malingering, and stigmatized by health care providers, coworkers, family members, and others in society. Patients with FS may have family histories of poor interpersonal communication and conflict resolution, with inherited codes of silence and shame concerning sensitive or traumatic subjects. Patients with FS may have Post-Traumatic Stress Disorder (PTSD) as a comorbidity.

Biography

Robert B. Slocum is the Narrative Medicine Program Coordinator at University of Kentucky HealthCare. He holds doctorates in law (Vanderbilt), ministry (University of the South), and theology (Marquette). He has experience in pastoral ministry as well as academic teaching and administration. He has taught undergraduate courses in religious studies and ethics. He is an Assistant Professor (voluntary faculty, Internal Medicine) at the University of Kentucky College of Medicine (COM). He teaches a fourth-year COM elective on the narrative basis for patient care and resilient practice. He is a member of the Hospital Ethics Committee. He is the author, editor, or co-editor of 14 books, including a journal of reflections. His 36 articles have appeared in theological or medical journals and as book chapters, and he has made presentations at more than two dozen theological and medical conferences. He has also published short fiction and poetry. He is interested in the clinical application of narrative and the significance of narrative for identity formation. He sees Narrative Medicine as a bridge between medical humanities and clinical practice.

They may have significant dissociation and inadequate emotional expression.

Narrative Medicine (NM) is a communication therapy that draws out the patient's narrative of illness or injury and overwhelming experiences through interactive conversations and writing exercises. NM provides space for the patient to explore thoughts and feelings in a guided conversation with a collaborator who listens attentively. NM is patient-centered and open-ended with focus on exploring topics the patient needs to discuss. NM seeks to help patients identify meaning and identity in the context of their lives and challenges.

Unlike Cognitive Behavioral Therapy (CBT), there is no script or checklist for NM sessions. NM sessions are not confrontational. The "teller" and "listener" share a "dyadic" professional relationship that encourages trust and respect. This interactive process is dynamic and may take unexpected turns. Both teller and listener can be changed by an NM session. Patients can reflect on their difficult stories relative to their sense of identity, sources of strength, new insights, and hope for the future. Unstated or previously silenced concerns may be voiced by the patient. An unhurried context of trust where the patient is heard can encourage the patient to communicate about disturbing history and situations. NM helps patients work through the biographical disruption of their condition that may threaten their sense of an integrated and coherent self. Narrative writing exercises have also proven helpful for patients facing a variety of traumas and major stresses.

A patient with FS who constructs a story (written or oral) about personal trauma or overwhelming stress can discover a narrative antidote to the communication disorder and inhibition of FS. The patient with FS can become the teller of the story who discovers hope by putting the unspeakable into words. Old taboos and codes of silence can be let go as the patient collaborates with an attentive NM provider. Finding words for difficult experiences and sharing the story can help patients process their thoughts and feelings to reintegrate traumas and other experiences relative to their sense of meaning, self-identity, beliefs, and goals. Difficult personal history cannot be changed, but the patient may come to see their challenges in a new light. Patients can begin to reclaim their lives from the communication disorder of FS and other functional disorders.

- This presentation will help the audience to understand the causes and symptoms of Functional Seizures (FS), and respond appropriately when encountering patients with PNES.
- This presentation will help the audience to understand the need for Narrative Medicine (NM) interventions for patients with FS, and to make appropriate referrals for care with NM.
- This presentation suggests future possibilities for research concerning the effectiveness of NM applications for patients with FS.

Sam Vaknin Ph.D

Professor of Clinical Psychology in CIAPS (Commonwealth of International Advanced Professional Studies), Cambridge, UK

Gangstalking is real, should be studied

Gangstalking is a much mischaracterized and neglected psychosocial phenomenon. It described in the literature overwhelmingly as a delusional disorder. It is sometimes conflated with social justice activism, victimhood and woke movement such as #MeToo when “gangs” of activists or alleged self-imputed victims target individuals cast as evil perpetrators. Alternatively, gangstalking has been attributed to deep state structures and featured in other conspiracy theories, such as Qanon. This expansive redefinition of gangstalking has given it a bad rep and caused academics to shy away from it.

Thus, people who claim to be gangstalked are cast as delusional, paranoid, psychotic, grandiose or narcissistic, and worse. There has been no in-depth study of the veracity of the claims the victims of gangstalking because its very existence has been widely and invariably discredited.

However, occasionally, gangstalking is real, it does occur. I will describe ten environments, settings, and circumstances that give rise to the orchestrated activity colloquially known as gangstalking.

10 Types of Gangstalking

Gang stalking in most cases is delusional, but, on some occasions, it is still a real phenomenon denied by the clueless academic community (targeted individual). Dynamics resemble shared psychosis: inducer and secondary induced.

Biography

Sam Vaknin is the author of Malignant Self-love: Narcissism Revisited as well as many other books and ebooks about topics in psychology, relationships, philosophy, economics, international affairs, and award-winning short fiction. He is a Professor of Clinical Psychology and Management Studies in CIAPS (Commonwealth of International Advanced Professional Studies), Cambridge and Birmingham, UK; Ontario, Canada; Lagos, Nigeria; a Visiting Professor of Psychology and Economics in South East European University (SEEU); and a former Visiting Professor of Psychology, Southern Federal University, Rostov-on-Don, Russia. He was the Editor-in-Chief of Global Politician and served as a columnist for Central Europe Review, PopMatters, eBookWeb , and Bellaonline, and as a United Press International (UPI) Senior Business Correspondent. He was the editor of mental health and Central East Europe categories in The Open Directory and Suite101. His YouTube channels garnered 100,000,000 views and 450,000 subscribers.

Morality play

Grandiosity via elation and empowerment Flying monkeys and unwitting collaborators: Conspiracies (structured goal-orientation) or networking (loose like-minded alliances or coalitions). Free riders. Smear campaigns (falsehoods, defamation, libel) Cults and the Other (in-group vs. out-group) Mentally ill Revenge Mobs (e.g., cancel culture) and mob or cult or hive mind Bullying (including at school) Religious excommunication Social ostracism Legal and institutional.

Biography

Sergei M. Danilov, MD completed his PhD and postdoctoral studies from the National Cardiology Research Center, Moscow, Russia. He is the Principal Investigator and Head of the laboratory of ACE biology in the Division of Pulmonary and Critical Care, (Department of Medicine in the University of Illinois at Chicago). His laboratory developed more than 40 mAbs to ACE. He has published more than 200 papers on ACE biology and ACE immmunochemistry in highly respected journals and has been serving as an editorial board member of Biomedicines.

Sergei M. Danilov MD, PhD

Division of Pulmonary and Critical Care, Department of Medicine, University of Illinois at Chicago, IL 60612, USA

ACE-dependent Alzheimer's Disease (AD)

An analysis of 1200+ existing missense ACE mutations revealed that more than 400 mutations are predicted to be damaging and led us to hypothesize that heterozygous carriers of these Loss-of-Function (LoF) ACE mutations (which result in low ACE levels) may be at risk for the development of late-onset Alzheimer's Disease (AD) [Danilov, 2024].

The 1st stage of this ACE-dependent AD project is characterization of blood ACE levels, catalytic properties, and conformations (ACE phenotyping) using a wide set of mAbs to ACE that were developed in our lab. We already have performed ACE phenotyping in >200 carriers of 80+ different ACE mutations and 200+ controls [Kryukova, Biomedicines, 2024, PloS One, 2024, unpublished]. We found that several of the relatively frequent AD-associated ACE mutations (present in at least 2% of the population) are truly damaging and, likely transport-deficient, resulting in plasma ACE levels only ~50% of controls. Some other AD-associated ACE mutations were not associated with a decrease in blood ACE levels, and likely do not affect ACE surface expression. Thus, their mechanism of association with AD is likely different, such as via catalytic changes. However, both these types of ACE mutations may result in reduced degradation of amyloid beta peptide Aβ42, an important component for amyloid deposition, and may pose a risk factor for the development of AD. Therefore, a systematic analysis of blood ACE levels in patients with ACE mutations has the potential to identify individuals at increased risk of late-onset AD.

The 2nd stage of this project will include 1) Cell-based in vitro model (HEK cells transfected with cDNA of different ACE mutations) in order to find transport-deficient ACE mutations, which may be amenable to rescue of impaired trafficking of mutant ACE to the cell surface; 2) medico-genetic analysis of 50-100 families of carriers with the most damaging and transport-deficient

ACE mutations. This stage will identify prospective candidates for a future limited clinical trial of preventive or therapeutic interventions to delay the development of ACE-dependent AD.

The 3rd stage of the project could be a limited clinical trial in individuals with several transport-deficient ACE mutations (starting with the most frequent damaging ACE mutation, Y215C) aiming to enhance mutant ACE protein traffic, as we previously demonstrated for the transport-deficient ACE mutation, Q1069R, using a combination of chemical and pharmacological chaperones and proteosome inhibitors [Danilov, PloS One, 2010].

Stephen Grossberg

Boston University, United States

Towards solving the hard problem of consciousness: The varieties of brain resonances and the conscious experiences that they support

The hard problem of consciousness is the problem of explaining how we experience qualia or phenomenal experiences, such as seeing, hearing, and feeling, and knowing what they are. To solve this problem, a theory of consciousness needs to link brain to mind by modeling how emergent properties of several brain mechanisms interacting together embody detailed properties of individual conscious psychological experiences. This article summarizes evidence that Adaptive Resonance Theory, or ART, accomplishes this goal. ART is a cognitive and neural theory of how advanced brains autonomously learn to attend, recognize, and predict objects and events in a changing world. ART has predicted that "all conscious states are resonant states" as part of its specification of mechanistic links between processes of consciousness, learning, expectation, attention, resonance, and synchrony. It hereby provides functional and mechanistic explanations of data ranging from individual spikes and their synchronization to the dynamics of conscious perceptual, cognitive, and cognitive–emotional experiences. ART has reached sufficient maturity to begin classifying the brain resonances that support conscious experiences of seeing, hearing, feeling, and knowing. Psychological and neurobiological data in both normal individuals and clinical patients are clarified by this classification. This analysis also explains why not all resonances become conscious, and why not all brain dynamics are resonant. The global organization of the brain into computationally complementary cortical processing

Biography

Stephen Grossberg is a principal founder and current research leader in computational neuroscience, theoretical cognitive science, and brain-inspired technology. He introduced the paradigm and equations for learning and memory that are used today. His work focuses upon how individuals adapt autonomously in real time to unexpected environmental challenges. Google Scholar reports more than 70,000 citations of his over 550 publications. He has received numerous awards and honors from around the world, most recently the 2015 Norman Anderson Lifetime Achievement Award of the Society of Experimental Psychologists (SEP), and the 2017 Frank Rosenblatt award of the Institute for Electrical and Electronics Engineers (IEEE).

streams (complementary computing), and the organization of the cerebral cortex into characteristic layers of cells (laminar computing), figure prominently in these explanations of conscious and unconscious processes.

Thomas J. Webster

School of Biomedical Engineering and Health Sciences, Hebei University of Technology, Tianjin, China

School of Engineering, Saveetha University, Chennai, India

Division of Pre-College and Undergraduate Studies, Brown University, Providence, RI, USA

How have we eliminated infection: From the bone to brain?

Implant infection is rising with the U.S. Centers for Disease Control predicting one person every three seconds will die from a bacteria infection by 2050. Nanomedicine is the use of nanomaterials to improve disease prevention, detection, and treatment which has resulted in hundreds of FDA approved medical products. While nanomedicine has been around for several decades, new technological advances are pushing its boundaries. For example, this presentation will provide an over 25 year journey of commercializing nano orthopedic implants now in over 30,000 patients to date showing no signs of failure. Current orthopedic implants face a failure rate of 5–10% and sometimes as high as 60% for bone cancer patients. Further, Artificial Intelligence (AI) has revolutionized numerous industries to date. However, its use in nanomedicine has remained few and far between. One area that AI has significantly improved nanomedicine is through implantable sensors. This talk will present research in which implantable sensors, using AI, can learn from patient's response to implants and predict future outcomes. Such implantable sensors not only incorporate AI, but also communicate to a handheld device, and can reverse AI predicted adverse events. Examples will be given in which AI implantable sensors have been used

Biography

Thomas J. Webster's (H index: 129) degrees are in chemical engineering from the University of Pittsburgh (B.S., 1995; USA) and in biomedical engineering from RPI (Ph.D., 2000; USA). He has formed over a dozen companies who have numerous FDA approved medical products currently improving human health in over 30,000 patients. His technology is also being used in commercial products to improve sustainability and renewable energy. He is currently helping those companies and serves as a professor at Brown University, Saveetha University, Hebei University of Technology, UFPI, and others. Dr. Webster has numerous awards including: 2020, World Top 2% Scientist by Citations (PLOS); 2020, SCOPUS Highly Cited Research (Top 1% Materials Science and Mixed Fields); 2021, Clarivate Top 0.1% Most Influential Researchers (Pharmacology and Toxicology); 2022, Best Materials Science Scientist by Citations (Research.com); and is a fellow of over 8 societies. Prof. Webster is a former President of the U.S. Society for Biomaterials and has over 1,350 publications to his credit with over 55,000 citations. He was recently nominated for the Nobel Prize in Chemistry. Prof. Webster

in orthopedics to inhibit implant infection and promote prolonged bone growth. In vitro and in vivo experiments will be provided that demonstrate how AI can be used towards our advantage in nanomedicine, especially implantable sensors. Lastly, this talk will summarize recent advances in nanomedicine to both help human health and save the environment.

also recently formed a fund to support Nigerian student research opportunities in the U.S.

Meera Vaswani

All India Institute of Medical Sciences New Delhi, India

Neurobiology of addiction

Addiction was historically viewed as a disease of "weak personality" and was not systematically addressed by the scientific and medical communities until the latter half of the 20th century. They are now commonly accepted as diseases of the brain caused by the impact of the drug on the brain (direct effects and neuroadaptations) modified by environmental factors.

Drug addiction can be considered a chronic brain disease that affects neurotransmission between neuronal circuits controlling behavior, emotion and cognition; characterized by excessive drug use, unsuccessful attempts in controlling drug intake leading to increase in anxiety and emotional pain. Thus, addiction results from repeated long-term exposure to drugs, leading to changes in central nervous system, especially in the midbrain dopamine system, resulting in an addictive state with complex behaviors such as dependence, tolerance, sensitization, and craving. However, addiction leading to loss of volitional control (opiates, nicotine and illicit use of psychostimulants), if left untreated, can cause major medical, social, and economic problems.

Drug addiction represents a dramatic dysregulation of motivational circuits caused by a combination of exaggerated incentive salience and habit formation, reward deficits and stress. Three phenomena characterize addiction: binge/intoxication, withdrawal/negativeaffectandcraving(preoccupation/anticipation). Impulsivity and positive reinforcement often dominate the first stages, driving the otivation for drug seeking, and compulsivity and negative reinforcement dominate the terminal stages of the addiction cycle.

Biography

Dr. Meera Vaswani, has been a Professor, WHO Collaborative National Drug Dependence Treatment Center, All India Institute of Medical Sciences, New Delhi, India. She is the First Scientist in India to initiate Genomic Pathways in Drug and Alcohol Abuse in Indian population. She has more than 20 years of experience in Addiction Psychiatry and has been recepient of several awards from NIDA, NIH. Distinguished International Scientist collaborative award(DISCA), for which she worked in Louisiana State University Health Sciences (LSUHS). International visiting faculty award for which she worked at University of Pennsylvania(UPENN), Philadelphia AND University of Minnesota, Minneapolis in USA. She was One of the Three Scientists to be awarded United Nationas Fellowship for Advanced Training in Substance Abuse for which she worked in University of Scotland, Glasgow, UK. She was invited by Japan to represent India for formulating by laws of Asia Pacific Society for Alcohol and Addiction Research (APSAAR) and was elected as Founder Member on "Board of Directors". She has Chaired Scientific Sessions on substance/ alcohol abuse in American Psychiatric Association

Binge/intoxication: Addictive substances and rewarding behaviors, increases the release of dopamine from mesolimbic projections to the nucleus accumbens. Thus, dopamine signals a pleasurable experience and is critical for the reinforcing effects which releases dopamine in the mesolimbic area, the corpus striatum, and the frontal cortex thereby promoting self-administration.

(APA) Meeting (2002-2012). She has been Nominated as Honorary member of "Board of Directors" by Scientific Council of Skibbereen University, UK.

Withdrawal/negative affect: The increase in negative emotional states in the withdrawal stage involve decrease in the dopamine function. These neuronal changes lead to dysphoric and stress-like responses. Repeated drug intake during withdrawal, results in a vicious cycle.

Craving (preoccupation/anticipation): The craving and deficits in executive function in the so-called preoccupation/anticipation stage involve the dysregulation of key afferent projections from the prefrontal cortex to the basal ganglia and extended amygdala. Impaired dopamine and glutamate signaling in the prefrontal regions weakens the ability to resist strong urges to stop taking the drug. Thus, despite the potentially catastrophic consequences, it develops compulsive behavior and the associated inability to voluntarily reduce drug-taking behavior.

Molecular genetic studies have identified transduction and transcription factors that might mediate initial vulnerability, maintenance, and relapse associated with addiction.

Summary

- Addiction-relevant behaviors in animal studies model have led to an understanding of addiction neurobiology and identification of several genes mediating variation in drug preference and response.
- The neurobiological pathways that modulate reward, stress resiliency and behavior inhibition are among those having underlying addiction liability.
- Variation in the neurobiology of addiction is genetically influenced by correlation of addiction liability with heritability.
- The individualization of treatment and prevention is likely to be advanced by the discovery of genetic predictors of the neurobiological pathways that underlie addiction.

Professor W S El Masri (Y) MB, BCH, FRCS, FRCP, PHF

Clinical Professor of Spinal Injuries, Keele University

Emeritus Consultant Surgeon in Spinal Injuries

RJ & AH Orthopaedic Hospital – Oswestry Shropshire UK

Traumatic Spinal Cord Injuries (TSCI) – Are the radiologically based "advances" in the management of the injured spine evidence-based?

Prior to WWII the majority patients with tSCI died in hospitals. There was however no shortage of Clinicians experimenting with the management of the injured spine.

During WWII L. Guttmann (a well-trained aggressive Neurosurgeon) was given the task of looking after injured soldiers & officers with tSCI at Stoke Mandeville Hospital in the UK. By studying the condition and the causes of death in a large number of patients, he realised that patients died or developed further neurological damage from various complications caused by the multi-organ Physiological impairment and malfunction caused by the neural tissue injury and not from the Spinal Injury (SI). Some died because of additional complications from surgical interventions on the injured spine.

By providing a Holistic Model of Service Delivery that attends to all the patho-physiological medical and non-medical effects of cord damage as well as the injured spine by what can be described as Active Physiological Conservative Management (APCM), Guttmann demonstrated that all complications can be prevented or diagnosed and treated early, some patients exhibit

Biography

Prof W S El Masri FRCS Ed, FRCP currently Hon. Clinical Professor of Spinal Injuries (SI), Keele University has trained between 1971 & 1983 in the Oxford group of hospitals, Guys & Stoke Mandeville hospitals and the USA. He obtained the first accreditation in Spinal Injuries and General Surgery in 1982. Appointed Consultant Surgeon in Spinal Injuries at the Midland Centre for Spinal Injuries in 1983. He personally treated 10,000 patients with. He published 145 manuscripts. He the author of the: Concepts of "Physiological Instability of the Spinal Cord", "Time related Biomechanical Instability", "Micro-instability of the injured spine" and published the largest series of Bladder cancer in SCI patients. He has repeatedly demonstrated and published on the discrepancy between the radiological and neurological presentation of patients in support of the hypothesis that the initial force of the impact and the quality of the management of both the injured spine and the effects of cord injury are the two majpr determinants of the initial neurological loss and the neurological outcome. He is Past-President of the International Spinal Cord Society; Past Chairman British Association of Spinal Cord Injury

various degrees of neurological recovery and the great majority of patients can live long, healthy, dignified, productive and often competitive lives.

Specialists and has lectured world-wide. He won many National and International awards.

In 1967 Frankel et al studied the neurological outcome of 612 patients treated by APCM and demonstrated that the majority of patients who retained sensory sparing but had no visible or palpable motor sparing following the injury exhibited the recovery of motor power from the motor neurone adjacent to the spared sensory tracts. Surprisingly they found that the neurological recovery occurred irrespective of the radiological presentation on Xrays at admission (within 15 days of injury) and on discharge. They published their results in 1969 in what has been known since as the Frankel Classification. This was the first population outcome study that correlated the presentation and outcomes of patients presenting with sensory and sensory-motor sparing. Their findings have been confirmed by various international groups of clinicians dedicated to the management of patients with tSCI.

Prof El Masri will discuss the change of both the methods of management and model of service delivery to patients with tSCI following the development of CT and MRI.

He will also discuss rationale and outcomes of each of these changes.

Yong-Xiao Wang

Department of Molecular and Cellular Physiology, Albany Medical College, Albany, New York, USA

Novel important cellular responses, signaling mechanisms and therapeutic options in vascular dementia

Vascular Contributions to Cognitive Impairment and Dementia (VCID) have high morbidity and mortality, and diabetes is a leading factor for VCID. The signaling mechanisms for diabetes-induced VCID are largely unknown, and the current treatments for VCID are neither very specific nor effective. Dysfunctions of Cerebral Arteries (CAs) to cause blood hypoper fusion to the brain makes an important contribution in VCID. Perfusion of CAs is predominantly generated and controlled by contraction and relaxation of Smooth Muscle Cells (SMCs). These two cellular processes are fundamentally produced and regulated by cell calcium signaling. We have started to explore whether and which ion channels might be essential for diabetes-evoked VCID. Consistent with the previous reports, we have found that intraperitoneal injection of streptozotocin caused a large increase in blood glucose, leading to diabetes in mice. The diabetic mice had declined cognition, impaired memory, and increased anxiety, thereby exhibiting significant VCID. This dementia might occur due to cerebral vasoconstriction and subsequent blood hypoperfusion, as revealed by Laser Speckle Imaging System. Diabetic cerebral vasoconstriction could result from increased intracellular calcium concentration ($[Ca^{2+}]_i$) in CASMCs. Increased $[Ca^{2+}]_i$ was attributed to the augmented Ca^{2+} release from the SR, the major intracellular Ca^{2+} store, which followed the hyperfunctional activity of Type-2 Ryanodine Receptor (RyR2), the calcium release channel on the SR in

Biography

Dr. Yong-Xiao Wang has been a Full Professor in Department of Molecular and Cellular Physiology at Albany Medical College since 2006. Dr. Wang obtained his MD at Wannan Medical University, PhD at Fourth Military Medical University, and postdoctoral training at Technology University of Munich and University of Pennsylvania. He has made many important findings using complementary molecular, biochemical, physiological, and genetic approaches at the molecular, organelle, cellular, tissue and organism levels in animals and human samples, had numerous publications in Nature Commun (impact factor: 14.290), Antioxid Redox Signal (8.209), Proc Natl Acad Sci USA (9.432), Nature (34.480), Circ Res (9.214), and other highly peer-reviewed journals and academic books, and served as the editorial board member and/or section editor as well as the executive committee member and/or subcommittee chair for professional societies.

CASMCs. Biochemical and genetic experiments indicated that the hyperfunction of RyR2 channel was a result of dissociation of FK506 Binding Protein 12.6 (FKBP12.6), an endogenous channel stabilizer (or inhibitor). In conclusion, our findings provide the first evidence that RyR2/FKBP12.6 dissociation exerts a crucial role in the development of diabetes-caused VCID; presumably, specific pharmacological and genetic inhibition of RyR2 and/or FKBP12.6 stabler in vascular SMCs may become specific and effective treatment options for diabetic VCID and vascular complications.

Zhen-Huan Liu

Nanhai Aternity and Children's Hospital Affiliated Guangzhou University of Chinese Medicine, China

Study scalp electroacupuncture therapy for autism spectrum disorder

Background: Autism Spectrum Disorders (ASD) are a series of neurodevelopmental disorders characterized by social disorders, rigid behaviors and narrow interests. The World Health Organization (WHO) estimates that the prevalence of ASD has been increasing over the past 50 years. With one in 48 children, ASD has become a global public health problem. Currently, there is no effective drug treatment for children with ASD, and there is no effective medical treatment. Education of these ASD children by special education methods alone has a poor outcome, with 75% of ASD children failing to achieve normal or cure. And 80% of ASD children suffer from mental retardation, ADHD, epilepsy, emotional sleep disorders and so on. It can cause pain and suffering for ASD children and their parents. The effects may persist into adulthood.

Objective: The purpose of this study was to investigate the effect of head acupuncture therapy on core symptoms, quality of life and communication ability of children with ASD. Our team conducted a controlled study of head acupuncture therapy in 198 children diagnosed with ASD. The clinical diagnostic criteria of children with ASD who were selected for head acupuncture treatment met the DSM-5 criteria. Each child and parent signed an informed consent form.

Methods: 198 children with ASD were randomly divided into two groups. Acupuncture treatment group 89 cases received head acupuncture therapy and the control group 89 cases received special education and

Biography

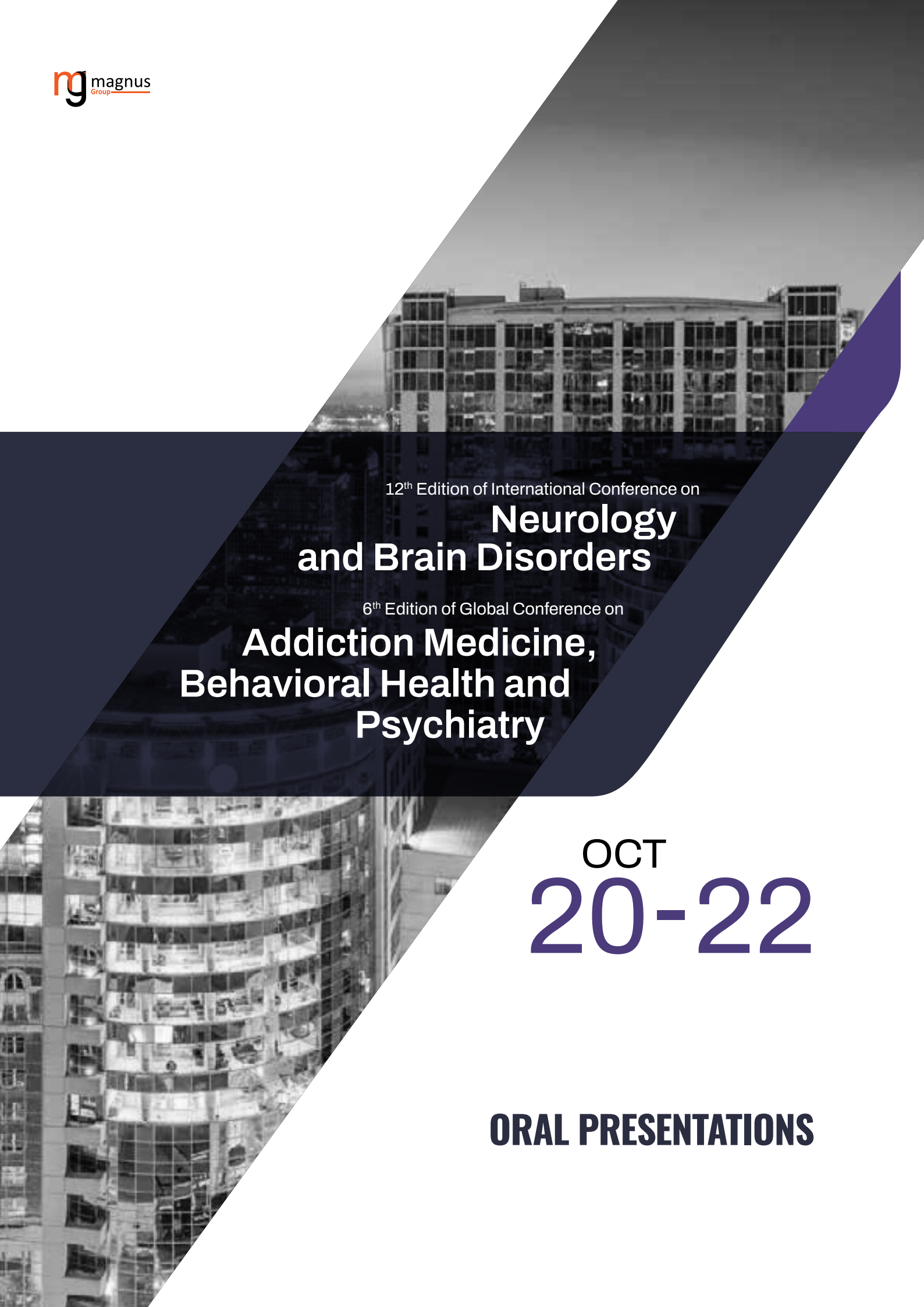
Zhenhuan LIU professor of pediatrics, Pediatric acupuncturist Ph.D.tutor. He has been engaged in pediatric clinical and child rehabilitation for 40 years. Led the rehabilitation team to treat more than 40,000 cases of children with intellectual disability, cerebral palsy and autism from China and more than 20 countries, More than 26800 childrens deformity returned to school and society and became self-sufficient. The rehabilitation effect ranks the international advanced level. Vice-chairman of Rehabilitation professional committe children with cerebral palsy, World Federation of Chinese Medicine Societies. Visiting Profassor of Chinese University of Hong Kong in recent 10 years. He is most famous pediatric neurological and rehabilitation specialists in integrated traditional Chinese and Western medicine in China. He has edited 10 books. He has published 268 papers in international and Chinese medical journals.

speech therapy for 3 months. Clinical evaluation methods were ATEC, ABC, CARS and Gesell developmental scales. Pre- and post-treatment assessments were performed. The age of the two groups was 3-8 years old, and the gender, degree of illness, comorbidities, family education and rearing methods, course of disease and other factors were statistically analyzed. There was no significant difference between the two groups, and there was a certain comparability between the two groups. Both groups were evaluated on the ATEC, ABC, CARS and Gesell scales before starting rehabilitation. CNRAT method, Zhijiu acupuncture and precise body surface projection in functional language area of cerebral cortex were selected for head acupuncture. Broca and Wennicken area were simultaneously stimulated by acupuncture. Acupuncture is performed every other day. After acupuncture, electrical acupuncture was given to stimulate the language area for 15 minutes, every 10 times of acupuncture, rest for 15 days. A second clinical evaluation was conducted 3 months after acupuncture.

Results: The improvement of core symptoms in the head acupuncture treatment group was better than that in the control group. The initial clinical improvement was in abnormal visual communication, improvement of sleep and mood, and the following clinical effects were alleviation of rigid behavior, improvement of attention, and improvement of verbal and social communication ability. Assessment of these scales reflects a gradual improvement in these core symptoms. But these changes were not significant in the control group.

Conclusion: The research results showed that head acupuncture therapy could significantly improve the core symptoms of ASD children, such as extreme loneliness, eye contact disorder, language repetition, compulsive agreement, and indifference, significantly regulate the abnormal EEG of ASD children, and positively promote the cognitive level of low-functioning ASD children. The clinical efficacy of the treatment of ASD was not closely related to age. Electrocephalic acupuncture can be used as an effective supplement and alternative medicine therapy in the clinical treatment of ASD. The popularization and application of head acupuncture therapy can improve the quality of life of ASD children and reduce the economic burden of society and family. Since 2004, Nanhai Women's and Children's Hospital Affiliated to Guangzhou University of Chinese Medicine has applied our original pediatric neurorehabilitation head acupuncture therapy to treat ASD and achieved good clinical efficacy. In order to further promote the application, our research group obtained the exact clinical effect confirmed by scientific evaluation through the clinical validation study and clinical follow-up of 1000 cases of ASD. We also receive pediatricians from all over the world who come to our hospital in China to study head acupuncture therapy for ASD. Doctors and rehabilitation therapists from Switzerland, Australia, the United States, Germany, Egypt, Russia, Kazakhstan and other countries have come to our hospital to study the clinical application of head acupuncture therapy in ASD.

Keywords: Autism spectrum disorder; Acupuncture; Scalp Electroacupuncture.



12th Edition of International Conference on

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6th Edition of Global Conference on

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20-22

ORAL PRESENTATIONS

Abbas Khizar Khoja[1,2*], Asfand Baig Mirza[1], Vishvan Naidu[1], Suleyman Ullah[1], Priyanka S. Iyer[1], Jack Plume[1], Arsalan Baig[1], Chaitanya Sharma[1], Ahmed Ramadan Sadek[1]

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Outcomes and prognostic factors of surgical decompression in neurological foot drop: A systematic review and meta-analysis

Objective: To evaluate the outcomes of surgical decompression and determine the factors predicting post-operative motor recovery in patients with unilateral footdrop and to propose a critical time frame for operative management.

Design: Systematic review and meta-analysis (using individualised patient-data for ordered logistic regression).

Subjects: The Population, Intervention, Comparator and Outcome (PICO) framework was used to define the eligibility criteria for the study. Adult patients (≥18 years) presenting with unilateral foot drop managed with surgical decompression +/- neurological rehabilitation.

Methods: The systematic review and meta-analysis were carried out in accordance with the guidelines of the PRISMA statement. The MRC Power scale for ankle dorsiflexion was used uniformly throughout the review. The clinical outcome was the stage of recovery of motor function at final follow-up. An improvement in this parameter to >3 was used as the definition of recovery from foot drop. Predictors of outcome (patient age, gender, pre-operative severity, symptom duration, and level of pathology) were tested for statistical significance at the alpha level 0.05 using a multi-variate cumulative odds statistical model.

Results: The search returned 1037 studies of which 66 extractable individual patient cases were eligible for inclusion. Statistical analysis showed that patients aged ≤47 (median age in our sample) [P=0.045], and symptom duration ≤6 [P=0.01] had favourable post-operative outcomes. When comparing patiences across pre-operative severity, patients with the highest severity of footdrop (MRC=0/5) were up to 23 times more likely to have poorer post-operative motor function as compared to patients with lower severity clinical foot drop (MRC 3/5) [P=0.001]. Gender and level of pathology were not statistically significant prognostic factors. A critical time frame of </=6 weeks from onset was isolated as the sweet spot for surgical decompression after which outcomes started to dramatically shift towards poorer motor recovery.

Conclusion: This meta-analysis isolated three factors significantly influencing motor recovery: (1) ≤47 years age, (2) symptom duration ≤6 weeks, and (3) pre-operative foot drop severity. We recommend a critical time-frame of under 6 weeks for surgical intervention from onset for this population. Further prospective, multi-centred research is required to explore these factors further.

Biography

Dr. AK Khoja completed his primary medical qualification (MBBS) from King's College London and went on to complete and achieve a distinction in his Master's degree (MSc) in Clinical Neurology and Neuroscience. Currently, he is an specialised (academic) foundation doctor working at the Nottingham University Hospitals (NUH) NHS Trust. To date, he has published 6 original articles in respected peer-reviewed journals and presented research around the UK and the European area.

Abdessamad El Hamaoui*, Younes Yassine, Zakaria abidli, Hassan Saidi, El Mahjoub Aouane

Natural Resources and Sustainable Development Laboratory, Faculty of Sciences, Ibn Tofail University, PB 133-14050, Kenitra, Morocco

Study of traumatic brain injuries and their consequences on neurocognitive deficits: Clinical analysis and therapeutic perspectives

Introduction: Traumatic Brain Injury (TBI) is a leading cause of mortality and morbidity worldwide, with significant neurocognitive consequences. In Morocco, particularly at Idrissi Hospital in Kénitra, TBIs represent a frequent cause of hospital admissions, yet data on their cognitive impact remain limited.

Objective: This study aims to evaluate the prevalence and predictors of neurocognitive deficits among TBI patients and to propose strategies for improved management.

Methods: A six-month cross-sectional study (February–August 2023) was conducted on 120 TBI patients at Idrissi Hospital. Data were collected on demographics, injury severity (Glasgow Coma Scale), and cognitive performance (MMSE, Clock Test). Statistical analyses included descriptive, bivariate, and multivariate tests.

Results: The majority of patients were male (80%) with a mean age of 40.5 years. TBI severity was mild (50%), moderate (30%), or severe (20%). Neurocognitive deficits were observed in 40% of patients, with memory (35%), attention (30%), and executive functions (20%) most affected. Significant correlations were identified between neurocognitive deficits and TBI severity ($r=0.68$, $p<0.001$) and age ($r=0.40$, $p=0.001$). Road traffic accidents were the main cause (60%), associated with extensive cognitive deficits.

Conclusion: TBI significantly affects neurocognitive functions, particularly in severe cases and older patients. Preventive measures and targeted rehabilitation strategies are crucial for reducing the long-term burden of TBI.

Keywords: TBI, Neurocognitive Deficits, Memory, Attention, Road Traffic Accidents, Morocco.

Adrienne Tichy
The Lodge at Delray Beach and Recovery Comes Home, USA

The importance of recovery residences in the addiction-recovery continuum

In today's landscape of addiction treatment, much focus is placed on detoxification, intensive inpatient care, and short-term rehabilitation. However, true recovery doesn't end when the discharge papers are signed—it begins. For too long, we've overlooked a critical phase in the addiction-recovery continuum: The transitional support offered by recovery residences.

Recovery residences are not just "sober homes"—they are intentional communities that bridge the gap between treatment and independent living. When done right, they are structured environments that provide safety, accountability, peer support, and a sense of belonging. They give individuals in early recovery the time, tools, and structure needed to rebuild their lives in alignment with their new values.

Drawing on 16 years of experience as co-founder of The Lodge at Delray Beach—a recovery residence community in South Florida—I will explore the essential role these homes play in relapse prevention, community reintegration, and long-term recovery success. I will also present data, real-world case studies, and best practices that differentiate high-integrity recovery residences from the poorly regulated models that give the industry a bad name.

This talk will highlight how recovery residences:

- Serve as a critical safety net post-treatment
- Reduce relapse and re-hospitalization rates
- Promote vocational, relational, and personal growth
- Provide cost-effective solutions compared to repeated inpatient stays

We'll also examine the need for clear standards, ethical oversight, and public/private partnerships to ensure recovery residences are a healing force—not a predatory business model.

As addiction becomes more complex and chronic, recovery residences must be seen as an essential part of a long-term, community-based recovery ecosystem—not an optional afterthought.

Agata Chudzik[1,2,3,*], Margaret Koletar[1], Emma Pineau[3], Siddharth Sadanand[1], Radoslaw Rola[2], Bojana Stefanovic[1,3], Eiko Iwashita[4], Wolfgang Kunze[4], Greg Stanisz[1,2,3]

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Transcutaneous vagus nerve stimulation modulates hippocampal glutamate–glutamine levels and brain activation in a rat model of chronic stress

Introduction: Transcutaneous Vagus Nerve Stimulation (tVNS) has gained attention as a non-invasive, drug- free approach for treating neurological and psychiatric disorders. This preliminary study aimed to assess neurometabolic and brain activation changes following tVNS in an animal model of Chronic Unpredictable Mild Stress (CUMS).

Materials and methods: Sixteen male Wistar rats were randomly assigned to four groups: naïve, stress (both without tVNS), control + tVNS, and stress + tVNS. Animals in the stimulation groups received a single session of vagus nerve stimulation. Under isoflurane anesthesia, the positive and negative electrodes were placed in contact with the skin over the line of the cervical branch of the vagus nerve in a shaved region of the neck. The stimulation parameters were identical for both experimental groups, with current delivered in cycles of 0.596 s “on” and 6.215 s ”off”. Each “on” cycle consisted of six 1 ms pulses separated by 97.7 ms period (amplitude 1 mA, total stimulation time 34 minutes per day). Magnetic Resonance Spectroscopy (MRS) and Functional MRI (fMRI) were performed using a 7T Bruker animal MRI system. Whole-brain fMRI was conducted during tVNS, and MRS of the right hippocampus was acquired immediately after stimulation. Groups without tVNS underwent MRS only. Stressed rats were subjected to the daily CUMS protocol for five weeks. The effectiveness of the stress induction was assessed using the elevated plus maze and open field tests before and after the CUMS protocol.

Results: After five weeks of stress, rats showed decreased exploration time and lower locomotor activity compared to baseline. MRS data were processed using LCModel to estimate absolute concentrations of brain metabolites. Glutamine levels were significantly elevated in both the control + tVNS and stress + tVNS groups compared to the naïve group (5.5±0.4 vs. 4.4±0.6 mM, p=0.02 and 5.7±0.5 vs. 4.4±0.6 mM, p=0.008, respectively). Additionally, glutamine levels were significantly higher in the stress + tVNS group compared to the stressed group without stimulation (5.7±0.5 vs. 4.6±0.3 mM, p=0.02). Glutamate concentrations were significantly higher in the stress + tVNS group compared to the control + tVNS group (13.5±0.7 vs. 11.6±1.0

mM, p=0.03). Taurine levels showed a non-significant increasing trend in the stress + tVNS group compared to the stressed group (9.1±0.5 vs. 7.9±0.8 mM, p=0.06). fMRI responses to tVNS were detected using generalized linear modeling (AFNI 3dDeconvolve and 3dREMLfit). While the groups had similar levels of hippocampal activation, the brainstem of the stressed group contained more voxels with t-scores exceeding 2.0.

Conclusion: Behavioural tests confirmed the effective stress induction via CUMS. tVNS influenced glutamine levels in the hippocampus of healthy rats and modulated both glutamine and glutamate concentrations in animals subjected to chronic stress. Brain activation with tVNS was evident in both control and stressed animals.

Funding: Canadian Institutes of Health Research (PJT148660); CRC (CRC-2019-00384); Polish National Agency for Academic Exchange (BPN/WAL/2023/1/00067).

Biography

Dr. Agata Chudzik earned her M.Sc. in Biology from Maria Curie-Skłodowska University in Lublin, Poland, where she later worked in the Department of Biochemistry. She subsequently joined Dr. Greg Stanisz's research group at the Medical University of Lublin, completing her Ph.D. in 2023, and then becoming an assistant professor. She undertook a six-month postdoctoral fellowship at the University of Miami, and in early 2025 joined the Sunnybrook Research Institute, fully affiliated with the University of Toronto, as a postdoctoral fellow. Her research focuses on neurobiology, particularly the microbiome–gut–brain axis, chronic stress, and glioblastoma biology, with a strong emphasis on advanced MRI techniques.

Dr. Aji Mathew

Consultant Paediatrician, Amana Health Care, Abu Dhabi, UAE

A case of paroxysmal sympathetic hyperactivity induced by renal stones in a chronically ventilated child

Introduction: Paroxysmal Sympathetic Hyperactivity (PSH) which was previously called sympathetic storming, is a clinical disorder mainly caused by traumatic brain injury, stroke, hypoxic brain injury or encephalitis. The clinical features include sudden episodes of hypertension, tachycardia, tachypnoea, fever, sweating and dystonic postures. Even though majority of the episodes are spontaneous, few of the episodes may be triggered by pain or infection. We report a case of sympathetic storming in a child with HIE, found to be triggered by renal stones. Removal of the stones led to the control of symptoms.

Case report: One year boy, a known case of hypoxic ischemic encephalopathy, chronically ventilated child, noted to have frequent episodes of sympathetic storming, difficult to control, most of the episodes required multiple medications including benzodiazepines and propranolol. Markers of infection and cultures were negative. In search for a trigger, noted to have ureteric stones in ultrasonography. Presence of stones were confirmed by CT scan of abdomen. He underwent cystoscopic removal of stones , which lead to the resolution of symptoms.

Conclusion: Since the pathology of sympathetic storming is still not clear, symptom control is the primary aim of treatment. Search for a trigger is also mandated as in our case. Treatment of underlying cause can lead to resolution of symptoms..

Biography

Dr. Aji Mathew is a Consultant General paediatrics with more than 16 years of experience as a paediatrician, including 7 years at Al Jalila Children's Hospital, Dubai. Dr. Mathew graduated from Mahatma Gandhi University, India in 1999 obtaining an MBBS degree. Following his graduation, Dr. Mathew had his training in paediatrics at Manipal Academy of Higher Education, India from 2006 to 2008. As of 2008, Dr. Mathew holds an MD Doctor of Medicine in paediatrics. Since 2012, Dr. Mathew has been a member of the Royal College of Paediatrics and Child Health (UK). In 2019, he received the European diploma in paediatric pulmonology, and in 2020, he was elected a fellow of the Royal College of paediatrics and Child Health (UK). Field of Expertise: Acute pediatrics, Growth and development pediatrics, Behavior issues in children, Immunizations, Allergy and asthma, Common respiratory and gastrointestinal conditions, Long term rehabilitation.

Akankunda Veronicah Karuhanga
Golden Age Elderly Homes Kampala, Uganda

Geriatric care for individuals with neurological & brain disorders in carehomes /assisted living facilities

Care homes play a crucial role in providing specialized care and support to individuals with neurological conditions such as alzheimer's disease, parkinson's disease, and stroke survivors. These facilities offer a safe and structured environment, tailored to meet the unique needs of residents with neurological and brain disorders. At golden age elderly homes Uganda, we pride ourselves in providing personalised care to seniors.

Geriatric care focuses on providing high-quality, patient-centred care to older adults, addressing their unique physical, emotional, and social needs.

Core Principles of Geriatric Care

1. **Patient-cantered care:** Prioritizes the individual's needs, preferences, and values.
2. **Interdisciplinary teams:** Collaborative approach involving healthcare professionals from various disciplines.
3. **Comprehensive assessments:** Evaluates physical, functional, cognitive, and social aspects.
4. **Prevention and early intervention:** Focuses on preventing age-related conditions and addressing issues promptly.
5. **Family and caregiver support:** Recognizes the vital role of family and caregivers in the care process.

Geriatric Care Services

1. **Primary care:** Routine check-ups, health monitoring, and disease management.
2. **Geriatric assessments:** Comprehensive evaluations to identify age-related issues.
3. **Rehabilitation and therapy:** Physical, occupational, and speech therapy to maintain or restore function.
4. **Palliative care:** Focuses on alleviating symptoms, pain, and stress for individuals with serious illnesses.
5. **Social services:** Support with daily living activities, transportation, and connections to community resources.

Geriatric Care Settings

1. **Primary care clinics:** Outpatient settings providing routine care.
2. **Geriatric clinics:** Specialized clinics focusing on age-related issues.
3. **Assisted living facilities:** Residential settings offering support with daily living activities.
4. **Skilled nursing facilities:** Providing 24/7 care for individuals requiring ongoing medical attention.
5. **Home care:** Services delivered in the comfort of the individual's own home.

Benefits of Geriatric Care in clients with neurological conditions

1. **Improved health outcomes:** Proactive approach to addressing age-related issues.
2. **Enhanced quality of life:** Focus on maintaining independence, function, and social connections.
3. **Support for family and caregivers:** Recognizes the vital role of caregivers and provides resources and guidance.
4. **Cost-effective care:** Preventive approach can reduce healthcare costs and hospitalizations.
5. **Patient and family satisfaction:** Prioritizes individualized care, dignity, and respect.

Biography

Veronicah Akankunda is a Ugandan Gerontologist, Neuro Researcher, social entrepreneur and advocate for elderly care. She is the Founder and CEO of Golden Age Elderly Homes (GAEH), a pioneering organization providing holistic care to seniors in Uganda. Veronicah is a passionate geriatric care specialist, visionary leader with expertise in Gerontology, healthcare management, and social work for over 10 years. Her dedication to elderly care is inspiring. The engaging presentations, public lectures and compassionate care to seniors inspire audiences to action. Apart from Gerontology consultancy she has innovated age-friendly living spaces. Golden Age Elderly Homes being the first care home in the country is a beacon of hope for Uganda's seniors offering a comprehensive range of services designed to cater to the diverse needs of the elderly population. From the Geriatric Training Academy that equips students with Nursing skills in Elderly care, to Mobility Aides, Personal Care, Elderly Nutrition, and Rehabilitation, the organization stands as a one-stop destination for elderly care support. The unique blend of home services, including Physiotherapy and Massage, Adult day care centre sets Golden Age Elderly Homes apart, providing a holistic approach to caregiving as seniors age gracefully with Dignity in the comfort of their homes. Veronicah's work focuses on addressing the Psychosocial, emotional, and healthcare needs of the elderly, promoting dignity, and challenging age-related discrimination. She has gained recognition for her efforts to improve elderly care in Uganda and Africa. Her dedication to enhancing the lives of older adults has earned her respect and admiration internationally. Her work continues to inspire positive change and promote a culture of care and inclusivity for all ages. Her projects have Improved lives of countless elderly individuals and their families, Raised awareness about Geriatric care and age-related issues. Inspired a new generation of social entrepreneurs and caregivers, Contributed to policy changes and advocacy for elderly rights in Uganda. Her selflessness, compassion, and innovative spirit makes Veronicah a true champion for the elderly and a role model for social entrepreneurship. She has won numerous Awards for Excellency in Palliative care ,Health entrepreneur , Innovation and Entrepreneurship, her Research in Geriatric Care , Neurology and Neurological disorders has been internationally published and continues to impact society. Golden Age Elderly Homes has left an indelible mark on Ugandan communities. The organization has provided geriatric care to over 1962 elderly individuals, conducted more than 134 community health camps, and trained over 350 home care-based carers. The impact extends beyond physical care, touching on community health and general well-being.

Dr. Akshayaa Kumar Aggarawal*, Nang Soe Yamin Mon*, Dr. Jithun V Varghese, Dr. Mansoor Gazi

Walsall Manor Hospital, Walsall, United Kingdom WS2 9PS

When the mind plays tricks: LGI1 encephalitis mimicking psychiatric illness

Background: LGI1 antibody-associated autoimmune encephalitis is a rare condition typically affecting older adults, presenting with seizures, cognitive decline, and behavioural changes. Diagnosis is often delayed due to normal imaging, EEG, and CSF findings. Early recognition and immunotherapy are critical to prevent long-term deficits. This case illustrates the diagnostic challenges and importance of considering autoimmune causes in subacute neuropsychiatric syndromes.

Case Presentation: A 66-year-old forklift driver presented to Walsall Manor Hospital in March 2024 with a 10-day history of brief, non-convulsive episodes (10 seconds, once or twice daily), without loss of consciousness or typical seizure features. Since February 2024, he also experienced a “butterfly” abdominal sensation, occasionally followed by limb jerks or falls. His symptoms progressed over the months to include confusion, memory loss, impulsivity, and disinhibition.

Initial blood tests showed mildly raised WBC and neutrophils, elevated ALT and GGT, and low calcium. CSF was unremarkable with no signs of infection or inflammation. EEG and MRI brain were normal, and a cardiology review excluded syncope. Early investigations were inconclusive, and he was referred for psychiatric evaluation.

Cognitive testing (ACE: 85/100, MMSE: 28/30) raised concerns for a neurological cause. In September 2024, serum LGI1 antibodies were detected, confirming LGI1 autoimmune encephalitis; other autoimmune and paraneoplastic panels were negative. Repeat testing in October reaffirmed LGI1 positivity. CSF antibody panels remained negative, suggesting disease confined to serum.

In December 2024, treatment with IV methylprednisolone followed by oral steroids was initiated, with some cognitive and behavioral improvement. Despite ongoing hallucinations and insomnia (managed with melatonin), overall clinical status improved.

As of February 2025, the patient showed stabilization with persistent but manageable neuropsychiatric symptoms and continued follow-up under neurology.

Conclusion: The patient who has clinical presentation of personality change and abnormal body movement had normal initial work up. While earlier it was seen that there were non-epileptic attacks, it was extensive work up that showed the patient was having a rare disease – auto-immune encephalitis.

Biography

Dr. Akshayaa Aggarawal, completed MBBS and MD in Internal Medicine. The doctor has cleared MRCP Part 1 and 2. Currently working in the Walsall Manor Hospital as a senior clinical fellow. Published articles and actively involved in teaching.

Ala Bashir

Worcestershire Acute Hospitals NHS Trust, United Kingdom

A case of probable Progressive Supranuclear Palsy Frontal type (PSP-F) presenting as psychosis

Background: Progressive Supranuclear Palsy (PSP) is the second most common parkinsonian disorder after idiopathic parkinson's disease; yet, it remains frequently misdiagnosed, with only 4,000 confirmed cases reported in the UK by the PSP Association. While neuropsychiatric symptoms in PSP are well-documented, psychosis as a presenting complaint is exceedingly rare. This case describes a 48-year-old patient who presented with psychosis resistant to antipsychotic treatment, alongside executive dysfunction. emphasising the need for clinicians to consider neurodegenerative conditions in atypical presentations.

Case Presentation: The patient presented with severe depression and psychotic symptoms resistant to multiple antidepressants and antipsychotics. Her condition deteriorated, leading to subsequent hospitalisation. Despite extensive psychiatric interventions, including electroconvulsive therapy, her symptoms persisted, prompting neurological evaluation.

Outcome: A provisional diagnosis of PSP was established after ruling out autoimmune encephalitis and utilising the movement disorder society's diagnostic criteria. A DaT scan showed subtle reduction in tracer uptake in the left putamen, indicating decreased presynaptic dopaminergic transporter activity. Hallmark features of PSP were identified clinically, alongside no pathognomonic neuropathological signs on imaging indicating a 'probable' diagnosis of PSP. Paired with prominent frontal lobe dysfunction, PSP-F subtype is currently the most likely diagnosis.

Follow Up Discussion: This case illustrates the diagnostic challenges posed by neuropsychiatric symptoms in PSP. It highlights the need for clinicians to consider PSP in patients with persistent psychiatric symptoms, especially when accompanied by parkinsonism. Future management may include trials of clozapine to address psychotic symptoms without exacerbating parkinsonian features and neurorehabilitation tailored to the patients PSP subtype, especially important if PSP is recognised early, extending functional ability and maximising quality of life.

Biography

Dr. Ala Bashir is a Foundation year doctor working in Worcestershire Acute Hospitals Trust located in the West Midlands in the UK. His passion lies in neurology, especially in the realm of neuropsychiatry. This particular cases hones in on Dr Bashir's interests, combining both psychiatry and neurology. PSP in particular is a rare condition that is commonly misdiagnosed and identified 2-4 years after presentation, adversely affecting patient's benefits gained from neurorehabilitation. This case highlights the breadth of varying psychiatric presentations of PSP, different subtypes of PSP, and how to recognise the condition early to maximise patients functional ability as they deteriorate neurologically.

Alex Lombardi
The Brain Edit, United States

The brain edit: A lifestyle-first approach to healing

In this dynamic and interactive workshop, Alex Lombardi — three-time brain injury survivor, speaker, and author — introduces The Brain Edit™, a lifestyle-first framework that bridges neuroscience, wellness, and lived experience to reimagine what recovery can look like. Brain injury recovery is often presented as a passive process: rest, wait, and hope for improvement, but for survivors and caregivers, this approach can feel like being left to their own devices without direction.

At the heart of this session is a powerful idea: if you're not talking about lifestyle, you're not talking about recovery. Lifestyle is more than routines or habits; it is the foundation that determines how the brain and body function day to day. Participants will learn how seemingly small daily choices, what you eat, how you structure your time, and the systems that support you, can create meaningful and lasting change.

Drawing from her personal journey, Alex takes participants beyond theory and into application with a workshop designed to equip attendees with tools they can use immediately to rebuild their health, habits, and identity after brain injury. Through interactive discussion, participants will connect insights to their own lives, leaving with a personalized sense of what to shift next.

Key takeaways include:

- A new perspective on recovery that centers lifestyle as the missing variable — helping survivors and caregivers see a path forward that feels actionable, not overwhelming.
- Practical strategies to edit daily routines: simplifying nutrition to support brain function, how to reduce decision fatigue, rebuilding habits step by step, and designing supportive systems that make recovery sustainable.
- Presenting accessible tools such as time blocking, nervous system regulation practices, and daily habits that make day-to-day life more manageable.
- A sense of hope paired with direction — moving beyond inspiration into specific, doable steps participants can implement right away.

Alex delivers more than motivation; she provides a framework that can be implemented into every area of your recovery journey. Survivors will leave feeling seen and supported, caregivers will leave with strategies they can apply immediately to support the people they love, and the community as a whole will gain a shared language for what it means to rebuild life after brain injury.

Biography

Alex Lombardi is a speaker, strategist, and founder of The Brain Edit™, a community redefining brain recovery through lifestyle. A three-time brain injury survivor, she transformed her own recovery into a movement bridging neuroscience, wellness, and lived experience. Known for her keynote The Brain Edit, Alex reveals why lifestyle is the missing variable in recovery. She hosts The Enriched Podcast and authored What You Build From Here, a collection of tools for rebuilding after brain injury. Alex shows survivors how to restore health, habits, and identity—because if you're not talking about lifestyle, you're not talking about recovery.

Alexander Kharibegashvili

Iakob Gogebashvili Telavi State University, Faculty of Exact and Natural Sciences, Telavi, Kakheti, Georgia Telavi Regional Hospital, Georgia

Neurochemical theory of epilepsy and mental diseases pathogenesis. Role of the blood-brain barrier

Background and Aims: In epileptology and psychiatry, a huge layer of clinical facts have been accumulated, many of which have not received a proper explanation. An attempt to explain some of the clinical manifestations of epilepsy and mental illness is presented.

Methods: Consideration of these clinical manifestations in the light of the proposed new hypotheses, theories.

Results: In the presentation, in light of the presented hypotheses about the pathogenesis of epilepsy and mental diseases the author considers certain clinical manifestations of epilepsy, touches upon the neurochemistry of behavior, as well as the neurotransmitter hypothesis of schizophrenia. In the context of this hypothesis, there are discussed the clinical signs of epilepsy such as forced normalization, reinforcement epilepsy activity during sleep deprivation, and other clinical manifestations of epilepsy. Two kinds of "clinical-electroencephalographic dissociation" are proposed. An explanation for the pathogenesis of forced normalization in migraine has also been proposed. It has been suggested that disturbances in the metabolism of different neurotransmitters cause the development of various psychiatric diseases. The presented theory also considers mental diseases and the biological antagonism of schizophrenia and epilepsy. The role of the blood-brain barrier in the development of epilepsy is considered. According to the author's assumption, the blood contains psychogenic and epileptogenic substances, the concentration of which in the blood is higher than their concentration in the brain. If the function of the blood-brain barrier is impaired, their content in the brain can increase and cause epilepsy or mental disorders. In addition to the antiepileptic system of the brain, the concepts of the borderline and extracerebral antiepileptic and antipsychotic systems are proposed.

Conclusion: The intensification of the development of neurochemical theories in epileptology will accelerate the creation of new antiepileptic and antipsychotic drugs.

Keywords: Epilepsy, Neuro Mediators, Forced Normalization of Electroencephalogram Image, Behavior, Biological Antagonism of Schizophrenia And Epilepsy, Blood-Brain Barrier.

Biography

Dr. Alexander Kharibegashvili graduated from the Tbilisi Medical Institute in 1978. After that, he completed internship and clinical residency at the Institute of Clinical and Experimental Neurology in Tbilisi, specializing in epilepsy, and electromyography training at the 2nd Moscow Medical Institute. Currently works at Telavi State University and Telavi Regional Hospital. Author of articles and inventions in the field of neurology, psychiatry and neurosurgery.

Dr. Anita V. Handore[1*], Dr. Sharad R. Khandelwal[1], Vijaya S. Ghayal[2], Pankaj S. Musale[3], Dilip V. Handore[1]

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Phytomolecules as nicotinic receptor modulators: A novel strategy for combating nicotine addiction

Nicotine addiction is a major global health challenge, necessitating the development of innovative therapeutic solutions beyond conventional pharmacological interventions, such as nicotine replacement therapy and synthetic receptor modulators, which often exhibit limited efficacy and adverse side effects. Recent research highlights the potential of phytomolecules i.e. bioactive compounds derived from plants—as promising alternatives for modulating Nicotinic Acetylcholine Receptors (nAChRs). These natural compounds exert their effects through diverse mechanisms, including competitive and non-competitive inhibition, allosteric modulation, and receptor desensitization, thereby influencing nicotine's neuropharmacological impact. Among nAChRs, the α4β2 and α7 subtypes play critical roles in nicotine dependence, with partial agonists demonstrating therapeutic potential by modulating receptor activity, alleviating withdrawal symptoms, and reducing relapse risk. Several bioactive phytomolecules, including cytisine, lobeline, anatabine, nornicotine, coniine, and arecoline, exhibit partial agonist activity at these receptors offering natural alternatives or adjuncts to synthetic drugs like varenicline. Besides, bioactive compounds of C. Sinensis and M. oleifera shows potential as α-2 nAChR inhibitors. Additionally, some plant-derived compounds such as theaflavin-3-gallate, asiaticoside, and theaflavin-3, 3-digallate are also identified as potent inhibitors of specific nAChR subtypes, including α3 and α2, expanding the therapeutic landscape for nicotine dependence. In this way, by leveraging the receptor-modulatory effects of phytomolecules, novel, plant-based therapeutic strategies can be developed, offering safer, more accessible, and effective options for nicotine addiction treatment.

Keywords: Nicotine Addiction, Nachrs, Bioactive Phytomolecule, Receptor Modulation, Natural Inhibitors, Therapeutic Strategies

Biography

Dr. Anita V. Handore is the visionary Founder and Director of PhytoElixir Pvt. Ltd., an innovation based Phyto-Biotech start up, Nashik, MS, India. A highly accomplished bio scientist and entrepreneur. She holds Ph.D. in Microbiology and M.Phil. in Environmental Science and recognized with her remarkable achievements including two granted process patents in Microbiology and Plant Biotechnology. Her next patents are filed in the fields of Agriculture-Biotechnology, Food Technology and Phytonutraceutical&Healthcare. Her work exemplifies the harmonious integration of science, innovation, and societal benefit. With over two decades of expertise in innovative research and development, she has excelled in translating laboratory research into value driven technologies, significantly

impacting sectors including Phyto-Biotechnology, Microbiology, Phyto-Nutraceuticals, Phyto-cosmeceutical, Functional Foods and Beverages, Education, Agriculture and Environment, Healthcare, etc. At Global platform, she has been honored as distinguished speaker for delivering scientific talks at prestigious International conferences and symposia. She is working as Editorial board member and prolific author, contributing extensively to International research journals and books of global repute. Over 100 research publications, presentations and, talks with reputed International and National research Journals & platforms along with numerous book chapters and books published with world leading publishers are to her credit. Sequences database of several novel and rare endophytes discovered by her submitted to NCBI GenBank is creditable. Dr. Anita has commendably and successfully shouldered managerial and administrative responsibilities and effectively serving as Program Advisory Committee member for research foundations and prestigious National universities. As a research guide, she has been effectively guiding and mentoring M.Sc. and PhD students of recognized Indian Universities. Her social and scientific endeavors extend beyond the research. She actively participates in community-driven initiatives, leveraging her knowledge and expertise to raise awareness and uplift society. To date, this versatile personality has been honored and appreciated with over 21 awards from State, National, and International forums in recognition of her noteworthy research contributions to diverse sectors including Social Welfare. Driven by her profound vision, Dr. Anita has started journey as an entrepreneur with the purpose to serve hidden treasure of nature & bring resilience by revitalizing living beings, through her scientific and innovative power for addressing some global challenges & create value for society at large.

Archit Sonaje

Wilcox High School, miRcore, Sunnyvale, California, United States

Differential gene expression analysis reveals NF-κB subunit as a potential biomarker for alcohol use disorder

Alcohol use disorder is a chronic disease that causes an individual to lose control of their ability to stop drinking, diagnosed by state markers and biomarkers. We analyzed a publicly available RNA-seq dataset comparing patients with alcohol dependence (now AUD) to controls. We hypothesized that after analysis of the dataset, there would be a differential gene expression between the control and disease (alcohol dependence) groups indicating that expression levels for specific genes vary which can provide insights into biological processes. Using gene expression omnibus 2R, we identified differentially expressed genes with a P-value threshold of 0.05. The 250 most upregulated genes by P-value were inserted in the Search Tool for the Retrieval of Interacting Genes/Proteins database (StringDB) to find out the relationships between genes through the Kyoto Encyclopedia of Genes and Genomes (KEGG) and gene ontology. Furthermore, through the analysis, RELA (NF-**κ**B Subunit p65) emerged as one of the significant genes since it is an activator of AUD symptoms in the "AGE-RAGE signaling pathway in diabetic complications," possibly serving as a minimal biomarker for AUD. RELA has a Log2FC of 0.384 and approximately 1.3 times the expression level compared to the control group. This biomarker is more reliable than others through its low false discovery rate of 0.014919. The level of expression in RELA along with the candidate genes can be used to diagnose AUD which would provide a high sensitivity along with a low false discovery rate, making it ideal compared to other markers. Gamma-Glutamyl Transferase (GGT) and Carbohydrate-Deficient Transferrin (CDT), current markers for AUD, were not seen in the differential gene expression analysis possibly due to them not being highly expressed in the post-mortem brain tissue compared to the control. RELA has some benefits compared to other markers like GGT and CDT in the sense that RELA has a relatively low false discovery rate and does not have a low sensitivity. Both GGT and CDT are considered to be low sensitivity with GGT being 61% and CDT ranging from 26-83%. Additionally, the CDT marker results in a significant rate of false negative results while the GGT marker can be affected by certain medications along with pancreatitis or prostate disease in an individual. These weaknesses can be alleviated with RELA since this gene can also be used alongside the other candidate genes to ensure that it does not have a low sensitivity or false negative results. The candidate genes can serve as potential biomarkers since they have a higher fold-change than RELA but they do not directly affect the symptoms in the "AGE-RAGE signaling pathway" so due to confounding variables, these genes were not the main focus of our research. Alcohol can also stimulate NF-**κ**B activity and cytokine expression in the brain which is seen through the

dataset since it was derived from brain biopsies. The increased levels in the samples could serve NF-κB as a mediator of addiction-related gene expression

Biography

Archit Sonaje is deeply engaged in computational biology research, with experience investigating a range of diseases including Alzheimer's and Parkinson's. He aspires to pursue a career in the medical field, with a strong interest in integrating clinical practice and research. Passionate about healthcare equity, Archit is committed to improving access to medical resources for underserved populations. He looks forward to contributing meaningfully to the scientific community and advancing innovations that enhance patient care and public health.

Atta Boateng MPH, MHA

Department of Neurosurgery, Columbia University, NY, USA

Disparities in mortality, hospitalization costs, and length of stay after intracerebral hemorrhage: Cross sectional analysis of the 2022 U.S. national inpatient sample

Intracerebral Hemorrhage (ICH) is among the most devastating forms of stroke, carrying high mortality, prolonged hospitalization, and substantial financial burden. Whether disparities in outcomes across racial, insurance, and socioeconomic groups persist in the era of contemporary stroke care remains unclear, and addressing this gap is critical for advancing equitable neurocritical care. A cross-sectional study was conducted using the 2022 National Inpatient Sample (NIS), the largest all-payer U.S. inpatient database. Adult discharges with a primary diagnosis of ICH (ICD-10: I61.x) were included. Survey weights were applied to generate nationally representative estimates. The primary outcome was in-hospital mortality; secondary outcomes included Length of Stay (LOS) and total hospital charges. Predictors of interest were race, primary payer, and ZIP-code income quartile, with adjustment for age and sex. Multivariable regression models were used for mortality, LOS, and charges. A weighted national estimate of 78,685 ICH hospitalizations was identified in 2022. Overall, in-hospital mortality was 20.2%. Mean LOS was 9.9 days, and mean hospital charges exceeded $160,000. After adjustment, mortality risk varied significantly across subgroups. Black (18%) and Hispanic (19%) patients had lower adjusted mortality compared with White patients (20%), while Asian/Pacific Islander (27%) and Native American (24%) patients had markedly higher mortality. Patients with Medicaid or no insurance experienced higher odds of death relative to privately insured individuals. Disparities in resource use paralleled mortality patterns: LOS and charges were significantly greater among racial and payer subgroups, further stratified by income quartile. This study is the first to use the most recent national data to evaluate contemporary disparities in ICH outcomes. Despite advances in stroke systems of care, significant inequities persist across race, insurance, and socioeconomic context. These findings underscore the urgent need for equity-driven interventions to reduce mortality and mitigate resource burden in acute stroke care.

Biography

Atta Boateng is a medical student at St. Matthew's University and an MS candidate in Epidemiology at Columbia University. He also holds an MPH from the Icahn School of Medicine at Mount Sinai and an MHA from Purdue University. His research focuses on health disparities, population health, neuroepidemiology, and neurosurgery outcomes. Atta is committed to advancing equity-driven, community-engaged research and supporting initiatives that improve healthcare access and outcomes in underserved populations.

Atta Boateng Jr[1*] MHA, MPH; Taira Anderson[1] MHA; Faiza Chowdhury[2]

[1]Columbia University, Mailman School of Public Health, New York, NY, USA

[2]Sarah Lawrence College, Bronxville, NY, USA

Performance and predictive accuracy of machine learning prognostic models in traumatic spinal cord injury: A systematic review and meta-analysis

Traumatic Spinal Cord Injury (SCI) is a leading cause of long-term neurological disability, profoundly affecting function and quality of life. Advances in artificial intelligence, particularly Machine Learning (ML), have enabled prognostic models to estimate recovery, functional independence, and complication risks. Despite increasing use, the predictive accuracy and clinical applicability of ML models for traumatic SCI have not been fully evaluated. We systematically searched PubMed, Cochrane Library, and CINAHL-EBSCO for peer-reviewed studies published in the past five years applying ML to outcome prediction in adult patients with traumatic SCI in the United States. Eligible models included random forests, support vector machines, neural networks, gradient boosting, deep learning, and ML-enhanced logistic regression. Outcomes of interest were neurological recovery (AIS, SCIM, FIM, gait), functional independence, complications, reoperation risk, quality of life, and mortality. Non-traumatic SCI, animal studies, case reports, reviews, protocols, and studies lacking performance metrics were excluded. Screening and extraction were conducted independently by three reviewers using Covidence. Following PRISMA guidelines, 454 records were screened, with 32 studies included, representing over 200,000 patients across registry, ICU, and rehabilitation datasets. Mortality, neurological recovery, and hospital/ICU outcomes were most commonly predicted. Tree-based and ensemble methods (Random Forest, XGBoost, LightGBM, CatBoost) were frequently applied, often paired with SHAP analysis or decision-tree thresholds for interpretability. ML models generally outperformed conventional regression benchmarks, with mortality prediction AUCs of 0.84–0.89, functional outcome R^2 up to 0.88, and discharge disposition AUCs of 0.80–0.87. Key predictors consistently included admission AIS grade, motor scores, age, injury level, and ICU vital signs. Overall, ML prognostic models show strong predictive accuracy and potential as clinically interpretable tools for risk stratification and outcome prediction in traumatic SCI. However, reliance on retrospective data, heterogeneous outcomes, and limited external validation limit immediate clinical application. Future research should prioritize prospective validation, standardized outcomes, and integration into bedside decision-support systems to advance precision-oriented, patient-centered SCI care.

Biography

Atta Boateng is a medical student at St. Matthew's University and an MS candidate in Epidemiology at Columbia University. He also holds an MPH from the Icahn School of Medicine at Mount Sinai and an MHA from Purdue University. His research focuses on health disparities, population health, neuroepidemiology, and neurosurgery outcomes. Atta is committed to advancing equity-driven, community-engaged research and supporting initiatives that improve healthcare access and outcomes in underserved populations.

Charles Browning M.D.

Chief Executive Officer, Behavioral Health Link, Atlanta, GA; Chief Medical Officer, Recovery Innovations, Phoenix, AZ, United States

Crisis care 2.0: Transforming substance use systems into recovery gateways

Around the world, crisis care systems are evolving to meet the rising needs of individuals with mental health and substance use challenges. Yet, Substance Use Disorder (SUD) treatment too often remains siloed in crisis services, limiting impact and leaving opportunities for engagement untapped. SAMHSA's Crisis Care 2.0 guidelines outline a more comprehensive approach, one in which crisis systems serve as active gateways to recovery rather than brief stabilization points.

This presentation explores how integrating SUD care into every level of the crisis continuum — 988 call centers, mobile crisis teams, and crisis receiving facilities — can transform outcomes for individuals and communities. Drawing on decades of experience in crisis psychiatry and SUD treatment, as well as national consultation on crisis system design, Dr. Browning will share proven strategies for embedding evidence-based practices such as Medications for Opioid Use Disorder (MOUD), withdrawal management, harm reduction, and peer support into crisis workflows.

Real-world examples from U.S. communities will be featured, including Durham County's post-overdose peer engagement model, Baton Rouge's data-driven hotspot mapping, and North Carolina jail-based programs continuing MOUD and ensuring immediate linkage to community care upon release. The role of technology with call center and mobile dispatch platforms, real-time bed and referral registries, and outcome dashboards will be highlighted as a critical enabler for scaling these innovations, identifying gaps, and demonstrating return on investment.

By reframing crisis care as a fully integrated part of the substance use recovery system, communities can leverage the infrastructure, workforce, and reach of crisis services to address the ongoing overdose crisis, close treatment gaps, and reduce the economic and social toll of untreated SUD. This presentation will equip participants with both the conceptual framework and practical tools needed to operationalize this vision in their settings.

Biography

Dr. Charles "Chuck" Browning is a psychiatrist and national leader in crisis care innovation. He serves as Chief Executive Officer of Behavioral Health Link and Chief Medical Officer of Recovery Innovations. With over two decades of clinical and leadership experience, he has co-developed SAMHSA's National Toolkit for Behavioral Crisis Care, contributed to the revision of national crisis guidelines, and led integration of substance use disorder treatment into crisis systems across the U.S. He is a frequent national speaker and advisor to state and federal agencies on behavioral health system transformation.

Christopher Kennedy

Department of Family Nursing, Frontier Nursing University, Versailles, Kentucky, USA

Substance use disorder in the context of bipolar disorder: The need for a dual-diagnosis framework

Bipolar disorder affects an estimated 37 million people globally, representing approximately 0.5% of the world's population. While diagnosis rates are higher in regions such as North America, South America, and Oceania than other parts of the world, this is likely due to diagnostic, cultural, and environmental factors with the true global prevalence likely being underdiagnosed and underreported. It is estimated that bipolar disorder is initially misdiagnosed as often as 70% of the time due to the shared symptoms with other mental health conditions such as major depressive disorder, attention-deficit/hyperactivity disorder, schizophrenia, and borderline personality disorder. Complicating this further, as many as 60% or more of those diagnosed with bipolar disorder will experience a Substance Use Disorder (SUD) at some point in their lives, with approximately 25% experiencing SUD at any given time. Concurrent SUD in these individuals can be a product of manic behavior, an attempt to self-medicate, and/or shared neurobiology between bipolar disorder and SUD, significantly increasing the risk for mortality. The notable overlap between bipolar disorder and SUD highlights the need for an integrated approach to diagnosis and treatment. Clinicians must consistently assess for bipolar disorder in individuals presenting with substance use issues—and vice versa—to ensure accurate diagnosis and effective care. A dual-diagnosis and treatment framework is essential to improve outcomes and reduce the morbidity and mortality of both conditions.

Biography

Christopher Kennedy, DNP, PMHNP-BC, FNP-BC, CNE, APRN is a dual-certified Psychiatric Mental Health and Family Nurse Practitioner. He received his Doctor of Nursing Practice and Master of Science in Nursing in Family Practice from Frontier Nursing University in Versailles, Kentucky, where he is currently an Assistant Professor in the Department of Family Nursing. He received his Psychiatric Mental Health Nurse Practitioner certification from Wilkes University in Wilkes-Barre, Pennsylvania. In addition to teaching, Christopher founded Big Picture Psychiatry & Wellness, LLC, a telehealth practice offering inclusive psychiatric care across eight states.

Daniel Curry* MD, Rebecca White NP

Department of Neurosurgery, Baylor College of Medicine/Texas Children's Hospital, Houston, Texas, USA

Environmental factors mimicking shunt malfunction symptoms in pediatric hydrocephalus: A hidden driver of unnecessary hospital encounters

Background: Hydrocephalus is a common and lifelong neurological condition in children, most often managed by Cerebrospinal Fluid (CSF) shunt systems. Due to the potentially life-threatening consequences of shunt failure, even subtle symptoms such as headache, vomiting, or lethargy often trigger urgent evaluation, including emergency imaging and surgical intervention. However, a significant proportion of these episodes result in no clinical or surgical findings, raising the question of whether external, non-neurological factors could be contributing to symptom perception and healthcare utilization.

Objective: To evaluate the impact of environmental conditions—such as barometric pressure, temperature, and humidity—on symptom flare-ups in pediatric hydrocephalus patients and their potential role in mimicking shunt malfunction.

Methods: A retrospective review of pediatric hydrocephalus patient encounters was conducted using institutional data from 2018 to 2022. Encounter dates were matched with historical environmental data to analyze correlations between atmospheric conditions and hospital visits. A caregiver-reported symptom survey was also distributed nationally in partnership with the Hydrocephalus Association to capture real-world insights into symptom timing and perceived triggers.

Results: Preliminary findings suggest a consistent pattern of increased emergency department visits and diagnostic evaluations during periods of low barometric pressure and abrupt environmental changes. In many cases, these visits did not result in surgical intervention, suggesting symptom flares mimicked shunt malfunction but were not associated with device failure. These findings were supported by caregiver reports indicating perceived symptom sensitivity to weather fluctuations.

Conclusion: Environmental factors may play a significant but under recognized role in triggering symptoms that mimic shunt malfunction in pediatric hydrocephalus. Improved understanding of these patterns could help reduce unnecessary hospital encounters, support development of predictive models, and guide future strategies for outpatient ICP monitoring. Each hospital admission for suspected shunt malfunction carries an average cost of over $25,000, highlighting the financial and emotional burden of diagnostic uncertainty in this population.

Biography

Daniel J. Curry, MD is Professor of Neurosurgery at Baylor College of Medicine and Director of Pediatric Functional Neurosurgery at Texas Children's Hospital. He leads the nation's largest pediatric SEEG and RNS programs and has pioneered minimally invasive treatments for epilepsy, neuromodulation, and hydrocephalus. His research focuses on intelligent shunt systems and real-time intracranial pressure monitoring. Dr. Curry has authored numerous peer-reviewed publications and is the recipient of the prestigious Herbert Olivecrona Award from the Karolinska Institute in Stockholm, Sweden, recognizing his global impact on advancing the field of pediatric neurosurgery.

Dr. Daniel Sun
Westminster Theological Seminary, United States

Stress-induced trauma syndrome in Chinese teenagers

(Based on the book Stress-Induced Trauma Syndrome in Chinese Teenagers)

Background & Rationale: Over the past decade, Chinese adolescents have reported rising levels of sleep disturbance, somatic complaints, academic avoidance, irritability, and episodes of self-harm. While many cases do not meet criteria for single-event Post-Traumatic Stress Disorder (PTSD), they display chronic, trauma-like reactions to persistent stressors—high-stakes schooling, family pressure, social comparison amplified by digital life, and community disruptions. Drawing on the clinical narratives, field notes, and caregiver toolkits compiled in *Stress-Induced Trauma Syndrome in Chinese Teenagers*, this paper proposes a practice-based construct—**Stress-Induced Trauma Syndrome (SITS)**—to describe and address these presentations within China's cultural and educational context.

Concept & Definition: SITS refers to a pattern of trauma-like symptom clusters arising from **cumulative, uncontrollable, and prolonged** stress rather than a single catastrophic event. Core features include: (1) selectively compromised social function, (2) emotional numbing alternating with sudden outbursts particularly triggered by parent-child relationship, (3) avoidance of school- or peer-linked triggers, (4) negative self-appraisals ("I am the failure"), and (5) occasional self-harm or suicidal attempts particularly triggered by parent-child relationship. In contrast to classic PTSD, SITS is driven by **micro-traumas**—daily humiliations, perfectionist demands, unstable attachment cues, online shaming—that accrue into **allostatic load.**

Mechanisms (Bio-Psycho-Social-Spiritual).

- **Neurobiology:** Repeated uncontrollable stress sensitizes the amygdala–insula threat system, blunts prefrontal regulation, and keeps the HPA axis "idling high," producing sleep fragmentation and somatic pain.
- **Cognitive-emotional loops:** Catastrophic appraisal ("one exam = my future"), attentional bias to threat (grades, likes, rankings), and shame-based identity scripts.
- **Family&culture:** Filial duty, one-chance gateway exams, parental over-scaffolding, "face" economy, and intergenerational anxiety spillover.
- **Spiritual/meaning:** Felt loss of purpose or worth ("I am only my scores"), with recovery often requiring re-anchoring identity beyond performance.

Phenotype & Red Flags: Typical entry complaints: headaches or stomachaches on school nights, "can't switch off," scrolling until 2 a.m., dread before tests, perfectionism with paralysis, and "going blank" during oral checks. Red flags include escalating self-injury, suicidal ideation, bullying/cyber-shaming exposure, substance misuse, and abrupt decline in functioning.

Screening & Triage (Measurement-Guided Care).

We recommend a brief, three-gate screen used in schools/clinics/tele-consults:

1. **Distress** (sleep, mood, somatic pain, school refusal);
2. **Danger** (self-harm thoughts/behaviors, abuse, extreme weight change);
3. **Disability** (days missed, grades crash, social withdrawal).

Use short, validated mood/anxiety/trauma checklists where available; pair scores with **function** and **safety** questions. "Yellow" (mild–moderate) cases enter stepped self-help with coaching; "Orange" (moderate–severe) add structured therapy; "Red" (imminent risk) trigger crisis protocols and medical referral.

Intervention Framework (Stepped & Context-Sensitive).

1. **Psychoeducation that normalizes and names:** explain SITS as the brain's "alarm learning" under chronic pressure—treatable, not moral failure.
2. **Body-first regulation:** sleep prescription (fixed wake time, evening light-down), brief breathing drills, movement snacks between study blocks; reduce late-night screens.
3. **Cognitive-behavioral tools:** thought records targeting catastrophe/shame, graded exposure to feared situations (e.g., short oral answers, then full presentations), and values-based goal setting that decouples self-worth from scores.
4. **Family alignment:** replace "Why can't you…?" with collaborative problem-solving, set two non-negotiables (sleep, safety), and one flexible zone (study style). Coach parents in "praise effort, validate emotion, reinforce recovery behaviors."
5. **Trauma-like symptoms address:** re-register traumatic memory in the neuro-system as non-traumatic.
6. **School partnerships:** quiet rooms for de-escalation, exam accommodations for acute cases, teacher gatekeeper training to recognize SITS signals, and anti-shame classroom language.

Ethics & Culture: Interventions must respect family honor, avoid public shaming, and protect adolescent privacy. Clinicians should translate skills into culturally resonant metaphors (e.g., "training the inner metronome," "giving your brain a nightly curfew"). Faith communities and secular providers can cooperate around shared aims: safety, dignity, and hope.

Contribution & Call to Action: This paper consolidates a **Chinese, practice-first language** for trauma-like distress under continuous stress—**SITS**—and offers implementable algorithms suited to classrooms and homes. We invite partners to (1) standardize screening and stepped-care pathways, (2) co-develop teacher/parent micro-curricula, and (3) study outcomes that adolescents themselves value: sleep, belonging, courage to try again.

Conclusion: Not every teenager needs a diagnosis; many need **a map**. Naming **Stress-Induced Trauma Syndrome** gives schools and families a common map for recognizing, de-escalating, and reversing the brain's "always-on" alarm. With small, repeatable practices—sleep first, safety always, skills together—Chinese adolescents can move from **surviving school to recovering self**, and from silent endurance to resilient hope.

Keywords: Adolescence, Chronic Stress, Trauma-Like Symptoms, China, School Mental Health, Family Systems, Stepped Care.

Biography

Daniel Sun is a psychiatrist and clinical researcher whose work spans biomarker discovery in major psychiatric disorders, sleep-deprivation physiology, resilience, and mental health. He earned a Ph.D. in Counseling & Psychological Studies from Regent University (2018¨C2022), an M.S. in Applied Psychology and a B.M. in Clinical Medicine from Naval Medical University, and is currently pursuing an M.Div. at Westminster Theological Seminary. Clinically, he has 20 years of clinical experience, and in recent years, he has been practicing as Psychiatrist at Shanghai United Family in China, and Founder/Chief Lecturer of Muxile Consultation & Management (Shanghai, China), where he trains therapists and provides consultation. Dr. Sun is first or co-first author on multiple peer-reviewed papers, including studies in Journal of Psychiatric Research, American Journal of Medical Genetics Part B: Neuropsychiatric Genetics, International Journal of Psychophysiology, Journal of Molecular Neuroscience, Journal of Clinical Neuroscience, and International Journal of Behavioral Medicine. His books include What Is Going on with My Teenager Child? Break Free from Depression, and Stress-Induced Trauma Syndrome.

Deetya Potakamuri

Adrian Wilcox High School, Santa Clara, California, USA

The journey to Alzheimer's disease diagnosis and beyond through different perspectives

Alzheimer's Disease (AD) is a prevalent neurodegenerative disease that affects at least 50 million people worldwide and is on the rise to affect about 152 million by 2050. This progressive disease burdens both the patients and their family/caregiver, bringing upon social, emotional, and financial challenges. The pathology of AD involves the buildup of amyloid plaques and neurofibrillary tangles years before the onset and diagnosis of the disease. Signs of cognitive decline are often first reported to health care professionals before evaluation and eventual diagnosis and treatment. Initially, these signs are often diagnosed as Mild Cognitive Impairment (MCI), but consistent further testing is required by health care professionals to monitor the progress of the disorder and its possible development into dementia and AD. Health care professionals utilize a combination of cognitive assessment, evidence of AD pathology, and other testing to diagnose the disease and rule out other potential causes of cognitive impairment. An earlier diagnosis of AD is beneficial in planning current and future care and management for AD symptoms and limitations for the patient, their families/caregivers, and the health care professionals themselves. In this review article, we will discuss the current etiology of AD in addition to considering different approaches health care professionals could take to more effectively diagnose and manage the disease along with their limitations.

Biography

Deetya Potakamuri is currently a junior at Wilcox High School with a strong passion for the biological sciences, especially neuroscience. She hopes to improve people's lives through research and practical applications. She has authored a research paper on the etiology of Alzheimer's Disease, exploring the perspectives of health care providers, patients/families, and society.

Dhastagir Sultan Sheriff
Anna Medical College, Mauritius

Ethical issues related to substance abuse in HIV patients

Ethics guides one to make a choice from the principle of what is right or wrong. Substance abuse involves both the provider and user. It can be also be personal and societal in nature. Morality and its legalization say “for public good” has to balance with the individual right such as “autonomy”.

It starts with labeling a person as “substance abuser,” which is not an easy choice to make as it may infringe upon the individual right’s autonomy. It is rather an intense emotional issue that transcends from personal to societal level. It clashes with personal values and beliefs including both religious and regional ones.

Drug or substance abuse is one of the major causes of HIV. Injection Drug Use (IDU) is one of the direct routes of HIV transmission. Up to 30 percent of global HIV infections are due to injecting drug use. Of an estimated 15.9 million people who inject drugs worldwide, up to 3 million are infected with HIV.

Such patients and their therapy involve ethical issues:

Some of the ethical issues that need to be addressed are

1. Duty to Treat: Duty to treat requires the participation of the patient, counselor and the treating physician. The patient need to have access to medical insurance. The counselor must be available to advise and direct the patient to a particular therapist or an institution or tertiary care center. The Doctor must be willing to interact with an HIV infected person. It is a complex interaction between individuals and if there is an agency that needs to be taken into consideration.

2. Duty to Warn: There has to be a trust built between the patient and the counselor. The counselor must have the capacity to inform the status of the patient to the partner or wife or husband. There are cases who knowingly infected multiple partners in spite of being warned of the status.

3. End of Life Issues: A physician may face many complex situations where he or she has to deal with informing the patient about the prognosis, or to handle a patient who discontinues the treatment as it does not help him or her from recovering from the infection. The physician has to follow the code of conduct ethics or institution ethics in dealing with such situations to avoid legal implications.

4. Dual Relationships: The provider would have met the patient in a social context and also at a professional level. One needs to set boundaries when dealing with such situations.

5. Confidentiality: The core ethical principle is to keep the test result confidential. When it comes to confidentiality, one has to consider the situation whether he or she can tell the HIV status of patient to the partner or the family.

6. Scarce Resources: Availability of resources including the provider, drugs as well as medical insurance will decide the treatment schedule of a patient with HIV. Based on these ethical issues, the presentation will be focused.

Biography

Dhastagir Sultan Sheriff is a member of the European Society for Human Reproduction and Early Human Development, the Association of Physiologists and Pharmacologists of India, and the National Academy of Medical Sciences, New Delhi. He is also a resource person for UNESCO. Dr. Sheriff has authored five books, including a textbook on medical biochemistry with additional interest in human sexology. He has published editorials in the British Journal of Sexology, Journal of Royal Society of Medicine, Postgraduate Medicine, and The Scientist. He was a former Rotarian, Citizen Ambassador, and was selected for the Ford Foundation Fellowship.

Edie Raether, MS, CSP
NeuroShifts and Wings for Wishes Academy, United States

Your brain…your breakthrough: NeuroShifts to rewire minds for recovery and resilience

In a world where anxiety, addiction, and emotional overwhelm are hijacking the mental health of our youth, **NeuroShifts**™ offers a revolutionary, brain-based approach to prevention, recovery, and resilience. Rooted in neuroscience and designed for real-world impact, NeuroShifts bridges the gap between emotional wellness and neurological wiring—empowering young people (and those who guide them) to take control of their minds, their decisions, and their lives.

By decoding the brain's reward system and harnessing the power of neuroplasticity, this session reveals how dopamine, habit loops, and subconscious programming drive anxiety, screen compulsion, and addictive behaviors. Participants will discover science-backed tools to reset dopamine, rewire thought loops, and regulate emotional storms, transforming destructive cycles into constructive choices.

This isn't just about coping. It's about" being the boss of your brain" **to recondition the brain for courage, confidence, and conscious choice.** NeuroShifts equips youth, educators, and mental health professionals with strategies to break the digital dopamine trap, outsmart self-sabotage, and build healthier brains for a brighter future.

Objectives

By the end of this session, participants will be able to:

1. **Understand** how dopamine and developing neural pathways increase vulnerability to addiction and anxiety in youth.
2. **Recognize** early warning signs of digital and behavioral addictions and their impact on mental health.
3. **Apply** the NeuroShifts Rewire Formula™ (dopamine resets, habit hacks, subconscious priming) to empower resilience and recovery.
4. **Implement** practical tools that help youth move from craving to control, and from compulsion to clarity.

Key Takeaways

- Rewire Habit Loops that fuel addiction, self-sabotage, and emotional outbursts.
- Train the Brain's Reward System to build lasting motivation and healthy behavior.
- Replace Fear-Based Reactions with empowered responses and inner calm.
- Break the Bullying Cycle by shifting the identity of both victims and aggressors.
- Prime the Subconscious Mind to foster resilience, empathy, and better decision-making.
- Build Mental Fitness to outsmart anxiety, self-harm, and peer pressure.
- Develop Self-Leadership Skills grounded in neuroscience and personal agency.

Biography

Edie Raether, MS, CSP—the Maestro of Mind Mastery—is a behavioral health strategist, psychotherapist, family counselor, and bestselling author with over 50 years of experience empowering youth and shaping social change. A TEDx speaker and former ABC talk show host, Edie's keynotes have inspired audiences on five continents with her pioneering work in neuroscience, child development, and mindset mastery. She is the founder of **Wings for Wishes Academy**, a nonprofit dedicated to building resilient, remarkable children through brain-based, heart-centered education. With advanced studies in neuropsychology and degrees in Occupational Therapy and Counseling from the University of Wisconsin, Edie has been mentored by world-renowned thought leaders such as Dr. Jean Houston, Dr. J.L. Moreno, and Dr. Lauretta Bender. Her TEDx talks—Brain Fitness for Kids: Cloning the DNA of Einstein and Is AI and Digital Dopamine Making Us Dumb?—spotlight her mission to address today's digital dopamine epidemic and equip the next generation with the tools to be the boss of their brain.

Elana Deuble LMSW[1*], Sara Lorenzen[2*]

[1]Community Medical Services, United States
[2]Bright Therapeutics, United States

LAC connection is the opposite of addiction: Using digital tools to drive connection in clinical settings

In recovery, connection isn't a luxury-it's a lifeline. In a world where digital access is high but emotional connection is low, clinical programs have an urgent opportunity: To use technology not to replace, but to enhance human connection. This presentation highlights how recovery connect, a digital tool integrated into counseling workflows, was used to strengthen engagement in Opioid Use Disorder (OUD) treatment through scalable, clinician-led implementation.

Based on findings from a year-long feasibility study across 53 community medical services clinics, involving over 11,000 patients and more than 300 therapists, one message was clear: Connection drives outcomes. Clinicians exchanged over 400,000 messages with patients, and patients completed more than 270,000 therapeutic activities. Notably, 84 percent of patients intended to use the app as part of their care, and 87 percent of clinicians reported that it improved their clinical performance. These insights laid the foundation for the SMART OUD randomized clinical trial, where recovery connect demonstrated significant improvements in retention and engagement.

This session moves beyond the data to focus on how to bring digital connection into real-world care.

Common clinician concerns such as "How do I connect between sessions?" or "How can I support clients without burning out?" are addressed through four key strategies:

Train with Purpose: Teach clinicians not just how to use the app, but how to use it meaningfully by sending empathetic messages, responding to journals, and celebrating progress.

Start Strong: Prioritize engagement in the first seven days. Make the app a key part of client onboarding to extend the therapeutic alliance.

Build Routine: Integrate app data into team huddles and supervision to drive informed care.

Act Early: Use engagement insights to identify and support clients at risk of disengaging.

Biographies

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Sara Lorenzen, MS, LAC, NCC, CCMHC, has over a decade of experience in mental health and substance use treatment, specializing in clinical technology implementation. She holds a Master of Science in Counseling with a specialization in Mental Health Counseling and is a National Certified Counselor, Certified Clinical Mental Health Counselor, and Certified Clinical Trauma Specialist. As Director of Clinical Implementation at Bright Therapeutics, she leads technology integration in behavioral healthcare. Sara also consults on clinical program development, system implementation, and staff training. She collaborates with healthcare organizations to enhance patient care, streamline processes, and improve clinical outcomes.

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Deciphering astrocytic responses to alcohol in the striatum through combined manual and deep learning methods

Astrocytes, as key components of the neurovascular unit, play a significant role in maintaining Blood-Brain Barrier (BBB), regulating neurotransmitter homeostasis, and modulating neuroimmune signaling. Changes in astrocyte density can influence the stability and permeability of the BBB, making astrocyte count a valuable biomarker for assessing alcohol-induced neurotoxicity. This study focuses on the spatial distribution of astrocytes in Grey Matter (GM) and White Matter (WM) of the human striatum, providing a comprehensive understanding of their role in structural vulnerability to alcohol-related damage.

Formalin-fixed brain tissue samples were obtained from the Latvian State Center for Forensic Medical Examination. The study comprised 42 striatal autopsies, which were subdivided into three groups: young alcohol users, chronic alcohol users, and controls. The samples were processed using standard histopathological procedures and analyzed using anti-GFAP immunohistochemistry to label astrocytes, followed by manual cell counting. We also employed deep neural networks to systematically assess astrocyte density and morphology across the striatal regions. In particular, we implemented convolutional neural network architectures such as U-net for segmentation, allowing us to automatically identify and quantify astrocytes in high-resolution histology images. This approach reduces observer bias and ensures more consistent assessments of cellular features like size, shape, and branching complexity. Additionally, we incorporated pre-trained “foundation models” to further enhance the accuracy of astrocyte detection. Compared to the controls, both the chronic and young alcohol user groups demonstrated a significantly higher number of GFAP-positive astrocytes in the WM. However, the total number of GFAP-positive astrocytes in the GM did not show any significant differences between groups.

The increased density of GFAP-positive astrocytes in the WM underscores the regional specificity of cellular responses to alcohol dependence, despite the lack of significant differences in GM astrocyte counts. These findings suggest that WM astrocytes are more susceptible to alcohol-induced structural remodeling, potentially due to their role in maintaining axonal integrity. These results support the theory that WM volume shrinkage in alcohol-dependent individuals is linked to astrocytic adaptations, even in young alcohol users. Our findings, supported by deep learning-based feature aggregation, provide insights into astrocytic

responses in WM and their potential role in alcohol-related microstructural alterations. The use of advanced computational tools reveals subtle spatial distributions of astrocytes within both GM and WM, offering a more precise understanding of how chronic alcohol use impacts the cellular architecture.

Biography

Evalds Viguls is an undergraduate student at the University of Chicago, pursuing a Bachelor of Science in Neuroscience and Computer Science. Under the mentorship of Prof. Sandra Skuja at Riga Stradins University and the Krons Lab at UChicago he specializes in computational neuroscience, with a focus on Convolutional Neural Networks (CNN) for biomedical imaging and statistical modeling.

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Effects of subthalamic deep brain stimulation on facial emotion recognition in parkinson's disease: A comprehensive literature review

Background: Subthalamic Nucleus (STN) Deep Brain Stimulation (DBS) is a well-established intervention for alleviating motor symptoms in Parkinson's Disease (PD), including tremor, rigidity, and bradykinesia. However, emerging research points to significant nonmotor side effects, particularly impairments in Facial Emotion Recognition (FER). Given the STN's involvement in motor, cognitive, and emotional neural circuits, understanding the impact of DBS on FER is essential for comprehensive outcome assessment and individualized treatment planning.

Methods: A systematic literature review was conducted following PRISMA guidelines, covering studies indexed in MEDLINE and Cochrane databases from 1980 to 2025. Of 295 initially identified articles, 234 remained after removing duplicates. Title and abstract screening reduced this number to 42, and after full-text evaluation, 21 studies met the inclusion criteria. Two were excluded due to insufficient FER data, resulting in 19 studies for final analysis. Key data extracted included sample sizes, patient demographics, FER assessment methods, medication dosage (levodopa equivalent), DBS conditions, and reported FER outcomes.

Results: The majority of studies reported FER impairments post-DBS, especially in recognizing negative emotions such as fear, sadness, and anger. Some also noted difficulties in identifying disgust, although these may predate DBS. Differences in findings likely reflect variability in methodology, patient populations, and DBS parameters. These FER changes are thought to stem from DBS-induced disruptions in emotional processing networks, particularly altered connectivity among the STN, limbic basal ganglia loops, and prefrontal cortex.

Conclusion: Overall, STN DBS appears to influence emotional processing in PD, underscoring its integrative role across motor, cognitive, and affective domains. Implementing standardized FER evaluations and optimizing DBS settings may help mitigate these nonmotor side effects, ultimately enhancing patient quality of life.

Biography

Dr. Forough Yazdanian studied at Medical School in Tehran University of Medical Sciences and graduated in 2013. She worked Several years as a physician in Iran. She started postdoctoral fellowship at Harvard Medical School in 2022, she joined the research group of Professor Fisher at Beth Israel Deconeass Medical Center at Harvard Medical School in 2024. She has 13 accepted publications in peer reviewed journals. She is incoming transitional year redient at St Elizabeth Medical Center (Brockton Track) and will start her postgraduate training since June 2025.

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Antithrombotic strategies for the secondary prevention of ischemic stroke: A systematic review and network meta-analysis

Background: The optimal antithrombotic regimen for secondary stroke prevention remains debated due to trade-offs between ischemic recurrence and bleeding risk. We conducted a Network Meta-Analysis (NMA) comparing antiplatelets, vitamin K antagonists, and Direct Oral Anti Coagulants (DOACs) in patients with prior ischemic stroke or TIA.

Methods: We conducted a systematic review and network meta-analysis per PRISMA guidelines. Searches in PubMed and Cochrane identified 25 RCTs—9 on antiplatelets and 16 on anticoagulants for secondary prevention (Tables 1,2; Figures 1,2). Quality was assessed using the Cochrane Risk of Bias. Pooled HRs were estimated using a random-effects model. Publication bias was assessed via funnel plot and Egger's test. A frequentist NMA estimated Hazard Ratios (HRs), with Surface Under the Cumulative Ranking Curve (SUCRA) rankings used to assess performance. A matrix plot illustrates stroke recurrence vs. major hemorrhage risk (Figure 3).

Results:

Efficacy (Stroke Recurrence): Apixaban (SUCRA: 91%) and Dabigatran (110/150 mg) (SUCRA: 87%) significantly reduced recurrence risk across multiple trials. Clopidogrel and aspirin-dipyridamole were superior to aspirin alone but less effective than DOACs. Asundexian, a novel Factor XIa inhibitor, was inferior to apixaban (HR 3.79; 95% CI, 2.46–5.83). Short-term DAPT (≤21 days) reduced stroke recurrence by 26% compared to aspirin (HR 0.74; 95% CI, 0.61–0.88), while long-term Dual Antiplatelet Therapy (DAPT) had no added benefit (HR 1.20; 95% CI, 0.92–1.57).

Safety (Major Bleeding and ICH): Apixaban had the most favorable bleeding profile (major bleeding HR ~1.13; ICH HR ~0.85). Rivaroxaban and Edoxaban showed higher ICH risk (e.g., NAVIGATE-ESUS ICH HR 4.02). Short-term DAPT showed modest bleeding risk (HR 1.86; 95% CI, 0.87–2.85), while prolonged DAPT increased bleeding (HR 1.20; 95% CI, 0.91–1.58).

All-Cause Mortality: No regimen significantly reduced mortality. Warfarin was associated with increased risk (WASID HR 2.33; 95% CI, 1.19–4.59), while DOACs trended favorably (e.g., edoxaban HR 0.86; 95% CI, 0.77–0.97).

Conclusions: Apixaban and dabigatran are preferred options for balancing efficacy and safety. Short-term DAPT may be beneficial in early high-risk periods but not beyond. Newer agents like asundexian require further validation. Long-term DAPT and warfarin in ICAD may increase harm and should be used cautiously.

Table 1. Main Randomized Trials Comparing Antiplatelet Therapies: Efficacy, Safety, and Clinical Benefit: Outcomes are reported as treatment arms

Study	Treatment Arms	Target Population	Treatment vs. Control arms (n)	Follow-up Duration	Stroke Recurrence HR (95% CI)	Primary Composite Outcome HR (95% CI)	Intracranial Hemorrhage HR (95% CI)	Major Hemorrhage HR (95% CI)	All-cause Death HR (95% CI)
CAPRIE (1996)	Aspirin vs. clopidogrel	IS, MI, PAD	9599 vs 9586	697 d	0.99 (0.90 – 1.09	0.93 (0.81 to 1.06)	0.72 (0.46– 1.12)	NR	1.05 ((0.95 – 1.15)
MATCH (2004)	Clopidogrel vs. ASA + Clopidogrel	IS, TIA	3797 vs 3802	548 d	0.93 (0.83 - 1.04)	0.94 (0.85 - 1.05)	1.60 (1.00 - 2.50)	1.96 (1.41 - 2.71)	1.00 (0.83 - 1.21)
CHARISMA(2018)	ASA + Clopidogrel vs. Placebo + ASA	IS, TIA	7802 vs 7801	853 d	0.79 (0.64– 0.98)	0.93 (0.83 - 1.05)	0.96 (0.56– 1.65)	1.62 (1.27– 2.08)	0.99 (0.86 - 1.14)
CHANCE (2013)	Clopidogrel + ASA vs. ASA	Minor IS, TIA	2584 vs 2586	90 d	0.68 (0.57 - 0.81)	0.68 (0.57 - 0.81)	1.01 (0.38 - 2.70)	1.01 (0.38 - 2.70)	0.97 (0.40 - 2.33)
SOCRATES (2016)	Ticagrelor vs. ASA	Non-severe IS or high-risk TIA	6589 vs 6610	120 d	0.87 (0.76 - 1.00)	0.89 (0.78 - 1.01)	0.68 (0.33 - 1.41)	0.83 (0.52 - 1.34)	
POINT (2018)	Clopidogrel + ASA vs. ASA	Minor IS, TIA	2432 vs 2449	120 d	0.72 (0.56 - 0.92)	0.75 (0.59 - 0.95)	1.01 (0.14–7.14)	2.32 (1.1 - 4.87)	1.51 (0.43 - 5.35)
THALES (2020)	Ticagrelor + ASA vs. ASA	Minor IS, TIA	5523 vs 5493	60 d	0.79 (0.68 - 0.93)	0.83 (0.71 - 0.96)	3.33 (1.34 - 8.28)	3.99 (1.74 - 9.14)	1.33 (0.81 - 2.19)
CHANCE 2 (2021)	Ticagrelor + ASA vs. Clopidogrel + ASA	Minor IS, TIA (CYP2C19 loss-of-function alleles)	3205 vs 3207	360 d	0.77 (0.64 - 0.94)	0.77 (0.64 - 0.94)	0.49 (0.12 - 1.96)	0.82 (0.34 - 1.98)	0.50 (0.22 - 1.11)
LACL-2 (2023)	ISMN, Cilostazol, ISMN+Cilostazol, No study drug	Lacunar IS	90 vs 91 vs 91 vs 91	365 d	0.23 (0.07 - 0.74)◦	0.77 (0.57 - 1.05)◦	NR	NR	NR
INSPIRES (2023)	Clopidogrel + ASA vs. ASA	Mild AIS (24 - 72 h)	3050 vs 3050	180 d	0.79 (0.66 - 0.94)	0.79 (0.66 - 0.94)	2.13 (0.92 - 4.93)	2.08 (1.07 - 4.04)	1.24 (0.76 - 2.00)

◦ HR applies to comparison between Cilostazol vs. No study drug.
ASA: acetylsalicylic acid (Aspirin); IS: ischemic stroke; AIS: acute ischemic stroke; TIA: transient ischemic attack; HR: hazard ratio; CI: confidence interval; CYP2C19: cytochrome P450 2C19 (enzyme affecting clopidogrel metabolism); ISMN: isosorbide mononitrate; NR: not reported. MI: myocardial infarction. PAD: peripheral artery disease.

Table 2. Main Randomized Trials Comparing DOACs and other antithrombotic therapy: Efficacy, Safety, and Clinical Benefit comparing treatment arms

Study	Treatment Arms	Target Population	Treatment vs. Control Size	Follow-up Duration	Stroke Recurrence HR (95% CI)	Primary Outcome HR (95% CI)	Major Bleeding HR (95% CI)	Intracranial Hemorrhage HR (95% CI)	All Cause Death HR (95% CI)
WASID (2005)	Warfarin vs. ASA	TIA/IS (50-99% IC stenosis)	280 vs. 289	657 d	0.86 (0.59 - 1.26)	1.02 (0.72 - 1.44)	1.08 (0.77 - 1.50)	2.0 (0.18 - 22.06)	2.33 (1.19 - 4.59)
RE-LY (2009)	Dabigatran (110, 150 mg), Warfarin	AF	6015 vs. 6076 vs. 6022	730 d	0.66 (0.53–0.82)◦	0.91 (0.74–1.11)◦	0.80 (0.69–0.93)◦	0.31 (0.17–0.56)◦	0.88 (0.77 - 1.00)◦
AVERROES (2011)	Apixaban vs. ASA	AF	2808 vs. 2791	402 d	0.45 (0.32 - 0.62)	0.45 (0.32 - 0.62)	1.13 (0.74–1.75)	0.85 (0.38 - 1.90)	0.79 (0.62 - 1.02)
ROCKET-AF (2011)	Rivaroxaban vs. Warfarin	NVAF (mod-high stroke risk)	7131 vs. 7133	694 d	0.79 (0.66 - 0.96)	0.88 (0.74–1.03)	1.04 (0.90–1.20)	0.67 (0.47 - 0.93)	0.85 (0.70–1.02)
ENGAGE AF-TIMI 48 (2013)	Warfarin, Edoxaban (high, low dose)	AF (CHADS2 ≥2)	7036 vs. 7035 vs. 2730	1022 d	0.79 (0.63 - 0.99)€	0.79 (0.63 - 0.99)€	0.87 (0.78 - 0.96)€	0.47 (0.34 - 0.63)€	0.86 (0.77 - 0.97)€
VISSIT (2015)	Stenting vs. Medical Therapy	Symptomatic IC (70-99% stenosis)	124 vs. 59	365 d	2.40 (0 1.06,5.41)	2.56 (0.92, 7.12)	NR	NR	0.76 (0.25 - 2.33)
OCEANIC-AF	Asundexian vs. Apixaban	AF,(CHA2DS2-VASc ≥3M, ≥4F)	7415 vs. 7395	365 d	3.79 (2.46 - 5.83)	3.79 (2.46 - 5.83)	0.32 (0.18–0.55)	0.16 (0.05 - 0.55)	0.84 (0.60 - 1.19)
NAVIGATE-ESUS (2018)	Rivaroxaban vs. ASA	ESUS	3609 vs. 3604	330 d	1.07 (0.87 - 1.33)	1.07 (0.87 - 1.33)	2.72 (1.68–4.39)	4.02 (1.51 - 10.7)	1.26 (0.87 - 1.81)
RESPECT-ESUS (2019)	Dabigatran vs. ASA	ESUS	2695 vs. 2695	570 d	0.85 (0.69 - 1.03)	0.85 (0.69 - 1.03)	1.19 (0.85–1.66)	0.98 (0.60 - 1.60)	0.96 (0.66 - 1.38)
TIMING (2022)	Early vs. Delayed DOAC	AF with recent IS	450 vs. 438	90 d	0.67 (0.34–1.33)	0.78 (0.48–1.25)	1.45 (0.71–2.95)	NR	0.81 (0.45–1.44)
CASSISS (2022)	PTAS + medical therapy vs. medical therapy	TIA/IS (70-99% IC stenosis)	190 vs. 190	365 d	NR	1.11 (0.66–1.87)	NR	NR	3.38 (1.13–10.12)
ELAN (2023)	Early vs. Later DOACs	IS with AF	1006 vs. 1007	30 d	0.57 (0.29–1.07)	0.70 (0.44 - 1.14)	0.63 (0.15–2.38)	1.02 (0.16–6.59)	0.93 (0.61 - 1.43)
OPTIMAS (2024)	Early vs. Delayed DOACs	Acute IS with AF	1814 vs. 1807	90 d	1.04 (0.70–1.59)	0.98 (0.68 - 1.41)	0.72(0.38–1.26)	0.91 (0.40 - 2.06)	0.99 (0.80 - 1.22)
ARCADIA (2024)	Apixaban vs. ASA	AF cardiopathy post-cryptogenic stroke	507 vs. 508	694 d	1.00 (0.64 – 1.55)	1.00 (0.64 – 1.55)	1.02 (0.29-3.52)	NR	NR
ATTICUS (2024)	Apixaban vs. ASA	ESUS	178 vs. 174	365	0.82 (0.56 - 1.20)	0.78 (0.60 - 1.02)	0.75 (0.47 - 1.20)	0.85 (0.50 - 1.40)	0.90 (0.39 - 2.08)
CATIS-ICAD (2025)	rivaroxaban + ASA vs. ASA	IS/high-risk TIA with ICAD	51 vs. 50	365 d	0.78 (0.32 - 1.93	NR	NR	0.99 (0.03 - 8.78)	0.50 (0.05 - 5.50)

◦ HR applies to comparison between Dabigatran 150 mg vs Warfarin.

€ HR applies to the comparison between Edoxaban high dose vs Warfarin.

AF: atrial fibrillation; ASA: acetylsalicylic acid (Aspirin); CHADS2: Congestive heart failure, Hypertension, Age ≥75, Diabetes, Stroke/TIA (2 points) scoring system for stroke risk in AF; CHA2DS2-VASc: Congestive heart failure, Hypertension, Age (≥75, 2 points), Diabetes, Stroke/TIA (2 points), Vascular disease, Age (65-74), Sex category (female); DOAC: direct oral anticoagulant; ESUS: embolic stroke of undetermined source; ICAD: intracranial

atherosclerotic disease; IS: ischemic stroke; m: male; NR: not reported; NVAF: non-valvular atrial fibrillation; PTAS: percutaneous transluminal angioplasty and stenting; TIA: transient ischemic attack

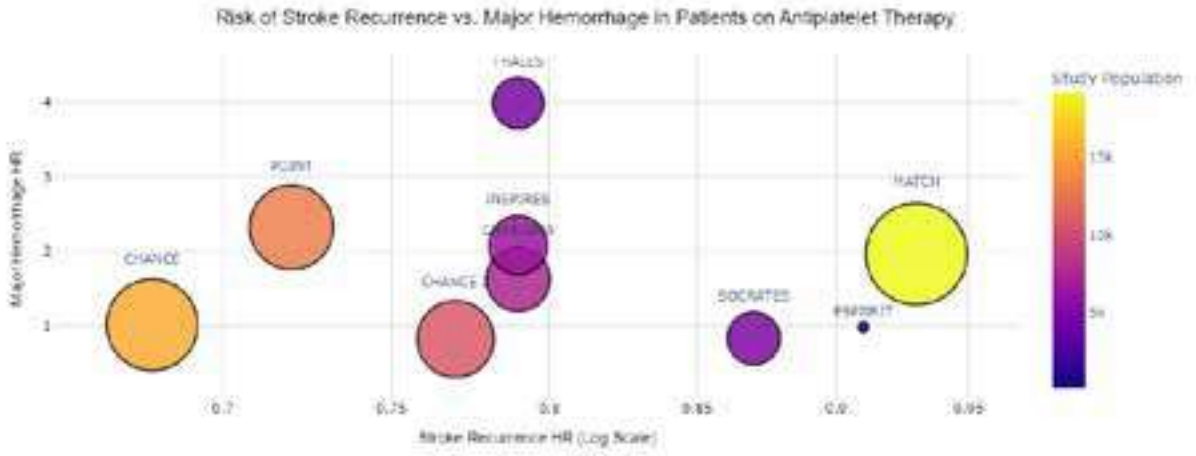

Figure 1. CHANCE and CHANCE-2 trials have the most favorable outcomes, balancing low stroke recurrence with minimal bleeding risk.

Figure 2. ELAN has the best overall balance, showing both low stroke recurrence and hemorrhage risks.

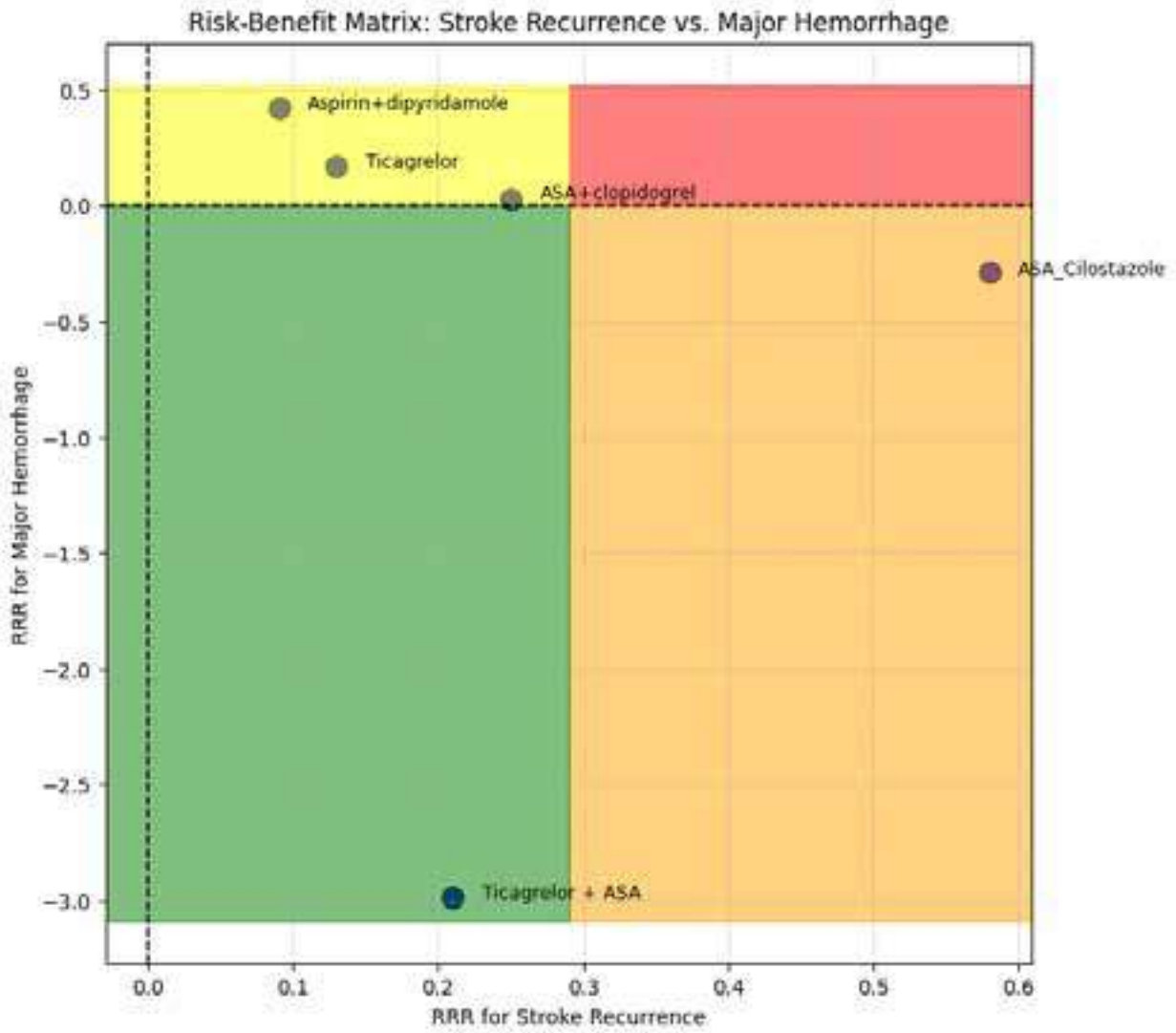

Figure 3

Biography

Dr. Forough Yazdanian studied at Medical School in Tehran University of Medical Sciences and graduated in 2013. She worked Several years as a physician in Iran. She started Her postdoctoral fellowship at Harvard Medical School in 2022, She joined the research group of Professor Fisher at Beth Israel Deconeass Medical Center at Harvard Medical School in 2024. She has 13 accepted publications in peer reviewed journals. She is incoming transitional year redient at St Elizabeth Medical Center (Brockton Track) and will start her postgraduate training since June 2025.

Galina V. Nikolskaya M.D.

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Video-based endurance and dynamic testing for convergence insufficiency in mTBI: A proof-of-concept study

Background: Convergence Insufficiency (CI) is common in Traumatic Brain Injury (mTBI), causing headaches, blurry vision, reading problems and reduced quality of life. Standard Near Point of Convergence (NPC) testing may miss subtle deficits. This proof-of-concept study evaluates a novel video-based method using endurance and dynamic convergence tasks to detect CI in mTBI, assessing reading endurance and adaptability to shifting visual fixations.

Objective: The objective of this proof-of-concept study is to evaluate a novel video-based method using endurance and dynamic convergence tasks to detect Convergence Insufficiency (CI) in traumatic brain injury patients, assessing its sensitivity and specificity in identifying reading endurance and adaptability deficits compared to standard Near Point of Convergence (NPC) testing.

Methods: A neurologist in private practice examined 30 mTBI patients with CI (difficulty reading up close, NPC>7 cm, Convergence Insufficiency Symptom Survey [CISS] score >21) and 30 controls (no TBI, NPC <7 cm, no visual symptoms, negative CISS), with informed patient consent. Two tasks were performed: (1) sustained fixation on a pen tip near the nose to test convergence endurance, and (2) rapid pen tip movement toward and away from the nose to assess fusion adaptability. Video analysis evaluated fusion failure (outward eye deviation).

Results: All 30 mTBI patients showed fusion failure, with 98% exhibiting deviation in the endurance task and 99% in the dynamic task. Conversely, 98% of controls maintained fusion. The endurance task revealed a failure to sustain eye convergence, linked to reading difficulties, while the dynamic task showed inability to maintain convergence during rapid fixation shifts, from far to near, oculo-motor convergence deficits not fully captured by standard NPC testing.

Conclusion: This proof-of-concept study demonstrates a novel video-based method for detecting Convergence Insufficiency (CI) in mTBI patients with high sensitivity and specificity. Assessing convergence endurance and adaptability offers a practical, cost-effective, time-efficient bedside diagnostic tool for doctors. Future studies will be required with a larger sample size in order to enhance diagnostic precision by validating specificity and quantifying eye deviation patterns.

Disclosure: The author has no conflicts of interest to declare.

Biography

Dr. Galina Nikolskaya is a double board-certified neurologist in San Diego, specializing in brain injury, migraine management, and neurodiagnostics. With over a decade of experience, she expertly diagnoses and manages TBI using advanced electrodiagnostic techniques (EEG, EMG, NCS, Evoked Potentials) and additional tools like VNG and Posturography. She completed her Neurology residency at UCSD and a Clinical Neurophysiology fellowship at Harbor-UCLA. Passionate about education, she mentors students and residents, serves as a Clinical Instructor at UCSD's Free Neurology Clinic, and has co-authored papers on TBI and headaches. Her upcoming book, BRAIN INJURY: A Multidisciplinary & Illustrated Guide, featuring contributions from experts in various fields, is set for release in late 2025.

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Granulocyte Colony Stimulating Factor (G-CSF) gene therapy as a regenerative treatment strategy in BCAO stroke mouse model

Ischemic stroke is one of the leading causes of death and long-term disability worldwide. While Tissue Plasminogen Activator (t-PA) is a primary clinical treatment in emergency care, its efficacy is limited to a narrow therapeutic window, which is less than 4.5 hours post-onset. Thus, novel therapeutic strategies that protect the remaining brain tissue past the limited time-window period and promote neural regeneration are urgently required. The human Granulocyte Colony Stimulating Factor (G-CSF) gene therapy is a promising candidate for treatment in ischemic stroke because of its dual role: in both neuroprotection and neuroregeneration.

Our laboratory previously demonstrated that the human G-CSF gene therapy reduces mitochondrial and endoplasmic reticulum stress in a mouse model of global ischemia induced by Bilateral Carotid Artery Occlusion (BCAO). The current study investigates its regenerative potential for endogenous repair through promoting neurogenesis. Our findings show that G-CSF gene therapy enhanced proliferation and differentiation of neural stem cells and progenitor cells within neurogenic niche of Subgranular Zone (SGZ) of dentate gyrus and Subventricular Zone (SVZ). At 7 days post-BCAO, the treatment increased the numbers of quiescent stem cells, proliferating neural stem cells, progenitor cells, and immature neurons that were observed within these regions. In addition, human G-CSF gene therapy may also support the newly formed neurons by promoting oligodendrogenesis, which is a mainstay for myelin synthesis and repair. Furthermore, at more prolonged time-points of 14 days and 28 days an increase was found in immature and mature neuronal populations in the treatment group which indicates the sustained regenerative effects of the drug.

Biography

Ganesh Chapagain is a current IB PhD (neuroscience) student at Florida Atlantic University, USA. He is carrying out his graduate research under the supervision of Dr. Howard Prentice at FAU. He received his master's degree in Biological Science from FAU in 2022. His research with Dr. Howard Prentice and Dr. Jang Yen Wu focuses on translational research in a stroke mouse model, a myocardial ischemia rodent model, a schizophrenic mouse model and Alzheimer's disease models.

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A new diagnostic perspective for Alzheimer's: Salivary p-TAU?

In recent decades, research has attempted to identify biomarkers associated with alzheimer's disease. Among the substances, the most prominent are beta amyloid protein and TAU protein, the latter of which can be described as total, phosphorylated, 181, 217, 231 and others. The investigations led us to seek to detect more specifically the levels of certain substances and the probable correlation with the preclinical, prodromal phases and the disease itself. The literature reports that some of these biomarkers can be found in plasma, saliva and cerebrospinal fluid, but the concentrations are often reversed and depending on the stage of the disease, it becomes more difficult to identify.

Our research group sought to identify tau protein as a possible salivary biomarker in 3 groups of patients, a control group and a group with Alzheimer's (different ages), trying to establish a positive correlation between salivary pTAU and Alzheimer's disease.

We detected higher concentrations of Phosphorylated TAU (pTAU) in patients with AD and slightly lower concentrations in elderly patients without alzheimer's. We believe in the possibility of using saliva biofluid to aid in the diagnosis of Alzheimer's disease, with the advantages of low cost, non-invasiveness and ease of collection. Saliva requires special treatment, it is quite unstable and the proteins we bind can be inactivated after a few minutes in contact with room temperature. We are also seeking to develop methods to stabilize it permanently and safely and recently some progress has been made in one of the groups I work with. Further studies are needed to establish the ideal method and concentration of the salivary pTAU biomarker.

Biography

Gustavo Alves Andrade dos Santos is a Pharmacist-Biochemist (Sao Paulo, Brazil); Doctor in Biotechnology, Master in Pharmacy; Post Doctorate in Anatomy and Surgery from Neurobiology (University of Chicago), Clinical Pharmacy (University of Central Florida), USA; Hospital Pharmacy (Necker Hospital) Paris, France; He is a Professor at the São Leopoldo Mandic Faculty of Medicine, Araras; Member of the Alzheimer's Association International (ISTAART) and Member of the American Society of Health-System Pharmacists (ASHP). Assistant Researcher at UNICAMP.

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Bouchard aneurysm: A call for precaution in stroke treatment

Intracerebral hemorrhage is a worldwide cause of morbidity and mortality.1 Bouchard aneurysms represent a very small percentage of these cases. However, its appreciation and consideration of rupture due to volume overflow and hypertension must never be ignored. We present the case of a sixty-year-old male with ischemic acute stroke, right hemiplegia, dysarthria and NIHSS (National Institutes of Health Stroke Scale) of twenty-two points. Magnetic resonance demonstrated an anatomical variation of unilateral carotid formation (Image A) with a left tandem occlusion (Video A and B). Patient underwent Mechanical Thrombectomy (MT) with solumbra technique (stent-retriever plus contact aspiration) and successful recanalization (Video C and D).

Twelve hours after the stroke, the patient can speak properly and move his four extremities without difficulty (Video E and F). To avoid future ischemic events, two days later patient enters the angiosuite again for stenting placement and full carotid revascularization (Video G), which turns immediately into a hypertensive crisis and provokes a massive left-hemispherical intracranial bleeding (Video H), conducting eventual decompressive craniectomy and death three days later. Bouchard aneurysm was found while reviewing retrospectively the images (Image B).

The present case illustrates Bouchard aneurysm significance, especially with stent associated flow changes. Despite its size, these aneurysms must always be intentionally looked for before any carotid stenting. As of today, it´s unclear how many days to wait for carotid stenting after MT. Tandem occlusion continues to be a challenge for the interventional practitioners, considering that up to 20–30% of patients with acute ischemic stroke have one2. Prospective studies may set the pathway for the best patient protocol to proceed with carotid stenting after MT and Bouchard aneurysms.

Image A.
MRI, 3D TOF (Time of Flight Angiography) coronal cervical image.

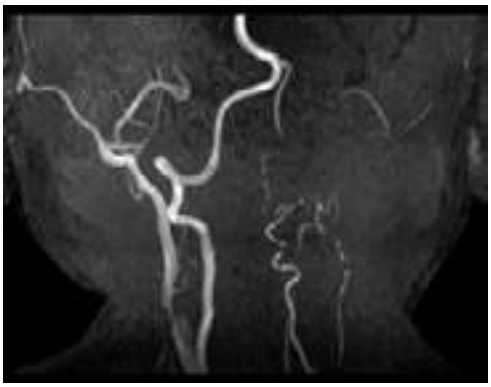
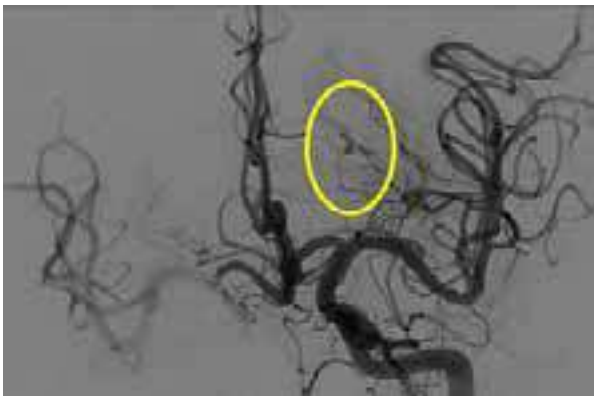


Imagen B.
Antero-posterior view of digital subtracted angiogram, Bouchard aneurysm in lenticulostriate artery.



Videos.

Biography

Dr. Humberto Montano-Tello is a current IMG from Mexico interested in Vascular Neurology. He graduated from the University of Chihuahua in 2023. Worked as a research assistant at the endovascular neurology laboratory in the Neurology and Neurosurgery National Institute in Mexico City. Currently, holds the position of Director of Medicine at Universidad del Valle de Mexico, the largest private university in the country, where oversees the academic progress of over three hundred and twenty students. As a member of the research committee and educational leader, he has quite a lot of experience in project management, soft skills, class teaching and quality assurance.

Ioana Ciubotarescu
Neurofeedback Therapist Doru Georgescu, SAIWALA, Romania

Neurofeedback and TPS for severe depression

Innovative neuromodulation technologies like neurofeedback and Transcranial Pulse Stimulation (TPS) are offering hope for individuals diagnosed with severe depression. These non-invasive approaches target specific brain regions involved in mood regulation and emotional processing, aiming to bring about lasting changes in mood and well-being.

Neurofeedback uses real-time Electroencephalography (EEG) feedback to train individuals to regulate their brainwave patterns. By monitoring brain activity and providing feedback, individuals gain control over their brainwaves, leading to a more balanced and stable mood. TPS utilizes gentle acoustic waves delivered through a headset to stimulate mood-regulating regions of the brain, including the prefrontal cortex and the limbic system. This targeted stimulation promotes neuroplasticity, helping rebalance brain circuits associated with mood regulation highlights the potential of these technologies in addressing the complex brain changes associated with severe depression.

Combining neurofeedback and TPS creates a powerful synergistic approach, enhancing neuroplasticity and emotional stability. This integrated approach aims to amplify the effects of each technique, creating a more powerful and effective treatment modality for severe depression.

Severe depression is a debilitating condition that can severely impact an individual's daily life, relationships, and overall well-being. Symptoms can include persistent sadness, loss of interest, changes in appetite and sleep patterns, feelings of worthlessness, and thoughts of death or suicide. Individuals suffering from severe depression may struggle to function at work, school, or in their personal lives.

The severity of depression can vary, but severe cases often require specialized treatment approaches. Traditional therapies, such as medication and psychotherapy, may not be sufficient to address the complex underlying brain changes associated with severe depression. Neuromodulation technologies, like neurofeedback and TPS, adjuncts to conventional treatments, providing a personalized approach that aims to restore brain balance and promote lasting recovery.

Neurofeedback and TPS: Mechanisms

- **Neurofeedback:** This non-invasive technique uses real-time EEG feedback to train individuals to regulate brainwave patterns, enhancing mood, attention, and cognitive function. In the context of severe depression, neurofeedback helps individuals regain control over their brainwaves, promoting emotional stability and reducing symptoms like persistent sadness, loss of interest, and difficulty concentrating.
- **Transcranial Pulse Stimulation (TPS):** TPS delivers pulses of sound energy that directly impact neural activity, promoting neuroplasticity and rebalancing brain circuits associated with mood regulation. For individuals with severe depression, TPS can help stimulate regions of the brain involved in mood regulation, such as the prefrontal cortex and the limbic system.
- **Synergistic Effect:** Combining neurofeedback and TPS creates a powerful synergy that strengthens the capacity for emotional resilience and facilitates lasting changes in mood and well-being. This combined approach can be especially beneficial for individuals with severe depression, as it provides a comprehensive and targeted intervention that addresses both the biological and cognitive aspects of the condition.

Clinical Potential and Outcomes

- **Symptom Reduction and Treatment-Resistant Depression:** Neurofeedback and TPS offer a promising approach for individuals experiencing treatment-resistant depression. By targeting brainwave activity and mood-regulating neural pathways, this combination provides a personalized and targeted intervention for persistent depressive symptoms.
- **Functional Recovery and Improved Well-being:** Beyond symptom alleviation, the combined neurofeedback and TPS approach promotes functional recovery, enabling individuals to reclaim their sense of well-being and actively engage in activities that bring them joy and fulfillment. The interventions foster neuroplasticity, enhancing the brain's ability to adapt and heal, leading to a more balanced and fulfilling life.
- **Relapse Prevention and Long- Term Stability:** A crucial aspect of this approach is relapse prevention. By strengthening cognitive resilience, individuals develop the skills and strategies necessary to manage their emotional well-being over the long term. The intervention empowers individuals to identify early warning signs of depression and take proactive steps to maintain their stability, reducing the risk of future episodes.
- **Severe Depression and Personalized Treatment:** For individuals facing severe depression, neurofeedback and TPS provide a highly personalized treatment approach. By identifying specific brainwave patterns associated with severe depressive symptoms, the interventions can be tailored to address the unique needs of each individual. This personalized approach can lead to more effective symptom management and improved overall well-being.

Biography

Ioana Ciubotarescu as a dedicated adult psychiatrist practicing in Romania, She is passionate about making a meaningful difference in people's lives through mental healthcare. Throughout my career, she has focused on combining strong academic foundations with innovative treatment approaches to provide the best possible care for my patients. She began her medical journey at the Medical University of Bucharest, where she earned her medical degree. Following her graduation, she chose to specialize in psychiatry, dedicating herself to understanding the complexities of mental health disorders and mastering the intricacies of diagnosis and treatment. My residency program provided me with a comprehensive foundation in the field, setting the stage for my career in psychiatry. She has worked in a chronic mental health hospital, where she gained invaluable experience managing complex cases and providing long-term care to patients with challenging conditions. This exposure has fostered her understanding of the multifaceted nature of mental illness and the importance of individualized treatment plans. She had a certified Neurofeedback trainer, demonstrating her commitment to utilizing cutting-edge techniques in her practice. Neurofeedback is a biofeedback method that helps individuals learn to self-regulate their brain activity, leading to improved mental well-being and reduced symptoms of various mental health conditions. She is the only psychiatrist in Romania utilizing Neurolith, a transcranial pulse stimulation technology from Storz Medical. This innovative treatment option allows for non-invasive brain stimulation, offering new possibilities for managing a range of mental health disorders. Her adoption of this technology reflects her commitment to exploring and integrating the latest advancements in psychiatry. Beyond her clinical practice, she is deeply committed to advocating for mental health awareness and reducing stigma. She actively engage in community outreach initiatives, sharing her expertise and knowledge with the public. These efforts play a vital role in breaking down barriers and encouraging individuals to seek help when needed. Her dedication to advocacy highlights my belief in the importance of promoting mental health on a broader societal level. Outside of my professional life, she finds great joy and balance in various activities that enrich my personal life. She takes solace in reading, which allows me to immerse herself in diverse worlds and expand her knowledge beyond the realm of medicine. Traveling is another passion of Ioana Ciubotarescu's, as it broadens her perspectives and exposes her to new cultures, enriching her life experiences.

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Improvement of brain function by Wasabi component “Hexaraphane”

Hexaraphane (*6-methylsulfinylhexyl isothiocyanate; 6-MSITC*) is an isothiocyanate present in the rhizomes and roots of Wasabi (*Eutrema japonicum (Miq.) Kiudz*.). Here we present the results of two clinical trials conducted on healthy subjects and patients with chronic fatigue syndrome using an extract powder "Wasabi Sulfinyl TM (WS)" containing 0.8% hexaraphane. In randomized controlled trial conducted on healthy middle-aged and elderly subjects improved memory for three months intaking of 100mg WS. In a clinical trial of fifteen patients with myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) treatment with 1.2g WS for three months improved brain fog and other symptoms.

Biography

Isao Okunishi studied Molecular Biology at Nagoya University, Japan, and graduated as MS in 1995. He then worked on functional research of Wasabi at Kinjirushi Co., Ltd. and received his Ph.D. (Agriculture) from Kagoshima University in 2022. He has published several papers and books on the functionality of Wasabi. He has also obtained nearly 30 patents related to his research.

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Trace elements as modulators of oxidative stress markers: Influence on neurotransmitters in neurodevelopmental disorders

Neurodevelopmental Disorders (NDDs) are disabilities primarily caused by impairment of the neurological system and brain functioning. They are characterized by impairments in cognition, communication, behavior and/or motor skills as a result of abnormal brain development usually manifesting in infancy. Autism Spectrum Disorder (ASD) and Cerebral Palsy (CP) are prominent members of these disorders. Aside equivocal results of several studies associating genetic modulation with exposure to environmental toxicants as the etiogenesis of ASD and CP, the interplay of exposure to environmental toxicants (essential and toxic trace elements) with neurotransmitters and their effect on neurodevelopmental disorders remain a medical challenge. This work investigated levels of some essential and toxic elements along with levels of neurotransmitters including oxidative stress markers in children with ASD and CP. Seventy-five children were recruited; twenty-five each of which were clinically diagnosed as ASD, CP and Neuro-Typical (NT) children respectively; their blood samples were collected. Essential and toxic metals (calcium, magnesium, selenium, zinc, copper, lead, aluminium, arsenate) using Inductively Coupled Plasma-Mass Spectrometry (ICP-MS); neurotransmitters (glutamine, glutamate, GABA) using ELISA and Biomarkers of oxidative stress [Malondialdehyde (MDA), Total Antioxidant Capacity (TAC), Total Plasma Peroxide (TPP)] using spectrophotometry were analyzed in the collected blood. Oxidative Stress Index (OSI) was calculated (TPP/TAC). In ASD, CP and NT, plasma calcium (7.9±1.4; 7.7±1; 9.8±1.3 mg/dL), magnesium (2.5±0.5; 2.8±0.6; 3.1±0.4 mg/dL), selenium (40.8±7.9; 27.6±6.8; 59.0±5.3 µg/dL), zinc (222.3±63.8; 233.8±105.3; 438.5±185.5 µg/dL), copper (4.3±1.0; 4.0±0.8; 4.9±0.9 µg/dL) and Zn/Cu ratio were significantly reduced in ASD and CP compared to in NT children. Conversely, lead (9.5±4.0; 11.1±5.8; 5.4±2.05 µg/dL) and manganese (0.2±0.2; 0.2±0.2; 0.1±0.1µg/dL) levels were significantly elevated in ASD and CP compared to NT. However, selenium level was significantly reduced in CP compared to ASD and NT. Glutamine levels (379.2±53.1; 296.3±59.6; 419.1±71.8µmol/l) decreased significantly in ASD and CP compared to NT. Glutamate (1.9±0.12; 1.8±0.3; 1.7±0.3nmol/ml) and GABA (2.1±0.3; 1.8±0.4; 1.8±0.3µmol/l) levels were significantly elevated in ASD compared to CP and NT. OSI (0.4±0.1; 0.6±0.2; 0.4±0.1) and TPP (105.9±2.3; 115.1±8.5; 110.4±7.9) levels were significantly higher and TAC (280.2±34.4; 209.8±57.9; 303.8±33.1) was significantly reduced in CP compared to ASD and NT. The MDA (2.3±0.2; 2.1±0.2; 1.4±0.1) level was significantly elevated in ASD and CP compared to NT. Manganese and copper positively correlated with GABA and glutamine. Although, magnesium correlated negatively with GABA in ASD,

copper correlated positively with glutamate in CP. Oxidative stress was induced in children with autism spectrum disorders and cerebral palsy due to reduction in essential metals. This stress may promote abnormal excitatory activities of neurons causing hyperglutermatagic and hypergabagic symptoms associated with the disorders.

Jana Furstova*, Eva Migalova

Olomouc University Social Health Institute, Palacký University Olomouc, Olomouc, Czech Republic

Changing patterns of adolescent addictive behaviors in the US and Europe: Success or substitution?

Objectives: This study examines changes in the prevalence of adolescent addictive behaviors between 2002 and 2022 across 39 European countries and the United States.

Methods: Data were analyzed from 15-year-old adolescents participating in the Youth Risk Behavior Surveillance System (YRBSS) (N=413,621) and the Health Behavior in School-aged Children (HBSC) study (N=362,768). Long-term trends in addictive behaviors were assessed using indicators of tobacco, alcohol, and cannabis use. Additionally, short-term trends included emerging addictive behaviors such as problematic gaming and problematic social media use.

Results: Analysis of these large cross-national datasets indicates a decline in conventionally studied adolescent substance use, including tobacco, alcohol, and cannabis consumption. However, this decrease has been accompanied by a rise in newer forms of behavioral addictions, such as internet gaming disorder, social networking addiction, and problematic internet use. These shifts highlight the evolving nature of adolescent risk behaviors in the digital age.

Conclusions: While the decline in substance use among adolescents is a positive trend, the emergence of new addictive behaviors underscores the need for continuous monitoring and intervention. Parents, educators, and healthcare professionals must remain informed about these trends and actively engage in addressing both online and offline risks to adolescent well-being. A comprehensive public health approach is necessary to mitigate the potential long-term consequences of these evolving addictive behaviors.

Biography

Dr. Furstova studied Applied Mathematics at Palacky University Olomouc, Czech Republic. She later joined Prof. Tavel's research group at the Olomouc University Social Health Institute (OUSHI), earning her PhD in 2022 in Social and Spiritual Determinants of Health. In 2023-24, she was a Fulbright research scholar at the University of Florida, Gainesville. She is currently an Assistant Professor at OUSHI, and since 2024, an official member of the international Health Behavior in School-aged Children (HBSC) study network. She has co-authored more than 55 research articles in SCI (E) journals.

Jessica Reichert
Illinois Criminal Justice Information Authority, United States

Police officer stigma and discretion in encounters with people with opioid use disorder: Findings from an Illinois survey

Background: Police officers frequently encounter people with Opioid Use Disorder (OUD), but their attitudes and behaviors in these interactions can significantly impact outcomes. This study examined Illinois police officers' stigma towards people with OUD, use of discretion, and views on treatment and harm reduction.

Methods: An online survey was conducted in 2021 with a stratified random sample of 248 Illinois police officers from 27 departments. The survey included items measuring stigma, discretion in encounters, and knowledge/attitudes about substance use treatment and harm reduction.

Results: A majority of officers held stigmatizing views towards people with OUD, including distrust (92% felt the need to be on guard) and blame (most felt people with OUD were responsible for their condition). Officers' discretion was heavily influenced by supervisor expectations (over 75%). While most officers endorsed treatment referrals, many held inaccurate views about medications for OUD and harm reduction strategies. Higher stigma did not predict lower support for deflection programs, but fear of people who use drugs reduced support for addressing addiction through treatment and other opportunities.

Conclusions: The findings highlight the need for comprehensive training for all officers to reduce stigma, correct misconceptions about treatment and harm reduction, and promote evidence-based responses to people with OUD. Supervisors should champion treatment referrals, and collaborations between police and treatment providers should be strengthened. Addressing officers' fear of people who use drugs may be particularly important for increasing support of alternatives to arrest.

Biography

Jessica Reichert is a Senior Research Scientist and the Center for Justice Research and Evaluation Manager at the Illinois Criminal Justice Information Authority, where she directs research and evaluation projects. Jessica has published over 100 articles and reports, including in peer-reviewed journals. She has conducted and is conducting studies of police deflection programs, including a multi-state evaluation funded by the National Institute of Justice with RAND. She has published articles related to justice-involved individuals with substance use disorders, as well as was a co-author of the state's opioid action plan. Jessica sits on several criminal justice and behavioral

health-related task forces including the Governor's Opioid Prevention and Intervention Task Force and the Police Treatment And Community Collaborative (PTACC). She has presented at national and state conferences on the criminal justice response to substance use disorders and the opioid crisis. She is a 4-time recipient of a National Publication Award for her work from the Justice Research and Statistics Association. In addition, Ms. Reichert was a part-time instructor of criminal justice at Loyola University Chicago for eight years. She earned her master's degree in criminal justice from University of Wisconsin-Milwaukee and bachelor's degree in criminal justice from Bradley University.

Joseph Wanjohi
Health wise and Wellness Centre, DSM Building Centre, Nairobi, Kenya

Empowering youth mental health through wellness, team building, and natural healing approaches

Mental health among youth is an increasingly urgent concern in today's complex, fast-paced world. Rising rates of anxiety, depression, substance use, and emotional dysregulation have created a critical need for holistic, preventive, and community-rooted wellness solutions. This presentation will explore the integrative, person-centered model developed by *Healthwise and Wellness*, a Kenyan-based organization founded in 2010. Our approach combines natural health modalities, trauma-informed psychological counseling, structured physical activities, addiction recovery strategies, and wellness education to promote mental well-being-particularly among youth and adolescents.

Rooted in the philosophy that "the greatest wealth is health," our model emphasizes the interconnectedness of the body, mind, and spirit. Our services are tailored to address the unique mental, emotional, and physical challenges faced by young people, while also incorporating strategies that strengthen personal resilience and community connection. These include individual and family therapy, youth-focused wellness coaching, evidence-based addiction recovery support, and customized physical exercise programs. Importantly, we integrate structured follow-up systems for clients to monitor recovery progress and prevent relapse, ensuring long-term sustainability of healing.

Team-building activities are central to our youth interventions-designed to foster collaboration, self-confidence, and emotional intelligence. During this session, we will present evidence-informed outcomes from our wellness initiatives, drawn from a growing client base of over 10,000 individuals. Through case-based examples, we will demonstrate how structured movement-such as guided wellness routines and team sports-can significantly reduce symptoms of anxiety and depression, improve cognitive clarity, and increase overall self-esteem among youth populations.

We will also highlight how our integrative mental health programs intersect with women's health, hormonal balance, and psycho-emotional care, providing a gender-sensitive and inclusive framework for adolescent wellness. Our trauma-informed model supports young people navigating PTSD, substance use disorders, bipolar, and attention-related challenges through a culturally grounded and compassionate approach.

This presentation aims to equip attendees with actionable insights for designing integrative mental wellness programs that are preventive, scalable, and community-centered. The Healthwise and Wellness model stands as a practical and adaptable blueprint for advancing youth mental health, addiction recovery, and emotional resilience across diverse settings. As we continue to grow through grassroots outreach and client-centered innovation, we demonstrate that a unified approach to health-encompassing the body, mind, and soul-can drive sustainable change in global mental health care.

Biography

Joseph Wanjohi is the founder of *Healthwise and Wellness*, a leading wellness center in Nairobi, Kenya. He holds a degree in Nutrition and Dietetics from Stellenbosch University, South Africa, and a diploma in Mental Health and Addiction Science from SAPTA College, Nairobi. He is also an *International Certified Addiction Professional – Prevention (ICAP-P)*. Joseph has worked with diverse populations, including collaboration with the *Defence Forces Wellness Centre (DFWC)* in Nairobi, and is dedicated to holistic health models that integrate natural healing, mental wellness, and addiction prevention strategies.

Dr. Juliana Jecinth R. B
Assistant Professor, Department of Psychology, JAIN (Deemed-to-be University), Whitefield, Bangalore, India

Gaming addiction among hearing-impaired children: Exploring social and cognitive correlates

Gaming addiction is an emerging concern among children, with potential implications for social and cognitive development. However, limited research has explored this phenomenon among hearing-impaired children. This study examines the relationship between gaming addiction, social skills, and cognitive functioning among hearing-impaired students following the aural-oral method of communication. Participants diagnosed with hearing impairment were assessed using standardized measures. SPSS was used for data analysis. The findings provide insights into how gaming behaviors interact with social and cognitive development in children with hearing impairments, highlighting potential risk factors and the need for balanced digital engagement. Understanding these associations is crucial for educators, parents, and clinicians to develop effective interventions that support the overall well-being of hearing-impaired children.

Keywords: Gaming Addiction, Hearing Impairment, Aural-Oral Method, Social Skills, Cognitive Functioning, Digital Engagement.

Biography

Dr. Juliana Jecinth, an Assistant Professor of Applied/Clinical Psychology at Jain University. Her academic background includes a PhD in Psychology, an M.Sc. in Applied Psychology, a B.Ed. in Special Education, and a B.Sc. in Audiology and Speech Language Pathology. She is also licensed by the Rehabilitation Council of India as both an Audiologist and Speech Language Pathologist, and as a Special Education Teacher. Her research interests are broad, covering areas like childhood disorders (particularly Autism and ADHD), the impact of technology on mental health, and rehabilitation strategies. She has published several papers in reputable journals, including studies on vocational training for the hearing impaired and the effects of specific exercises on sensory processing speed. She is also actively involved in organizing and presenting workshops, such as those on the impact of the metaverse and internet usage, aimed at both students, alumni and in hospital setup.

Kendall Lee
Crystal Springs Uplands School, United States

The effects of music tempo on the episodic memory of pre-school children

Musical tempo has not been definitively proven to alter memory such as storage and retrieval (Proverbio et al. 2015; Cournoyer Lemaire et al. 2019; Kwon et al. 2022). Prior studies have shown little research toward the effect of differing music tempos on the storage and retrieval of memories. Few studies have tested the effects of music tempo on young children; this study follows research done on children aged 3-5 to expand knowledge about this correlation. Understanding the relationship of music tempo on memory processes could provide more resources in healthcare and education, and improve the overall wellbeing of young children.

Biography

Kendall Lee is a student at Castilleja School. She will begin her freshman year at Crystal Springs Uplands School in the fall of 2025. Her passion for neuroscience was sparked in seventh grade, when a classroom lesson on how the brain works captured her imagination. Since then, she has been especially intrigued by early brain development in young children. Beyond academics, Kendall is an avid cross-country runner, a skilled violinist, and a creative home chef who enjoys experimenting in the kitchen to surprise her family with new dishes.

Kerryn Burgoyne
KTalk, Australia

Autism & mental health – How different individuals are impacted (my story)

Statement of the Problem: Women who suffer mental health issues, because of autism spectrum disorder has a significant impact on their lives, especially if they've suffered trauma because of the bullying/discrimination/cruel remarks & actions from other people.

Autism can impact one's mental health in many ways (childlike behavior), social anxieties or overload. The impact of mental health can also be experienced when the person does not have a good quality of life for themselves (eg employment, independent living skills), or haven't had the support from family/friends/society).

I will be discussing how my mental health was impacted, by living in either a black hole, or a glass coffin (seeing the world from outside in space) by living in the past, I'll also be discussing some trauma experiences that I've had in my life, which has caused me significant pain & suffering but has shaped me the way I am now today!

One sided relationships play havoc for those with autism, your social/communication/behavioral deficits/medical issues, disabilities/drug & alcohol dependencies & also lack of employment opportunities (despite the constant training that you've had) can also greatly affect your mental health.

In the last few slides of my presentation, I'll be providing some strategies that I developed for myself to assist the recovery and positivity to my mental health overall!

Links: https://ktalk.au/product-category/courses/
Aspektism for Teens/Adults Flyer: https://ktalk.au/wp-content/uploads/2024/10/aspektflyer-teens-adults.pdf
Employism Family Edition Flyer: https://ktalk.au/COURSES/EMPLOYISM%20(FAMILY%20EDITION)/EMPLOYISM%20(FAMILY%20EDITION)%20FLYER%202025.pdf
Power of Positivity Flyer: https://ktalk.au/wp-content/uploads/2024/10/POWER-OF-POS-FLYER-2023-KTALK.pdf
The Goal Flyer: https://ktalk.au/wp-content/uploads/2024/10/THE-GOAL-FLYER-2023-

KTALK.pdf
KTalk Promo Flyer: https://ktalk.au/wp-content/uploads/2024/07/KTALK-PROMO-23.pdf
Employism Company Edition Course:
https://ktalk.au/COURSES/EMPLOYISM%20-%20COMPANY%20EDITION/EMPLOYISM%20(COMPANY%20EDITION)%20(KTALK)%20FLYER%202025.pdf
Old Testimonials: https://ktalk.au/wp-content/uploads/2024/10/OLD-TESTIMONIALS-KTALK.pdf
Past Events: https://ktalk.au/wp-content/uploads/2024/10/PAST-EVENTS-KTALK.pdf

Biography

Kerryn Burgoyne was diagnosed with Asperger's Syndrome at the age of 30. Prior to that, there was very little known about what is known today as autism spectrum disorder. Life was extremely difficult for me, as when she tried to gain successful employment for herself, it was difficult to do so especially when you were judged as an "outsider looking in" at others. In 2007, she started up her own business KTalk after writing her very first self-help life course book "The Goal". That was followed by the development of 5 more course books which are now updated as we speak.

Kevin P. Connelly
Founder of Reconnect Breath | Sheridan, WY USA

Breaking addiction with breath: A transformative framework

This presentation examines how dysfunctional breathing patterns can keep individuals locked in cycles of addiction, while conscious breathwork may offer an overlooked yet powerful key to recovery. Modern science has shown that the way we breathe has profound effects on the nervous system, influencing brain wave activity, heart rhythm, and the body's overall stress response. When breathing becomes shallow, irregular, or dysregulated, patterns that are increasingly common in today's overstimulated world, the brain interprets these signals as stress or threat. This perpetuates compulsive behaviors and urges, reinforcing the very cycles that many individuals in recovery struggle to escape. Drawing from original research on controlled breathing and its measurable influence on both heart coherence and brain wave states, this session will explore how maladaptive breathing can directly contribute to anxiety, stress, and addictive patterns. Participants will learn how breath regulation interrupts these cycles by creating an internal environment of stability in both the heart and brain. These physiological shifts open new pathways for emotional regulation, impulse control, and resilience, all of which are critical factors in sustaining recovery.

The presentation will also highlight a complementary framework developed for addiction professionals. This system not only introduces evidence-based breathwork protocols but also provides a method for tracking client progress over time. By integrating measurable feedback tools, treatment counselors can observe how clients respond to different breathing practices and adapt interventions accordingly. This approach bridges the gap between ancient breathing traditions and modern therapeutic practice, offering both credibility and accessibility for those working in treatment and recovery.

Treatment counselors and other addiction professionals will leave the session with a deeper understanding of the science behind breathwork, practical tools they can begin using immediately, and a clear framework for measuring outcomes. The goal is to empower professionals with both knowledge and actionable strategies, allowing them to expand their therapeutic toolkit and better support clients in breaking free from the cycles of addiction.

Biography

Kevin Connelly is the author of Breathe Into It: Break Out of Addiction and Dial Into Your Body, and the founder of Reconnect Breath. He has trained more than 100 instructors globally in evidence-based breathwork and cold exposure facilitation, guiding over 6,000 participants worldwide. Kevin conducts original research on controlled breathing and its influence on anxiety, stress, and addiction, and has developed breath protocols designed to alleviate compulsive behaviors and support recovery. He regularly leads professional trainings, workshops, and instructor certifications, bringing science-based breath practices into both therapeutic and wellness settings.

Dr. Laxmikant Rathi
Govardhan Hospital, Director, Amravati, Maharashtra, India

Role of spirituality in treating addiction

Addiction is a multifaceted condition affecting individuals biologically, psychologically, socially, and spiritually. While conventional treatment approaches like pharmacotherapy, Cognitive-Behavioral Therapy (CBT), and rehabilitation programs address many dimensions of addiction, there is a growing recognition of the importance of spirituality in the recovery process. Spirituality, distinct from organized religion, involves a personal quest for meaning, purpose, connection, and transcendence. It plays a critical role in fostering inner transformation, resilience, and long-term sobriety.

This abstract explores how spiritual practices and beliefs contribute to addiction recovery. Numerous studies have shown that individuals who incorporate spiritual or faith-based elements into their treatment such as meditation, prayer, mindfulness, or participation in spiritually-oriented groups like Alcoholics Anonymous (AA) often report higher levels of emotional well-being, greater motivation for change, and reduced relapse rates. Spirituality provides a framework for self-reflection, acceptance, and forgiveness, while also offering a sense of belonging and hope that counteracts the isolation and despair common in addiction.

Spirituality also encourages a shift from self-centeredness to a more connected and purpose-driven life, which is vital in breaking the cycle of substance abuse. Integrating spiritual care into addiction treatment does not require religious affiliation; rather, it involves respecting and nurturing each individual's spiritual values and experiences. Clinicians who recognize and support this dimension can enhance the effectiveness of treatment, especially when tailored to the cultural and individual beliefs of the person.

In conclusion, spirituality is not a replacement for evidence-based treatments but serves as a valuable complementary approach. Its inclusion in a holistic model of care addresses the deeper existential void that often underlies addiction, ultimately contributing to a more complete and sustained recovery.

Biography

Dr. Laxmikant Rathi is a Consulting Psychiatrist Practicing in the field of Mental Health since last 44 years at his own 25 Bedded Govardhan Hospital, Near Rajkamal Bridge, Ambapeth, Amravati-444601, Maharashtra, India. He has done M.B.B.S. from Government Medical College, Nagpur, 1979, D.P.M. from Seth G. S. Medical College and KEM Hospital, Mumbai, 1981 and M.D. (Psychiatry) from Seth G. S. Medical College and KEM Hospital, Mumbai, 1982. He is Advisor to World Congress Asian Psychiatry (WCAP), Executive Council Member, SAARC Psychiatric Federation, Immediate Past President, Indian Psychiatric Society, Member, World Federation for Mental Health. He Conducts numerous Mental Health awareness programs for the public by writing articles, giving interviews and posting on social media platform. He has written many chapters on various subjects in various books. He participates in many Research programs also. He has given lectures at various platforms Nationally in various conferences all over the nation. He has been invited by various International organization as a faculty for example American Psychiatric Association, British Indian Psychiatrists Association, SAARC Conference, Asia Pacific Psychiatric Conference, Mayo Clinic, Neuropsychiatry Conference, Bangkok. He is Recipient of Lifetime Achievement Award by Indian Medical Association and Lions Club International. He has also been Felicitated by Hon. Smt. Pratibha Patil, Ex-President of India, for Medico-Social contributions.

Mako Momoda
Research Department, Hyogo Institute for Traumatic Stress, Kobe City, Hyogo Prefecture, Japan

Validity and reliability of the Japanese behavior rating inventory of executive function-adult version (J-BRIEF-A): Gender differences and age variations in adults

Executive Function (EF) refers to higher-order cognitive processes associated with the prefrontal cortex, playing a critical role in goal-directed behavior and daily functioning. The present study aimed to evaluate the reliability and validity of the Japanese version of the Behavior Rating Inventory of Executive Function–Adult Version (J-BRIEF-A). Additionally, age and gender differences in EF were examined, including tests of measurement invariance. A cross-sectional online survey was conducted with 1,378 adults (age 18–89 years; 689 men) across Japan. Confirmatory factor analysis supported the theoretical structure of the J-BRIEF-A, including nine subscales and a three-factor model (CFI=.98; RMSEA=.094). Internal consistency and test–retest reliability were both high. Convergent validity was demonstrated through significant correlations with the Dysexecutive Questionnaire (DEX). Construct validity was evaluated through three complementary approaches: (1) structural validity, as confirmed by the factor analysis; (2) convergent validity, supported by correlations with the DEX; and (3) measurement invariance testing across gender and age groups. Full scalar invariance was established across gender, allowing for meaningful comparisons between men and women. Across age groups, scalar invariance was confirmed for eight of the nine subscales, with the plan/organize subscale showing inadequate fit at the scalar level. This indicates caution should be taken when interpreting age-related differences on that subscale.

These results provide robust support for the J-BRIEF-A as a reliable and valid self-report tool for assessing EF in Japanese adults. While the reliance on subjective ratings and the absence of performance-based measures are noted limitations, the J-BRIEF-A remains a practical and accessible option for capturing executive dysfunction in everyday life. Further research should integrate objective cognitive assessments and examine contextual factors such as occupational stress and lifestyle habits to enhance comprehensive validity.

Biography

Mako Momoda is a Clinical Psychologist and Certified Public Psychologist, holding a PhD in Child Development. Currently working in the Research Department at the Hyogo Institute for Traumatic Stress in Kobe City, Hyogo Prefecture, Japan, she specializes in trauma and PTSD research. Their work focuses on understanding and mitigating the impact of traumatic experiences, providing insights that inform both clinical interventions and public mental health strategies.

Marcelo Sodelli
Professor of the Psychology course, Pontifical Catholic University of São Paulo (PUC-SP), São Paulo, Brazil

The phenomenologization of prohibitionism: Technique and positivity

We know that prohibitionism, despite repeatedly failing to achieve its objectives of eradicating drug production and consumption, remains completely dominant in the world. Its permanence and sustenance as a public policy, in spite of its failure, is generally understood as offering the State the power to control certain undesired social groups. However, when we analyze prohibitionism through the lens of late Heidegger's thought (Age of Technology), a new comprehensive possibility emerges. prohibitionism comes to be understood as an expression of the epochal sense of our world, completely attuned to the enframing of the age of technology. We argue that technology ontologically sustains prohibitionism. As an unfolding of technology and ratifying our position, we turn to the author Byung-Chul Han for the ontic notion of positivity. We thus arrive at the proposition that prohibitionism is positivity. Finally, we warn that if we truly want a new drug policy, we should not only fight against prohibitionism, but fundamentally, our efforts should project towards a resistance to the world of technology, a disobedience to calculative thinking. Ultimately, the meaning of existence, with or without drug use, should move closer to inhabiting the world in a more poetic manner.

Biography

Marcelo Sodelli holds a Master's and Ph.D. in Education (Psychology of Education) from the Pontifical Catholic University of São Paulo. Since 2018, he has been the Coordinator of the Psychology Program's Research Center at PUC, titled Psychology and Vulnerability–The Clinic of Dependencies and the Contemporary World. Member of the research group certified by CNPq (2012) Psychosocial Care Clinic and the Use of Alcohol and Other Drugs. Since 2007, he has been an Assistant Professor in the Psychology Program at the Faculty of Human Sciences and Health at the Pontifical Catholic University of São Paulo (PUC-SP) and a member of the Phenomenology Team.

Matthew He
Department of Mathematics Nova Southeastern University Ft. Lauderdale, FL, United States

Mathematical logic of action potentials: Roots of thoughts and zeros of mathematics

In recent scientific and technological advances, many boundaries among science, engineering and cognitive informatics are cross-linked in the face of combinations of knowledge and tools as demonstrated in the areas of scientific computing, network computing, bio-molecular computing, quantum computing, soft computing, most recently perceptual computing, and general artificial intelligence. Human thoughts are at the core of the latest scientific computing advances and development. Understanding the true nature of human thoughts and their mathematical patterns will be essential and critical. This talk presents three principles of the brain-mind relationship recently proposed by Giorgio A. Ascoli in 2015 and briefly provides an overview of Paul and Elder's model (in 1999 on the universal structure of human thought and the centrality of thinking. To explore mathematical structure of human thought, we briefly summarize Ulf Grenander's work "A Calculus of Ideas: A Mathematical Study of Human Thought" (in 2012). We then introduce a key concept of Thinking Kernels as geometric structure of human thought and draw the connections between Neural Spikes with Zeros of mathematics via an integration of fuzzy logic and binary logic (Fuzzinary Logic). Furthermore, we present a Central Dogma of Human Thoughts connecting internal black box of thinking kernels and external open box of thinking expressions via middle gray box of thinking flows.

Biography

Matthew He, Ph.D., is Professor of Mathematics at the Halmos College of Arts and Sciences of Nova Southeastern University, Florida, USA. He has been awarded as an Academician of European Academy of Informatization since 2004. He received the World Academy of Sciences Achievement Awards in recognition of his research contributions in the field of computing in 2003 and 2010. Dr. Matthew He has authored and edited over 30 books and conference proceedings and published over 100 research papers in the areas of mathematics, bioinformatics, algebraic biology, computer vision, information theory, math and engineering techniques in medical and biological sciences. He is an invited series editor of Biomedical and Life Sciences of Henry Stewart Talk "Using Bioinformatics in Exploration in Genetic Diversity". He has served as a member of the International Advisory Board of "International Symmetry Association (ISA) since 2004. He is also an Editor-in-Chief of International Journal of Information Technology and Computer Science.

Matthew Langford
Kindbridge Research Institute, United States

The hidden traps: Understanding gambling and gaming Addiction

Gambling and gaming addiction are rapidly emerging public health concerns that intersect psychology, neuroscience, and social behavior. This talk will explore the underlying mechanisms of these addictions, including the role of reward circuitry, variable reinforcement schedules, and the influence of technology in driving compulsive use. We will examine the overlap and distinctions between gambling disorder and gaming disorder, highlighting how accessibility, cultural normalization, and digital platforms have accelerated their prevalence. Drawing on recent research and real-world case examples, the presentation will address the impacts on individuals, families, and communities, as well as barriers to treatment and recovery. Finally, we will consider strategies for prevention, early intervention, and evidence-based treatment approaches, with a focus on how clinicians, educators, and policymakers can work together to reduce harm and support long-term healing.

Biography:

Matthew Langford is a Clinical and Transpersonal Hypnotherapist, public speaker, and founder of Beyond the Self Healing. As a lead instructor at the Institute of Interpersonal Hypnotherapy, he specializes in helping people heal childhood trauma, release resentment and anger, and access profound states of transformation through techniques such as past life regression, life-between-lives journeys, and spiritual entity release. With a foundation in deep meditation practice, Matthew bridges modern science—neuroplasticity, epigenetics, and mind-body healing—with timeless spiritual teachings from Advaita Vedanta, Ramana Maharshi, Adyashanti, and contemporary visionaries like Dr. Joe Dispenza, Bruce Lipton, and Gregg Braden. Alongside his private practice, Matthew works with Kindbridge Research Institute and Lotus Behavioral Health to deliver trainings, community outreach, and educational resources around mental health and gambling addiction. He is also creating international retreats that weave together hypnotherapy, meditation, and spiritual exploration. Dedicated to helping others dissolve the burden of thought and awaken to their true nature, Matthew's mission is to guide people into greater freedom, empowerment, and inner peace.

Medha Menon

[1]Student, John Foster Dulles HS, Sugar Land, TX, United States

Synapticare: Integrating sleep data and tau biomarkers to assess depression severity

After a year of treatment, only 11% of Major Depressive Disorder (MDD) patients achieved remission. This low recovery rate is not simply due to a lack of effective medications, as there are over 20 FDA approved, effective treatments for MDD. The challenge lies in identifying the best treatment for each individual patient. According to the American Psychiatric Association, a "watchful waiting" approach is recommended to assess whether a particular medication will work for a patient. Currently, depression treatment involves a "trial and error" approach, in which various medications or therapies are tried without a clear understanding of which will work best for the patient. This research focuses on the relationship between various sleep metrics, tau protein deposits, and depressive symptoms. The study aimed to develop a predictive model for the change in depression scores based on tau protein levels, sleep patterns, and depression severity, as measured by PHQ-9 scores. Neuroimaging data were used to measure tau protein levels across brain regions implicated in mood regulation and neurodegeneration. Depression severity was assessed using PHQ-9 scores, while sleep metrics were obtained through actigraphy over a 10-week period. For model development, changes in PHQ-9 scores served as the target variable. Features included tau deposition, baseline depression severity, treatment type, dosage, treatment duration, and sleep metrics. Performance was evaluated using R^2 and mean squared error (MSE). The Gradient-Boosting model demonstrated strong predictive performance. Results indicate that both tau pathology and sleep quality significantly influence changes in depression severity. These findings suggest that integrating tau- and sleep-based biomarkers into predictive frameworks may improve treatment personalization and clinical outcomes in MDD.

Biography

Medha Menon is a student researcher at John Foster Dulles HS, passionate about machine learning, and neuroscience. Medha has conducted research on behavioral neuroscience and MDD, as well as the gut- brain connection. She has been recognized by the Science and Engineering Fair of Houston, Texas Science and Engineering Fair, and Broadcom MASTERS.

Mohammad Ala Uddin
Assistant Professor, Department of Pediatrics, Pediatric Neurology and Development, Chattogram Medical College Hospital, Chattogram, Bangladesh

Pediatric stroke in Bangladesh: Epidemiology, clinical profiles, and policy implications for an under recognized public health challenge

Pediatric stroke is an under recognized yet significant cause of morbidity and mortality among children, particularly in Low- and Middle-Income Countries (LMICs) like Bangladesh, where it remains underdiagnosed, undertreated, and underreported due to limited awareness, inadequate neuroimaging facilities, and poor integration of pediatric neurology services. This paper explores the prevalence, etiology, clinical presentation, and treatment patterns of pediatric stroke in Bangladesh using data from tertiary hospitals and recent population-based studies. Drawing on a retrospective cohort study at Dhaka Medical College Hospital (DMCH) and records from the Institute of Paediatric Neurodisorder and Autism (IPNA), Bangabandhu Sheikh Mujib Medical University (BSMMU), the paper highlights the incidence of Arterial Ischemic Stroke (AIS) — more common in urban centers — and hemorrhagic strokes, which are more prevalent in peripheral districts. Common etiologies include congenital heart disease, sickle cell anemia, infections, and prothrombotic conditions. Delayed diagnosis — often beyond the therapeutic window — is linked to a shortage of trained personnel and limited MRI access. Outcomes are concerning: over 45% of survivors experience long-term neurological deficits such as hemiparesis, speech impairments, and epilepsy; mortality ranges from 10–15%, with neonatal strokes being more prevalent and severe. The article emphasizes the urgent need for national pediatric stroke protocols, public awareness initiatives, physician training, and expanded access to neurodiagnostic tools. Integration of rehabilitation services into primary care is essential to improve long-term outcomes. The paper recommends establishing a national stroke registry, enhancing pediatric neurologist training, and promoting research into genetic and environmental risk factors. This study adds to the growing but limited literature on pediatric stroke in South Asia.

Biography

Dr. Mohammad Ala Uddin is an Assistant Professor of Pediatric Neurology and Development at the Department of Pediatrics, Chattogram Medical College, Bangladesh. With over a decade of experience in child health, he specializes in pediatric neurology, combining clinical practice, research, and teaching to improve outcomes for children with neurological disorders. He earned his MBBS from MAG Osmani Medical College and holds MCPS, FCPS in Pediatrics, and FCPS in Pediatric Neurology and Development from BCPS. Dr. Uddin has served in leading hospitals across Bangladesh and published multiple research works. He is a member of the Bangladesh Pediatric Association.

Muhammad Abubakar
University Hospital Birmingham, United Kingdom

Concurrence of chickenpox and varicella zoster virus encephalitis in an immunocompetent female: A case report

Background: Varicella-Zoster Virus (VZV) commonly causes chickenpox in childhood and may later reactivate as shingles. Neurological complications such as meningitis, encephalitis, and myelitis are more frequent in immunocompromised or elderly patients. VZV encephalitis is rare in immunocompetent individuals and carries significant morbidity and mortality if not promptly treated.

Case Description: We report a 44-year-old immunocompetent female who presented with high-grade fever and a generalized papulovesicular rash typical of chickenpox. Five days after rash onset, she developed altered sensorium, irritability, hallucinations, and generalized tonic-clonic seizures. Neurological examination revealed a Glasgow Coma Scale score of 7/15 with diminished tone and reflexes. Cerebrospinal fluid analysis demonstrated lymphocytic pleocytosis consistent with viral encephalitis, and polymerase chain reaction confirmed VZV infection. MRI of the brain showed bilateral periventricular hyperintensities suggestive of small-vessel ischemic changes. She was treated with intravenous acyclovir for 14 days and a 5-day course of high-dose corticosteroids, along with anticonvulsants. Dramatic clinical improvement was observed, and the patient was discharged on day 15 with near-complete neurological recovery.

Discussion: This case highlights the occurrence of VZV encephalitis in an immunocompetent adult with active chickenpox. Although rare, clinicians should maintain a high index of suspicion for encephalitis in patients presenting with deteriorating consciousness or seizures during varicella infection. Early diagnosis with cerebrospinal fluid PCR and timely antiviral therapy are essential to reduce morbidity and prevent sequelae.

Conclusion: Varicella-related encephalitis can occur in immunocompetent patients. Prompt recognition and aggressive antiviral management can lead to favorable outcomes and avoid long-term neurological deficits.

Keywords: Varicella-zoster virus, Chickenpox, Encephalitis, Immunocompetent, Case report.

Biography

Dr. Muhammad Abubakar graduated in 2017 from Sharif Medical and Dental College, Pakistan. He is currently enrolled in the Fellowship of the College of Physicians and Surgeons Pakistan (FCPS) , having completed three years of training in Pakistan and Currently working as International training fellow in in the United Kingdom. He has presented work at national and international forums and remains dedicated to advancing evidence-based Medical care and involvement in research work.

Nassim Stegamat* B.S., Dr. George Smith PhD, Dr. Rupert Smit MD, Jacquelynn Rajavong B.S., Thomas Campion B.S., Sraavya Pinjala B.S.

Department of Neural Sciences, Shriner's Research Center, Philadelphia, PA, U.S.A

Mimicking Deep Brain Stimulation (DBS) via minimally invasive chemo-genetic manipulation of the subthalamic nucleus shows a recovery in parkinsonian behavior in rat models

Parkinson's Disease (PD) is a prevalent neurologic disorder characterized by the degeneration of dopaminergic neurons in the Substantia Nigra Pars Compacta (SNc). This augments the indirect pathway by over-exciting the Sub-Thalamic Nucleus (STN) causing excessive suppression of motor activity. Current treatments include DBS, where an electrode is implanted into the brain to suppress STN over-activity which is powered by a battery pack implanted sub-clavicular. In a 2002 study, Dr. Luo modeled DBS chemo-genetically by injecting adeno-associated virus encoding Glutamic Acid Decarboxylase (GAD) into the STN of a Parkinson's induced rat. The GAD converted all glutamatergic excitatory projections into GABAergic inhibitory projections. This transformed the over-excited STN into an inhibitory nucleus and remediated Parkinsonian behavior. Our goal was to further this study by converting excitatory neurons in the STN into inhibitory neurons via GAD, then excite the now inhibitory STN via synthetic neurotransmitter receptors to reduce the indirect pathway's excessive suppression of motor activity in PD.

We used adeno-associated virus to inject rats with GAD + excitatory "DREADDs" (retro-AAV2-DIO-hM3Dq-mcherry). "DREADDs" are "designer receptors exclusively activated by designer drugs" that act as synthetic neurotransmitter receptors to drive inhibition of the basal ganglia via stimulation by a synthetic ligand (clozapine-n-oxide, CNO). Our injections targeted STN projections to the Substantia Nigra Pars Reticulata (SNr). With this model, therapies were injected into the SNr and traveled retrograde to the STN where we injected the required DNA recombinase (AAV2-Cre-GFP) for protein expression. To Induced a Parkinsonian phenotype, we used a 6-OHDA lesion into the left medial forebrain bundle. To examine therapy efficacy, we used an amphetamine-induced rotation behavioral assessment which elicited a unidirectional Counterclockwise (CCW) rotation preference in untreated parkinsonian rats.

Amongst the treated cohorts, we observed a 47% reduction in CCW rotations and a strong trend towards impartial CCW vs CW rotations at 5 weeks post-treatment.

This therapy showed evidence of parkinsonian phenotype remediation and suggested potential for a minimally-invasive non-implant alternative to current treatment modalities promising a better patient quality of life.

Biography

Nassim Stegamat Studied Biochemistry and Molecular Biology at The Pennsylvania State University in State College, Pennsylvania U.S.A. He graduated in 2021 and shortly after started his M.D. curriculum at Temple University Lewis Katz School of Medicine. He is a current M.D. candidate with an anticipated graduation of 2026.

Natalia Borodulin*, Dr. Melanie Brion
Cambridge Center of International Research, Leigh High School, San Jose, CA, USA

PTSD and alcohol use disorder: Breaking the cycle – A literature review and new framework

This paper presents a literature review, critical analysis, and theoretical framework proposal for understanding and treating the frequent co-occurrence of PTSD and Alcohol Use Disorder (AUD). Despite the high prevalence and severity of this comorbidity, current research primarily focuses on symptom management rather than prevention.

The literature review brings together current research on the common risk factors of these disorders, including their shared vulnerabilities such as genetic predisposition, early-life trauma, and neurobiological dysregulation. PTSD-related stress dysregulation, characterized by amygdala hyperactivity, impaired prefrontal control, and hippocampal dysfunction, increases reliance on alcohol as a coping mechanism. Prolonged alcohol use worsens PTSD symptoms by further significant impairing emotional regulation and cognitive flexibility, creating a cycle that complicates treatment and worsens prognosis. A critical analysis of existing treatment modalities reveals a significant gap in current research–most studies focus on management of symptoms rather than prevention. Based on the literature review, this work presents an alternative perspective, viewing the reinforcement and interconnection of PTSD and AUD as a spiral cycle that progressively leads to worsening of the condition. The predictability of such reinforcement can be an opportunity for preventative intervention. Possible examples of this theoretical approach include Proactive patient screenings, education on the risks of self-medication, and preemptive behavioral and pharmacological strategies—including acamprosate, naltrexone, and semaglutide—may help prevent the full onset of AUD in high-risk PTSD patients, specifically predisposed to AUD but prior to the full onset of this problem.

By viewing this comorbidity as a progressive interconnected process and a single clinical entity, this model offers a foundation for future research and the development of prevention-focused treatment strategies.

Biography

Natalia Borodulin is an 11th grader at Leigh High School in San Jose. Her determination to combat addiction began in middle school after witnessing her friend overdose at 12. To deepen her understanding, she self-studied and passed AP Biology in 9th grade. She attended the Rosetta Institute at UCSD and BEAM x GATI at UCI. Her research focuses on the intersection of genetics, sociocultural factors, and epigenetics in substance use disorders. It was published in the Journal of Student Research. With the guidance of CCIR, she examined PTSD's link to AUD. Her abstract was accepted for the 4th International Conference on Addiction & Psychiatry, September 2025, Vienna, Austria.

Nethmi Nuwanji Amarasekera1* MBBS, BSc, AICSM; Janice Taylor2 MBBS, BAppSci; Christopher Coppin2 BMed, MD MMed; Simon J G Lewis2 MBBCh, BSc, FRACP, FRCP, MD

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An audit on the assessment and management of osteoporosis in a parkinson's and related diseases clinic in Australia

Osteoporosis is characterised by low bone mineral density and is associated with minimal trauma fractures. Patients with Parkinson's Disease (PD) and atypical parkinsonian syndromes are at increased risk of falls and should be actively screened and treated for osteoporosis. In 2024, the Royal Australian College of General Practitioners (RACGP) revised their practice guidelines for diagnosing and managing osteoporosis in postmenopausal women and men aged over 50 years. Here we conduct the first Australian study to audit the use of these guidelines in patients with PD and atypical parkinsonian syndromes.

We audited all PD, dementia with lewy bodies, progressive supranuclear palsy and multiple system atrophy cases attending our neurology service between January and March 2024 against the RACGP osteoporosis guidelines. We identified patients at risk of osteoporosis or minimal trauma fractures and assessed if they had been referred to their General Practitioner (GP) for appropriate management or were already receiving appropriate osteoporosis treatment.

This audit evaluated 230 patients, the majority of which had PD (n=199). We identified 78 patients over the age of 50 years with risk factors that should trigger a GP bone health assessment as per the guidelines. Twenty-six of these patients were already being managed appropriately for their bone health. However only 12 of the remaining 52 'at risk' patients (23%) were directed to seek screening for osteoporosis by their GP, leaving 77% (40/52) without appropriate guidance.

Specialists reviewing PD patients are well placed to assess osteoporosis and fracture risk, but this audit highlighted that this is currently not frequently done. Our major recommendations include following the guidelines and referring patients for a bone health screen with their GP if they have risk factors for osteoporosis. Considering the detrimental impact of poor bone health on morbidity and mortality, awareness amongst specialists needs to be improved.

Biography

Dr. Amarasekera studied medicine at Imperial College London School of Medicine and graduated in 2024 with a MBBS and BSc in Medical sciences with Anaesthetics and Critical Care. During university, she joined the Parkinson's Disease Research Clinic under Prof. Simon Lewis at Macquarie University, Australia for her elective. She has a keen interest in neurology and research, having previously published and presented an abstract for RCP during COVID-19 and presented at an international conference during her BSc, with another publication underway.

Priyanka Gupta
University of Delhi, India

Listen with the heart and heal the soul: A Jungian reflective analysis of holistic indigenous practices for group therapeutic facilitation

More often than not, emotionally unregulated and chaotic communication is the root cause of disturbances in interpersonal relationships, social connectedness, ultimately hindering personal growth and one's ability to make sense of the social world. Respective dialogue has transformative and therapeutic power, it encourages empathic self expression and mental harmony. The Talking Stick-Circle, rooted in Native American origin as an indigenous practice is a holistic tool for enhancing mental wellness, socio-cultural group cohesion, and therapeutic communication. Grounded in the Native origin narrative (retold by Kimberly Hardick as a story for children (2017)) it goes as follows-as the mothers were away to collect food, the village grandmothers were appointed to care for the grandchildren. Doing which they heard a loud argument between a Crow and Magpie. Engrossed in the argument they accidentally lost the sacred feather of the Eagle, noticing which, the Eagle intervened wisely. Instead of accepting the feather, the Eagle instructed them to create a Talking Stick, a sacred staff to promote respectful empathetic listening and open, non-judgemental communication in the village. Using the Jungian interdisciplinary qualitative research approach, Native American indigenous practices, rituals, ceremonies and storytelling council sacred narratives are explored and reflected on in this research, to understand the importance of harmonious communication reciprocity and the role of such holistic practices in group therapy settings. Ultimately, the talking stick-circle and such holistic community practices, tools facilitate the awakening of the inner voice, unraveling the inner psychological treasures of healing reflective in the clinical context as well. Aligned with the ritualistic talking circle, the Indian mythological sacred episode of Samudra Manthan (the Churning of the Ocean) will also be reflected on focusing on individual transformation through collective struggle, an outcome of group therapeutic work.

Keywords: Talking stick, Talking Circle, Jungian Analysis, Group therapy & Indian Mythology.

Biography

Priyanka Gupta, a PhD graduate in Psychology with a specialization in Jungian psychology and mythology from the University of Delhi, India (2023). Her doctoral thesis explored the hero archetype, through the distinctive prism of Hindu and Native American mythology. As a researcher, she is captivated by the interplay of the meaning of symbols, life, and religions, drawing inspiration from the novel perspectives laid by prominent Jungian and Psychology thinkers. Beyond academia, she is a writing enthusiast and a painter.

Rafaela Marchini[1]*, Dr. Curt Lox[2]

[1]Department of Brain and Psychological Sciences, University of North Florida, Jacksonville, FL, USA

[2]Department of Clinical and Applied Movement Sciences, University of North Florida, Jacksonville, FL, USA

The association between cardiorespiratory fitness and white matter integrity across the lifespan: A meta-analytic review

White matter deterioration is a hallmark of cognitive aging and a core feature of many neurodegenerative disorders. Cardiorespiratory Fitness (CRF) has emerged as a modifiable factor that may support white matter integrity across the adult lifespan. This meta-analytic review synthesized findings from seven peer-reviewed studies examining the association between objectively measured CRF and neuroimaging-based white matter structure. Results revealed a consistent positive relationship between higher CRF and stronger microstructural integrity, particularly in late-myelinating tracts such as the corpus callosum, cingulum, and longitudinal fasciculi. These associations were more robust in adults over 60, suggesting age-dependent neuroprotective effects. Higher CRF was also linked to reduced White Matter Hyper intensity (WMH) burden in older populations. Although most included studies were cross-sectional, one randomized trial provided intervention-based evidence of white matter plasticity. These findings underscore the potential of CRF as a non-pharmacological strategy to preserve brain health and mitigate cognitive decline with age. Future research should adopt longitudinal and multimodal designs to clarify causal mechanisms and identify moderators of these effects.

Biography

Rafaela Marchini is a neuroscience student, researcher and Division I track and field athlete at the University of North Florida. Her research focuses on the intersection of exercise physiology and brain health, specifically examining how cardiorespiratory fitness influences white matter integrity and cognitive resilience. As a student-athlete balancing elite sports performance and academic excellence, she brings a unique perspective to neuroscience research, bridging the gap between lifestyle interventions and neuroprotection. Rafaela aims to pursue a career in clinical neuroscience and continues to advance research on brain–body interactions under the mentorship of Dr. Curt Lox.

Ralph G. Walton M.D.
Northeastern Ohio Medical University, United States

Dietary methanol as a factor in seizures, mood disorders and Autism spectrum disorders

The artificial sweetener aspartame (L-aspartyl L-phenylalanine methyl ester) is a significant dietary source of methanol, a known neuro-toxic agent. Aspartame alone can almost double rat brain phenylalanine levels, while aspartame-carbohydrate combinations can raise brain tyrosine levels and suppress the usual physiologic increase in tryptophan that follows a carbohydrate rich meal. Such neurochemical changes are postulated to have potential behavioral impact, particularly in predisposed individuals. A series of case reports suggests a correlation between aspartame intake and seizures. In a double blind study, 40 patients with a history of unipolar depression and a similar number of individuals without a psychiatric history were recruited for a crossover study in which subjects were given aspartame 30mg/kg/day or placebo. There was a statistically significant difference in the groups, with individuals with a history of a mood disorder demonstrating significant sensitivity to this artificial sweetener. With regard to the issue of dietary methanol and autism, a prenatal dietary history was taken on 550 women who gave birth to a non-autistic child, and a similar prenatal dietary history obtained on 161 women who had given birth to a child with autism. The women who had given birth to a non-autistic child consumed an average of 66.71 mg of methanol per week, whereas women who had given birth to a child with autism consumed an average of 142.31 mg of methanol per week – a statistically significant difference.

Biography

Dr. Walton received his BA in General Science from the University of Rochester in 1963 and his MD from the State University of New York Upstate Medical Center in Syracuse in 1967. He completed his internship and residency in psychiatry at Strong Memorial hospital, University of Rochester Medical Center and was on the full time faculty of that medical school until 1976. In the 1980's he was chief of psychiatry at Jamestown General Hospital and Chautauqua County Commissioner of Mental Health. He subsequently served as Professor and Chairman of the Department of Psychiatry at Northeastern Ohio Medical University. Dr. Walton retired from the active practice of medicine in 2024.

Prof (Dr). Ramesh Nagarajappa
Department of Public Health Dentistry, The Oxford Dental College, Bengaluru, India

Cognizance of internet addiction

In today's world, we are all so dependent on digital technology that digital devices have fashioned into a significant part of our lives. These various digital devices have largely occupied all the fields and taken the place of almost everything in our life activities and have contributed towards a type of addiction called digital craving.

We're all spending too much time on our phones and computers. With the internet, smartphones, and video games easily available to increasing portions of society, researchers are becoming concerned with the potential side effects and consequences of their prevalence in people's daily lives. Internet Addiction Disorder (IAD) ruins lives by causing neurological complications, psychological disturbances, and social problems. Hence let us now try to explore more on this topic.

Keywords: Digital Technology, Internet, Internet Addiction Disorder.

Biography

Prof. (Dr.) Ramesh Nagarajappa graduated from the prestigious Bapuji Dental College and Hospital, Davangere, India, in 1999. He is currently serving as Professor and Head of the Department of Public Health Dentistry at The Oxford Dental College, affiliated with Rajiv Gandhi University of Health Sciences, Bangalore, India. With over 23 years of postgraduate teaching experience, he guides both PhD and MDS students. He has authored 145 publications in various reputed national and international journals and is a regular reviewer for several academic journals. Prof. Nagarajappa also has extensive experience in delivering scientific presentations and chairing sessions at numerous conferences.

Rebekah Sung
Fremont Christian School, Fremont, California, USA

Effects of sleep deprivation on alpha power

Sleep serves a vital restorative function, yet the precise mechanisms underlying brain activity during sleep deprivation remain unclear. Alpha waves (8-12 Hz), typically associated with relaxed wakefulness, also appear in various sleep stages, particularly during the transition from wakefulness to Non-Rapid Eye Movement (NREM) sleep. However, their role in sleep deprivation is still debated. This study examines how alpha activity changes under different levels of sleep deprivation and task presence – alpha power initially increases during mild sleep deprivation as the brain attempts to sustain cognitive alertness but later decreases with prolonged deprivation, reflecting cognitive disengagement and reduced vigilance, especially in task-absent conditions. Previous research presents conflicting findings, with some studies suggesting increased alpha activity helps maintain wakefulness, while others associate it with cognitive decline.

Understanding these patterns is crucial, as alpha waves serve as key markers of cognitive processing and alertness. This study aims to clarify how alpha activity is affected by acute sleep loss (1-2 days), providing insights into its functional role during sleep deprivation.

Biography

Rebekah Sung, 16, is a junior at Fremont Christian School. She is currently under the tutelage of Prof. Joonkoo Park of Commonwealth Honors College University of Massachusetts Amherst through the High School Research Program. She is also an active member of the Neuro Youth Club, and founded Music to Healing, a volunteer organization created to provide musical healing and bring awareness to musical and artistic therapy.

Ricardo A. B. Nucci*, Marina Rausch, Helena M.R.C. Freire, Rosana L. Pagano

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Non-pharmacological strategies to counteract oxaliplatin toxicity: Protective effects of vagal nerve stimulation and resistance training on neuropathy, motor dysfunction, and muscle atrophy

Background: Oxaliplatin (OXA), a platinum-based chemotherapeutic agent, is widely used in colorectal cancer treatment but frequently induces severe side effects, including peripheral neuropathy, motor deficits, and muscle wasting. These complications often limit treatment adherence and compromise quality of life. Non-pharmacological strategies such as Percutaneous Auricular Vagal Nerve Stimulation (paVNS), known for its systemic anti-inflammatory effects, and Resistance Training (RT), which promotes neuromuscular remodeling, have emerged as promising interventions to counteract these adverse outcomes.

Objective: This study investigated whether RT, alone or combined with paVNS, prevents OXA-induced neuropathic pain, motor deficits, and muscular atrophy, and whether these effects are associated with preservation of spinal cord integrity and reduced neuroinflammation.

Methods: Male Wistar rats were allocated into six groups (n=5/group): (1) Sedentary + sham-paVNS + vehicle; (2) Sedentary + sham-paVNS + OXA; (3) RT + sham-paVNS + vehicle; (4) RT + sham-paVNS + OXA; (5) Sedentary + paVNS + OXA; (6) RT + paVNS + OXA (CEUA P 2023-01). RT consisted of progressive “ladder climbing” sessions for four weeks. paVNS (20 min, random 2–10 Hz) was applied before each OXA cycle (6 cycles, cumulative dose 36 mg/kg). Behavioral assessments included nociceptive thresholds, open field, and loaded ladder tests. Histological and immunohistochemical analyses were performed on gastrocnemius muscle and spinal cord.

Results: OXA induced persistent neuropathic pain (mechanical hyperalgesia and allodynia), reduced locomotor activity, impaired muscle strength, and decreased cross-sectional area of gastrocnemius fibers. In the spinal cord, OXA induced microglial activation in the dorsal horn, along with neuronal loss and reduced cell number in both dorsal and ventral horns. RT alone promoted hypertrophy of gastrocnemius fibers and partially preserved neuronal integrity but did not prevent neuropathic pain. paVNS alone significantly attenuated pain behaviors, preserved locomotor activity, and reduced microglial activation. Notably, the combination RT + paVNS intervention provided the most robust protection, preventing OXA-induced loss of both slow-twitch (type I) and fast-twitch (type IIb) fibers, preserving neuronal number and morphology in

the spinal cord, and maintaining motor performance and muscle strength.

Conclusion: OXA treatment compromises both muscular and spinal integrity, resulting in neuropathic pain, motor dysfunction, and muscle atrophy. While RT alone induced muscle hypertrophy, it was insufficient to prevent pain and neurotoxicity. paVNS provided significant neuroprotection and anti-inflammatory effects, and the combined intervention exerted a synergistic protective action on both muscular and neuronal compartments. These findings highlight RT combined with paVNS as a promising non-pharmacological strategy to mitigate OXA-induced side effects, with potential to improve treatment adherence and quality of life in cancer patients.

Biography

Ricardo Aparecido Baptista Nucci holds a B.Sc. and teaching degree in Biological Sciences (2014) and an M.Sc. in Aging Sciences (2016) from Universidade São Judas Tadeu, Brazil. He earned his Ph.D. in Pathology (2022) at the University of São Paulo School of Medicine with a CAPES fellowship. Currently, he is a Postdoctoral Research Fellow at the Hospital Sírio-Libanês, São Paulo - Brazil. His research focuses on cellular and tissue biology, with emphasis on aging, pathological histology, and experimental models of chemotherapy-induced neuropathy.

Dr. Riham Mohsen Essa
Postdoctoral Researcher in Interior Design; Former Assistant Professor and Chairperson, Interior Design Department, Dar Al Uloom University, Riyadh, Saudi Arabia; Ph.D. in Interior Design, Faculty of Fine Arts, Alexandria University, Egypt

Neuro-responsive interior design for Alzheimer's care: Enhancing daily life in smart therapeutic spaces

Alzheimer's patients frequently experience anxiety, disorientation, memory loss, and trouble navigating space, which disrupts their daily lives. As cognitive decline advances, fundamental activities like locating a restroom, identifying personal areas, or experiencing safety in a familiar setting become considerable obstacles, impacting their independence and quality of life. This study suggests a therapeutic and neuro-responsive interior design strategy for small-scale memory care units, including activity hubs and respite lounges, within elder care facilities.

This approach incorporates sensor-driven lighting, modular IoT smart furniture, and adaptive way finding elements to establish intuitive, soothing environments that react to the user's movement and cognitive requirements. Motion-sensing lighting paths help with night-time disorientation, while signage with customized colors and icons enhances wayfinding and spatial memory. Additionally, biophilic design elements such as natural materials, indoor plants, and sun access are incorporated to enhance emotional calm and minimize stress. By incorporating RFID or sensor triggers into modular furniture, rooms can be subtly adjusted to patients' habits, encouraging predictability, autonomy, and less anxiety.

The approach is based on multidisciplinary research from the fields of environmental psychology, neuroarchitecture, and geriatric medicine. The suggested interior ecology is responsive—specifically, it responds in real time to patient presence, routine, and rhythm—and therapeutic—meaning, it actively supports psychological comfort and cognitive direction. Sensor-activated lighting, for instance, makes sure that rooms are well-lit when people step inside, which lowers the danger of falls and panic. Adaptive furniture and personalized signage encourage familiarity, strengthen daily routines, and lessen dependence on caregivers.

Disorientation, sleep difficulties, sensory overload, spatial confusion, emotional aggravation, and reliance on caregivers are the six main alzheimer's challenges identified in this work, and each is addressed with deliberate internal treatments.

The technology improves characteristics that support cognitive security while reducing stress-inducing environmental cues. Currently in its conceptual stage, the project will be prototyped

in a pilot setting in Cairo, Egypt, where cost-effective, smart design solutions will be beneficial for the city's growing senior population and underfunded care facilities. Future iterations will be modified for larger healthcare facilities, and a scaled pilot will show how such smart therapeutic zones can improve independence, safety, and emotional well-being.

This proposal is in line with INBC's mission to address neurological disorders by utilizing behavioral and environmental design techniques that directly enhance quality of life, in addition to pharmaceutical or medical advancements. This paper initiates a cross-disciplinary discussion on how the built environment might become an active therapeutic agent in alzheimer's care by combining smart systems, interior design, and neuropsychological knowledge.

Biography

Dr. Riham Essa is a Postdoctoral Researcher in Interior Design with a Ph.D. from the Faculty of Fine Arts, Alexandria University, Egypt. She previously worked as Assistant Professor and Chairperson of the Interior Design Department at Dar Al Uloom University in Riyadh, Saudi Arabia. Her research focuses on sustainable interior environments, smart technologies, and neuro-responsive design for therapeutic and workplace settings. She has published some peer-reviewed research papers in reputable, SCOPUS-indexed journals: “Advanced Sustainable Technologies and New Interior Design Approaches in Workspaces Post COVID-19”, published in Design Engineering (Toronto), June 2021. “Promoting Students’ Mental Health through Design and Implementation of Multi-Activity Pods in Educational Institutions Using the WELL Building Standard”, published in Designs (MDPI, Q2 SCOPUS Journal), January 2023. Currently, her postdoctoral work explores smart, neuro-responsive interior design solutions to support individuals with Alzheimer's disease, merging neuroscience and environmental design for improved daily life.

Robert Beggerow
North Middlesex University Hospital, United Kingdom

Neurosarcoidosis with cranial nerve polyneuropathy: A case report highlighting the potential role of Serial Systemic Immune-Inflammatory Indices (SSIIi)

Neurosarcoidosis is an uncommon but serious manifestation of systemic sarcoidosis, often posing a diagnostic challenge due to its varied presentation and the absence of definitive testing. This case report outlines a rare presentation of neurosarcoidosis and the comprehensive diagnostic process used to confirm the diagnosis. A 51-year-old woman presented with acute cranial nerve polyneuropathy involving the facial (VII), oculomotor (III), and trigeminal (V) nerves. These acute neurological deficits were accompanied by systemic constitutional symptoms, including weight loss and fatigue. Initial neuroimaging, including MRI of the brain, revealed neuritis of the right facial nerve. CT imaging of the thorax revealed extensive mediastinal and hilar lymphadenopathy. Abdominal imaging revealed signs of infiltrative liver disease. These findings shifted the diagnostic focus toward systemic granulomatous diseases. Differential diagnoses included tuberculosis, lymphoma, and other infiltrative or autoimmune conditions. A lumbar puncture and comprehensive serological investigations were undertaken, and these results were used to rule out infectious and malignant etiologies. To establish histological confirmation, an endobronchial ultrasound- guided biopsy of a subcarinal lymph node was performed. Histopathology demonstrated non-caseating granulomatous inflammation, confirming a diagnosis of sarcoidosis in the appropriate clinical and radiological context.

The patient was commenced on oral corticosteroid therapy with significant improvement in both neurological symptoms and overall clinical status. This case highlights the need for a high index of suspicion for neurosarcoidosis in patients presenting with multiple cranial nerve palsies, especially when accompanied by systemic symptoms and abnormal imaging findings. A novel aspect of this report is the serial measurement of the patient's Systemic Immune-Inflammatory Indices (SSIIi) during hospitalization. These values, calculated from routine full blood count parameters, fluctuated in relation to clinical status and treatment initiation. This trend suggests that SSIIi may serve as a dynamic, non-invasive marker of disease activity in sarcoidosis, especially in settings where repeated imaging or tissue sampling is not feasible. Further research is warranted to validate the utility of SSIIi as a monitoring tool in neurosarcoidosis.

Robert B. Slocum*, John L. Villano
University of Kentucky HealthCare, United States

Narrative medicine applications for neuro-oncology patient identity and quality of life

Brain cancer and its treatments bring a unique threat to the patient's identity and quality of life by challenging their essential identity in significant ways, possibly including impaired cognitive skills, loss of memory, reduced coordination, altered feeling states, and limited capacity for self-expression. These impairments may have a devastating and worsening impact on the patient as the cancer progresses and may be exacerbated by the side effects of treatment. We consider possible applications for Narrative Medicine (NM) to help these patients retain and rediscover self-identity. NM encourages patients to engage their stories of illness and treatment through guided conversations and emotional writing, with attentive listening at the heart of NM sessions. Patient experiences may be shared in conversation with a NM provider, or written in a patient journal and discussed at a later time. NM sessions were incorporated into the care of patients with brain tumors at the University of Kentucky Neuro-Oncology Program. NM made visible contributions for patients discussed in the case histories of this study. Understanding the patient's story is critical for evaluating the significance of impairments due to brain cancer and treatment relative to the patient's unique sense of self and quality of life. NM is at the nexus of clinical management and quality of life concerns for brain cancer patients. Insights from NM sessions may also help the treatment team as they assess patient needs, attitude, and abilities.

Biography

Robert B. Slocum is the Narrative Medicine Program Coordinator at University of Kentucky HealthCare. He holds doctorates in law (Vanderbilt), ministry (University of the South), and theology (Marquette). He has experience in pastoral ministry as well as academic teaching and administration. He has taught undergraduate courses in religious studies and ethics. He is an Assistant Professor (voluntary faculty, Internal Medicine) at the University of Kentucky College of Medicine (COM). He teaches a fourth-year COM elective on the narrative basis for patient care and resilient practice. He is a member of the Hospital Ethics Committee. He is the author, editor, or co-editor of 14 books, including a journal of reflections. His 36 articles have appeared in theological or medical journals and as book chapters, and he has made presentations at more than two dozen theological and medical conferences. He has also published short fiction and poetry. He is interested in the clinical application of narrative and the significance of narrative for identity formation. He sees Narrative Medicine as a bridge between medical humanities and clinical practice.

Robert DeLetis
CAC II Director of ERP Therapy 1115 Crest Worth Crossing Powder Springs, Georgia 3

The effects of using exposure response prevention therapy for reducing addicitive behaviors

Exposure Response Prevention (ERP) is a behavioral therapy technology that reduces a person's pre-disposition to respond to a set of stimuli. For example, ERP has been used to treat phobias and compulsions by exposing the person to the phobic situation or thing (stimuli set) and then preventing them from executing their dysfunctional response.

ERP Therapy has been applied to the problem of substance abuse. One of the key hurdles a person must overcome is to remain substance free to refrain from suing when exposed to stimuli (people. places, and things) formerly conditioned to their substance abuse. Failure to be able to ignore these conditioned stimuli is a primary cause of relapse. The range of stimuli conditioned as triggers of substance abuse is varied and individualized. There are, however, common triggers. These are sensory stimuli associated with the substance of choice, it acquisitions and preparation of use. Secondly, there is a typical use of setting, such as bar, time of day or special event. Finally emotional stressors while more individualized are another frequent trigger.

ERP Therapy helps a client extinguish their substance seeking behaviors & impulses by systematically exposing them in a controlled environment, to a sampling of the three sets of stimuli. It also reconditions the client's cognitive self-talk over a period of sessions. ERP Therapy is a eclectic approach that is another piece of the recovery process. It is compatible with many other approaches and added to traditional services it has been found to be a beneficial adjunct.

Objective of Presentation on Exposure Response Prevention (ERP) for Substance Abuse

1. Participants will learn WHY ERP is effective for their clients?
2. Participants will learn the rationale, theory, and approaches for incorporating ERP sessions into their practice.
3. Data will be presented reviewing the outcome study conducted.

Biography

Robert J. DeLetis, Director of ERP Therapy. Since 1992, Mr. DeLetis is currently a Nationally & Internationally Certified Drug Counselor. He is also the co-author of KILL THE CRAVING, a book that introduces Exposure Response Prevention to professional and their clients who want a new and innovative way to deal with their addiction. Mr. DeLetis, the creator of ERP Therapy for Substance Abuse, has been utilizing this process to help clients who are incarcerated, in residential program, and in outpatient settings for the last 25 years. He has developed training seminars, in-service training, as well as developed full professional ERP Kits for counselors. Psychologists and doctors to learn this new and exciting approach to substance abuse treatment. Over the years Mr. DeLetis has been employed in the criminal justice field, substance, abuse field (Rehabs & MOUD settings), and as a mental health counselor.

Robyn Merkel-Walsh MA, CCC-SLP, COM
Diamond Myo & Vocology, TalkTools, ®Ridgefield, NJ, USA

Tethered oral tissues: Navigating emerging research and clinical controversies

Frena are congenital remnants of tissue comprised of collagen, soft mucosa and fascia that can support or restrict movement. When this tissue is too short, too thick, too tight, or in the wrong location it is tethered. Tethered Oral Tissue(s) (TOTs) can impede feeding, swallowing, breathing, sleeping and speaking leading to lifelong challenges. TOTs including ankyloglossia (tongue-tie), lip-tie, and buccal ties, have garnered significant attention in recent years. This presentation will explore the latest evidence on TOTs from a three-pillar approach including clinical diet, patient/caregiver perspectives and research. Pre- and post-operative care, variations of surgery (laser vs. scissor), therapeutic interventions, interdisciplinary teams and treatment outcomes will be explored.

Biography

Robyn Merkel-Walsh is a NJ/NY licensed Speech-Language Pathologist, Certified Orofacial Myologist®, vocologist and author. She specializes in orofacial myology, feeding, voice and motor speech disorders. She is a member of the TalkTools® speaker's bureau and on the guest faculty of The Breathe Institute. She has multiple publications in peer reviewed journals. Robyn is the Board Chair of the Oral Motor Institute and a board member of the International Consortium of oral Ankylofrenula Professionals.

Roger H Coletti
Interventional Health, PA, Lewes, DE, USA

Treatment of chronic muscle spasm and pain with the CMECD® procedure

It has been noted by multiple researchers that there is Spontaneous Electrical Activity (SEA) at painful trigger points. This author has studied chronic muscle spasm and found that SEA is always present and appears to be the cause for the chronic nature of muscle spasm and resulting chronic pain. Chronic muscle spasm and resulting chronic pain can last for years and cases where the spasm lasted for decades were not only found but successfully treated with the CMECD® procedure. This procedure consists of EMG guidance searching for the SEA and using a combination of phenoxybenzamine, Lidocaine and dexamethasone to extinguish the SEA. Large areas of muscle often need to be treated. Thanks to lidocaine acting as an antiarrhythmic, the SEA is extinguished within seconds and the phenoxybenzamine then takes over after about one hour. With the resolution of the SEA, the muscle can immediately relax. The phenoxybenzamine forms a covalent bond on the alpha motoneuron receptor and the result is a duration of action of 2-3 months. This is enough time for the muscle to recover the prolonged effect of ischemia resulting from the prolonged spasm. Muscles treated in this fashion need only a single injection. Recurrences are rare and only occur if there is a repeat overuse or traumatic injury. The CMECD® procedure is available for use by any medical caregiver that is licensed to give injections. The ability to permanently relieve chronic pain without the use of opioid drugs should prompt interest in this procedure.

Keywords: Denervation, Phenoxybenzamine, CMECD, Spasm, Pain, Muscle.

Biography

Dr. Coletti received a BA from Georgetown University College of Arts and Sciences. He received a Master of Arts from Hofstra University. He received his MD from State University of New York at Downstate. His medical internship and residency was performed at Nassau County Medical Center in East Meadow, NY. He did two years of cardiology fellowship at Columbia Presbyterian Medical Center in New York and then transferred to Westchester County Medical Center where he completed one year of Interventional Cardiology fellowship. He was awarded FACC, FASNC, and FSCAI fellowship status. Current interest is chronic muscle spasm and pain. He has proposed The Ischemic Model of Chronic Muscle Spasm and developed the CMECD® procedure for treatment of chronic pain.

Samira Arji*, Fatima-Zahra Azzaoui
Department of Biology, Laboratory of Biology and Health, Faculty of Sciences, Ibn Tofaïl University, Kenitra, Morocco

Impact of burnout on executive functions in employees: A case study in a metallurgy company

Background: Burnout is associated with cognitive impairment. Research has shown a link between burnout and difficulties in executive functions in daily life, as well as changes in underlying neural processes. This cross-sectional study aimed to examine the impact of burnout on cognitive functioning, particularly on executive functions, and to identify key factors influencing these effects.

Materials and Methods: A total of 104 employees of a Moroccan industrial company participated voluntarily. They completed two neurocognitive digital tests via the ELIAN software and the self-assessment questionnaire "Maslach Burnout Inventory (MBI)". After applying the inclusion and exclusion criteria, 102 participants remained in the study.

Results: The study sample was composed of 102 voluntary employees who were informed in advance about the purpose of the survey and the anonymity of the data. It was conducted at the workplace through direct individual interviews. Each participant was given the option to accept or decline participation. They were aged 22 to 60 years, with a mean age of 36.76±10.5 years. 76.5% were men and 23.5% were women. Their professional status was diverse: 48% were supervisors, 32.4% were operators and 19.6% were managers. Statistical analysis showed that burnout significantly improved some executive functions, such as visuospatial perception, while impairing others, such as accuracy. The results also highlighted that age and gender are determinant factors in the effects of burnout on executive functioning.

Conclusion: This study concludes that the impact of burnout on executive functioning varies depending on the type of cognitive task involved, suggesting that burnout affects cognitive functions in complex and task-specific ways.

Biography

Dr. Samira Arji studied Life Sciences at Moulay Ismail University, Faculty of Sciences and Techniques in Morocco, where she obtained her general university degree in 1996. She completed her teaching qualification at the Center for Professions of Education and Training in 1998 and has been teaching Life and Earth Sciences since then. Dr. Arji furthered her studies at Ibn Tofaïl University, Faculty of Sciences, earning a Bachelor's degree in Biology in 2012, followed by a Master's degree in Neurocognition and Population Health in 2017. She completed her PhD in Biology, Neuropsychology and Health in 2023 at the same institution. Dr. Arji has published 4 articles in Scopus-indexed journals and delivered 5 oral presentations at international conferences.

Faisal F. Alamri[1,2], Eman A. Alraddadi[1,2], Yasser Alatawi[3], Asail Alkathami[2,4], Ghaida Altowairqi[2,4], Sarah Algamedi[2,4]*, Mehaf Ferak[5], Khadijah Bamusa[2,4], Amani Y. Alhalwani[1,2], Salwa Y. Hafez[2,6,7], Faisal Almutawa[8], Alqassem Y. Hakami[2,4]

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Major stroke adverse events of dual versus single antiplatelet therapy in acute and subacute ischemic stroke patient outcomes: A retrospective cohort analysis

Introduction: Short-term use of Dual Antiplatelet Therapy (DAPT) has been shown to be superior to Single Antiplatelet Therapy (SAPT) in improving outcomes in patients with Acute Ischemic Stroke (AIS). However, long-term effects following SAPT and DAPT remain unclear. This study aimed to investigate the long-term impact of DAPT and SAPT on the clinical outcomes of AIS patients.

Methods: A retrospective cohort study was conducted at King Abdulaziz Medical City facilities in Riyadh and Jeddah, and Prince Mohammed bin Abdulaziz Hospital in Madinah, and included 912 AIS patients who received either DAPT (aspirin plus clopidogrel) or SAPT (aspirin or clopidogrel alone). The primary outcome was the incidence of Net Adverse Clinical and Cerebral Events (NACCEs), defined as the incidence of any hemorrhagic transformation within 30 days or stroke recurrence and/or all-cause mortality within 12 months of the index stroke.

Results: Of the 4043 patients screened, 912 met the inclusion criteria, with a mean age of 65.21 years. Among them, 582 patients (63.8%) received DAPT. There was no statistically significant difference in the incidence of NACCEs between the DAPT and SAPT groups over 12 months ($p=0.946$). Although the DAPT group showed a higher rate of stroke recurrence 50 days after the index stroke, this difference was not statistically significant ($p=0.107$). Similarly, the SAPT group had a slightly higher incidence of mortality after 6 months and hemorrhagic transformation within 5 days, but these were also not statistically significant ($p=0.312$ and 0.214, respectively).

Conclusion: Addition of a second antiplatelet agent did not significantly affect the long-term risk of stroke recurrence or mortality in AIS patients over a 12-month period. Prospective studies are needed to clarify the long-term benefits and risks of DAPT compared with SAPT in different stroke subpopulations.

Biography

Sarah Algamedi is a fifth-year medical student at King Saud bin Abdulaziz University for Health Sciences (COM-J), Jeddah, Saudi Arabia. She serves as President of the Sustainability Club and the Hematology & Oncology Club, leading initiatives aligned with the UN Sustainable Development Goals. Her research interests include pediatric oncology, and neurovascular disorders, with contributions focusing on stroke outcomes and child neurological health. She has presented her work at national medical conferences and was selected as a 2025 Qimam Fellowship Scholar one of 50 fellows chosen from over 18,000 applicants across Saudi Arabia in recognition of her leadership potential and academic excellence.

Scharbach Hugues
Paris University, France

Attempt to approach epistemologic and etiopathologic basis of borderline state disorders

"A contribution to clarify the features of these new types of borderline's personality becoming so numerous in the frame of our new society with constant evolution, without underestimating the usefulness of assessment scales in aiding diagnosis.

About the presentation of diachronic observations, therefore also longitudinal, of patients encountered during on-call shifts in the C.H.R.U., of follow-ups during psychotherapeutic times developing over years or even in the context of forensic expertise, recalling that the assessment scales, however refined they may be, do not allow us to grasp all the psychopathological subtleties of these mosaic psychopathological entities, in order to refine the methods of care management in subjects with unstable relational exchange methods, psychotherapeutic follow-ups, which cannot be conceived as basic psychoanalyses, involving listening and interpretations but not demonstration of empathy. reassuring and soothing".

The epistemological and etiopathogenetic aspects need each time to be approach at their stem/roots.

Biography

Doctor Hugues SCHARBACH Neuro-Psychiatrist; Pedo-Psychiatrist, Doctor of Psychology, Past head of psychiatric Service in C.H.R.U.; National Expert hon. He began his academic career as an assistant in neuroanatomy under Professor P. Delmas at the New Medical Faculty, Rue des Saints-Pères in Paris, and later served as an invited Professor of Physiology at the University of Bujumbura (1970–71) through the French Foreign Office. Upon returning to France, he held the position of Chef de Travaux Délégué in Physiology at the Paris 6 Faculty of Medicine. Clinically, he served as Psychiatre des Hôpitaux and led the Adult Psychiatry Service at Nantes CHRU before founding and directing the Child and Adolescent Psychiatry Service at the same hospital. Dr. Scharbach has taught extensively as Director of Clinical Psychiatry and has delivered lectures and presentations across France, Germany, Jordan, and Brazil. A Co-Keynote Speaker at the WHO Conference in Athens on Bipolar Spectrum Disorders (BSD), his contributions include significant publications such as the 1983 Congress Report of the Société de Psychiatrie et Neurologie de Langue Française in Poitiers. He has also been involved in advanced pharmacological research, notably on rubidium with Professor P.H. Loo, and has contributed to multiple Phase IV clinical trials.

Serena Saunders
SPCA International – PAWsitive Recovery Program, United States

The PAWsitive model keeping families together and helping people and pets heal from the wounds of addiction, trauma, and abuse

Addiction and trauma tear lives apart—often forcing individuals to choose between getting help and keeping their beloved pets. The PAWsitive Recovery Program is a trauma-informed, pet-centered support model designed to bridge that gap. Our approach offers crisis foster care for the pets of individuals entering treatment, allowing people to pursue recovery without the fear of losing their animal companion.

In this session, I'll share my personal recovery journey—including the story of my dog Oscar, who became my anchor and inspiration to build a program that now helps hundreds of people and pets reunite after healing. I'll also introduce Sit-Stay-Heal, our trauma-responsive workshop series that brings structured animal-assisted programming directly into treatment centers to support emotional regulation, empathy, and trust-building.

We'll explore how pet guardianship improves treatment retention, the emotional and behavioral health outcomes tied to pet reunification, and how programs like PAWsitive Recovery can be adapted nationally through community collaboration. Audience members will engage in discussion, explore practical implementation strategies, and hear real-world success stories that speak to the deep, mutual healing between humans and animals.

This presentation includes a PowerPoint, interactive elements, and an invitation to reimagine recovery through the eyes of those who've lived it—on both ends of the leash.

Biography

Serena Saunders is a lifelong learner passionate about animal welfare and leadership. She graduated from Bel-Rea Institute in 2008 as a certified veterinary technician and later earned a bachelor's degree in business management. Most recently, she completed a Master's in Organizational Leadership and a graduate certificate in Project Management from Colorado State University. Serena has worked in shelter medicine, private practice, and rescue. She currently leads PAWsitive Recovery under SPCA International, a program that supports individuals in crisis by providing temporary care for their pets. Serena also created Sit-Stay-Heal, a workshop series that brings animal-assisted healing into recovery centers. She travels internationally for spay/neuter clinics and is deeply committed to helping people and pets stay together through life's hardest moments. She shares her life with her daughter Shaylene, and a house full of rescue animals.

Cheryl Molyneaux[1*] EdD, CRPS; Sherry Warner[2*] B.Ed, CRPS; Dr. Allison Ventura[3*], PhD

[1]Executive Director Peer Support Coalition of Florida Lake Mary, Florida, USA

[2]Education Director Peer Support Coalition of Florida St. Augustine, Florida, USA

[3]Certified Clinician DBT-Linehan Board of Certification University of Florida College of Medicine Jacksonville, Florida, USA

Feasibility and effectiveness of a professional peer-led approach to DBT skills coaching

Although Dialectical Behavior Therapy Skills have been around for some time, its main use has been by clinicians in clinical settings. There is a recent movement in the mental health field to expand capacity and service delivery to individuals who are suicidal and/or emotionally dysregulated via a peer led, recovery-oriented approach. In 2021, Cheryl and Sherry, Executive and Education Directors of the Peer Support Coalition met with Dr. Allison Ventura of UF Health Medicine to discuss the potential and likelihood of success with a peer-led approach to service delivery. A training model was developed in collaboration to deliver to non-clinical professionals working in recovery support. This model introduces DBT concepts and skills in plain language with a peer-to-peer recovery-oriented mindset. A research plan was developed to measure feasibility and effectiveness. The pilot of this program with conducted research is nearing the end of its first year in operation with remarkable quantitative and qualitative data that demonstrates affirmatively that the concepts and skills facilitated in this capacity are feasible, appropriate, beneficial, and replicable as an approach to support individuals in recovery.

The presentation includes a synopsis and overview of the origins and foundations of DBT Skills as well as a summary of the findings that support the research. The goals of this service delivery will be explained and workshop participants will get a chance to sample some of the curriculum as well as engage in some of the activities to experience an abbreviated example of the service delivery.

The 4 foundational modules and core skills of mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness will be covered as presenters share researched based evidence combined their with personal experience using the skills. The presenters will demonstrate that a model, carefully facilitated that encourages sharing in safe settings allows for participant vulnerability while receiving validation and support. This approach aids in the processing of life's difficult circumstances, including trauma, and fosters increased connection with others, better emotion regulation, greater life satisfaction, and hope for living a meaningful and productive life, regardless of diagnoses and setbacks.

Biographies

Cheryl Molyneaux has over 30 years of leadership experience in nonprofit organizations serving individuals living with mental health challenges. Cheryl has served in various capacities from Associate Campus Dean to Professor of Accounting and Business. She earned her Bachelor's degree from the University of the Virgin Islands, an MBA from the University of Baltimore and Doctorate in Organizational Leadership from Nova Southeastern University. She is the founding president of Depression and Bipolar Support Alliance (DBSA) Central Florida. Cheryl serves on the board of the Federation of Families of Central Florida and on the Behavioral Health Planning Council for the state of Florida. Cheryl is trained as a Neuro-linguistic Programming (NLP) Life Coach; Florida Certified Recovery Peer Specialist; Facilitator of WRAP (Wellness Recovery Action Plan), Emotional CPR (eCPR) as well as other whole health training. In addition to training, she has developed and adapted multiple peer education curriculum. Cheryl's dedication to this work comes not only from professional experience but also from the schooling gained from lived experience. She is committed to using her multifaceted background to model and be a supporter of those seeking recovery and those moving on to flourishing in recovery.

Sherry Warner is the Education Director for the Peer Support Coalition of Florida; she resides in St. Augustine, Florida. She has a bachelor's degree in Special Education from the University of North Florida and has taught in both the private and public sectors at all grade levels. She has experience with adult, family, and youth peer services. She has spoken about wellness, recovery, and leadership at multilple venues in Florida and in California. She facilitates several national curriculums. She is a curriculum developer for wellness and recovery education. She is a Certified Recovery Peer Specialist (CRPS) in the state of Florida and holds the National Certified Peer Specialist (NCPS) credential. In 2024 Sherry co-authored, The Human Experience: Stories of Hope Healing, and Inspiration. In her spare time, Sherry enjoys her volunteer work for the Northeast FloridaGirls on the Run organization as well as the St. Augustine Wild Reserve. She is a fierce advocate for the LGBTQIA+ community.

Dr. Allison Ventura is a child and adolescent psychologist specializing in Dialectical Behavior Therapy (DBT), and is the only certified clinician in Northeast Florida to hold the DBT-Linehan Board of Certification. She is also one of only a handful of providers in the state of Florida to have received this national certification status. She leads the DBT program at UF Health Psychiatry- San Jose, a program that treats patients with complex dysregulation. Dr. Ventura graduated from Fordham University with her doctorate in counseling psychology and received her master's degree and additional specialist's degrees from the University of Florida. Dr. Ventura's grant and research interests are in understanding the feasibility and implementation of mindfulness-based interventions within the elementary school setting, as well as understanding how DBT skills groups can be co-facilitated by peer recovery specialists. Dr. Ventura currently serves as the board representative and treasurer for the Northeast chapter of the Florida Psychological Association. Her previous chapter roles were president for two years, membership chair for two years and member for the past seven year.

Shrihita Ganga MS[4,*], Tyler Natof MD

Department of Psychiatry, Southern Illinois University School of Medicine

A case of acute disseminated encephalomyelitis presenting with catatonia and psychosis in a patient with schizophrenia

Introduction: Acute Disseminated Encephalomyelitis (ADEM) is a rare, immune-mediated inflammatory disorder of the Central Nervous System (CNS) characterized by multifocal neurological deficits and encephalopathy. Often triggered by infections or vaccinations, ADEM primarily affects the white matter and can present with symptoms such as altered mental status, motor deficits, ataxia, and seizures. While neurological features are well recognized, psychiatric symptoms—including psychosis, mood disturbances, and catatonia—are less commonly associated with ADEM and may lead to diagnostic challenges, especially in patients with preexisting psychiatric disorders.

Psychotic disorders, particularly schizophrenia, can share overlapping features with ADEM, complicating the clinical picture. Symptoms such as hallucinations, delusions, catatonia, and cognitive impairment can be attributed to either a primary psychiatric illness or an underlying neuroinflammatory process. In psychiatric inpatient settings, organic causes of psychiatric symptoms may be overlooked, especially when a patient carries a longstanding psychiatric diagnosis. This can delay appropriate recognition and management of conditions with neurological involvement.

We present the case of a patient with a history of schizophrenia who was admitted to an inpatient psychiatric unit for catatonia. Upon further review of his medical records, it was discovered that he also had a diagnosis of ADEM. This case highlights the clinical overlap between ADEM and psychiatric disorders, the challenges of distinguishing neuroinflammatory from primary psychiatric presentations, and the importance of thorough medical evaluation in psychiatric settings.

Case Presentation: A 24-year-old male with a history of schizophrenia, conduct disorder, Disruptive Mood Dysregulation Disorder (DMDD), and cannabis use disorder was brought to the emergency department via mobile crisis response after being found wandering barefoot in cold weather with altered mental status. Initial evaluation revealed aspiration pneumonia on chest CT, and he was admitted for medical management. During his hospitalization, the patient exhibited significant agitation, requiring restraints and PRN medications for elopement attempts. Once

medically stabilized, he was transferred to inpatient psychiatry due to worsening psychosis, marked by disorganized thoughts, nonsensical speech, and frequent Right-To-left Internal Stimulation (RTIS). Upon arrival, he developed profound catatonia, presenting with mutism, bizarre facial expressions, fixed gaze, and motor rigidity. He demonstrated a greater than 50% improvement with an Ativan challenge, leading to scheduled benzodiazepine treatment. His psychiatric medications—including clozapine, lithium, Depakote, benztropine, and Ativan—had been resumed on the medical floor after family-reported adherence; however, given concerns about noncompliance prior to admission and the risk of antipsychotic-induced worsening of catatonia, they were held. His condition required careful medication titration, with daily Haloperidol 1mg due to ongoing psychosis with command auditory hallucinations. During his admission, a chart review revealed a prior diagnosis of Acute Disseminated Encephalomyelitis (ADEM), raising critical questions regarding the interplay between his neuroinflammatory and psychiatric conditions.

Discussion: Acute Disseminated Encephalomyelitis (ADEM) is a rare neuroinflammatory disorder that typically presents with encephalopathy and neurological deficits. However, psychiatric symptoms, including psychosis and catatonia, can also be prominent, complicating diagnosis, especially in patients with preexisting psychiatric disorders. This case highlights a patient with schizophrenia who exhibited worsening psychosis, catatonia, and functional decline, raising concerns for an acute psychiatric exacerbation. However, the concurrent presence of ADEM in this patient raises important questions about the role of neuroinflammation in psychosis and the difficulty in distinguishing between primary psychiatric illness and neurological disease. This case contributes to the growing recognition of psychiatric manifestations of ADEM and underscores the need for clinicians to consider neuroinflammatory disorders when evaluating atypical psychiatric presentations.

Highlights:

- ADEM, a neuroinflammatory disorder, can present with prominent psychiatric symptoms, including psychosis and catatonia.
- Distinguishing between primary psychotic disorders and ADEM can be challenging due to overlapping symptoms.
- This case illustrates how a patient with schizophrenia also had ADEM, raising questions about the interplay between neuroinflammation and psychiatric illness.
- Awareness of ADEM as a potential cause of psychosis is important, especially in patients with treatment-resistant or atypical psychiatric symptoms.
- Neuroimaging and neurological evaluation may be valuable in psychiatric patients with unusual symptom presentations.

Plain language summary: Psychosis is typically associated with psychiatric conditions like schizophrenia, but sometimes brain inflammation can cause similar symptoms. This case describes a young man with schizophrenia who was hospitalized due to worsening psychosis and catatonia. While his symptoms were initially assumed to be part of his psychiatric illness,

he also had a rare brain inflammation disorder called Acute Disseminated Encephalomyelitis (ADEM). Since both schizophrenia and ADEM can cause hallucinations, delusions, and disorganized thinking, it can be difficult to tell them apart. This case highlights how ADEM can mimic psychosis and suggests that brain inflammation may play a role in psychiatric disorders. Recognizing the neurological aspects of psychiatric symptoms could lead to better treatment approaches.

Keywords: Acute disseminated encephalomyelitis, Psychosis, Catatonia, Schizophrenia, Neuroinflammation, White matter disease, Autoimmune encephalitis, Psychiatric symptoms, Neurology-psychiatry interface.

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Digital health narratives in neuro-oncology: Evaluating educational quality through NLP-augmented discern analysis

Background: Online visual health content is a widely used source of medical information, especially in emotionally charged fields like neuro-oncology, where patients and caregivers often turn to digital platforms for accessible education. However, the unregulated nature of such platforms raises significant concerns about content credibility, accuracy, and the potential for health misinformation—particularly when addressing topics involving prognosis and treatment decisions.

Objective: This study aimed to systematically evaluate the quality, readability, and educational value of widely viewed online visual content on brain tumors using a hybrid methodology combining Natural Language Processing (NLP) with the validated DISCERN tool.

Methods: We performed a cross-sectional analysis of 30 English-language brain tumor videos meeting the following inclusion criteria: ≥5,000 views, ≥2 minutes in length, uploaded within the past 3 years. Metadata (view count, upload date, source category) and full transcripts were collected. Videos were classified into five source types: medical professionals, health organizations, patient testimonials, media/news, and other. Readability was assessed using the Hemingway Editor; sentiment polarity was measured using TextBlob. Latent Dirichlet Allocation (LDA) topic modeling was used to identify underrepresented discussion areas (e.g., prognosis, palliative care). The first eight DISCERN items were applied in a two-step scoring pipeline involving AI-assisted scoring and human verification.

Results: Median view count was 58,200 (IQR: 21,945–187,900); readability ranged from Grade 7 to postgraduate level (median: 10.4). DISCERN scores ranged from 12 to 36 (mean: 26.3±5.7), with no video achieving an “excellent” rating. Medical professionals had the highest average DISCERN scores (31.5), while patient-generated content had the lowest (20.1), often lacking citation of sources or balanced treatment perspectives. Pearson correlation analysis revealed no statistically significant relationship between DISCERN scores and readability ($r=0.14$, $p=0.46$) or view count ($r=-0.07$, $p=0.69$). Topic modeling revealed a consistent omission of palliative care, survivorship, and prognosis-related discussions.

Conclusion: Online visual health content offers both accessibility and risk in neuro-oncology education. While professionally produced videos tend to offer more accurate and comprehensive information, they are often less emotionally engaging and attract fewer views. Conversely, highly viewed patient narratives often include unsupported claims. This study underscores the need for scalable content evaluation pipelines, such as hybrid NLP-DISCERN methods, and highlights the limitations of existing tools not optimized for video-based education. Our findings reveal critical content gaps and reinforce the ethical responsibility of creators and platforms to prioritize accuracy, transparency, and digital health literacy in high-stakes domains like neuro-oncology.

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Addiction rehabilitation & recovery: Pathways to healing and resilience

Addiction remains one of the most challenging and pervasive health issues worldwide. This presentation will explore the comprehensive process of addiction rehabilitation and recovery, focusing on key stages and effective treatment approaches. The journey of recovery begins with detoxification, a crucial first step in clearing the body of harmful substances and managing withdrawal symptoms.

Following detox, therapy and counseling play a central role in addressing the underlying psychological aspects of addiction. Evidence-based therapies such as Cognitive Behavioral Therapy (CBT) and Motivational Interviewing (MI) offer valuable tools for individuals to understand and confront the factors driving their addiction. Additionally, holistic practices, including yoga, meditation, and mindfulness, are increasingly recognized for their effectiveness in supporting emotional healing and promoting long-term recovery.

The role of community support is also critical. Family involvement and participation in recovery programs like Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) provide a strong foundation for sustained sobriety. The presentation will discuss how these support networks reduce the risk of relapse and provide ongoing encouragement for individuals in recovery.

Ultimately, this session emphasizes the importance of a holistic approach to addiction treatment, combining medical, psychological, and social strategies to foster long-term recovery and resilience. Attendees will gain insights into the key elements of addiction rehabilitation, the challenges of recovery, and the strategies that empower individuals to lead healthy, substance-free lives.

Biography

Dr. Sindu Padmanabhan is a seasoned psychologist with over 15 years of experience in counseling and psychotherapy. With a PhD in Psychology, Dr. Padmanabhan specializes in mental health, addiction recovery, and therapeutic interventions. Her extensive expertise in the psychological aspects of addiction has led to significant contributions in both research and clinical practice. Dr. Padmanabhan has a strong commitment to supporting individuals through their recovery journeys and is an advocate for holistic, personalized approaches to mental health care. She continues to advance the field through her work as an academic book contributor and research reviewer, aiming to improve mental health outcomes globally.

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Rare bismuth-induced neurotoxicity case report

Bismuth encephalopathy is a rare cause of neurological dysfunction that can result in confusion, gait disturbances, myoclonus, and dysarthria. Due to the rarity of this condition, a bismuth toxicology workup is usually not immediately initiated upon presentation of neurological symptoms and other causes such as autoimmune or Hashimoto's encephalopathy are evaluated instead. After gait disturbances and progressive paranoia for a week, this patient was found on the floor at home surrounded by pill vials. Her clinical course in the hospital was marked by tonic-clonic seizure-like episodes, encephalopathy, and persistent altered mental status, ultimately culminating in her death. Evaluations for tricyclic antidepressants overdose, serotonin neurotoxicity, autoimmune encephalitis, and infectious etiologies were non-contributory. Ultimately, the cause of death determined by autopsy was confirmed to be bismuth toxicity, revealing elevated levels of bismuth in the brain, liver, and kidneys. Immuno histochemical testing was negative for prion protein, excluding Creutzfeldt-Jakob Disease, and no other significant pathology was seen in the examination of the body that would have contributed to death. For many years before these events, this patient had been experiencing gastrointestinal symptoms such as bloating, epigastric pain, constipation, and diarrhea. She was lost to follow up in the months leading up to the day she was found down, raising the suspicion that she may have excessively self-administered bismuth-containing medications which are commonly available over the counter for digestive disturbances. Her case emphasizes the necessity of considering bismuth toxicity as a cause for neurological deterioration. Early diagnoses can result in a prompter initiation of treatment which can improve patient outcomes. This account should serve as a reminder for physicians about the critical repercussions of bismuth-containing medications that are frequently used and easily accessible.

Biography

Sriyaa Suresh has a Bachelor of Arts in Neuroscience from University of Pennsylvania where she assumed the role of clinical research assistant at the Children's Hospital of Philadelphia, notably achieving a co-authorship on a publication regarding profiling ctDNA as a predictor of neuroblastoma. In 2022, Sriyaa interned at Jenkins NeuroSpine in New York, additionally co- authoring clinical research to define a minimally invasive surgical method for the resection of epidural metastatic spinal cord tumors. She is currently a medical student at the University of Virginia and involved in developing a prognostication model for spinal cord injury with neuroradiologists at Jefferson Health.

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A long-acting naltrexone implant (for opioid use disorder: First-in-human phase I trial)

Background: Extended-release intramuscular naltrexone (XR-NTX; Vivitrol®) reduces relapse risk in Opioid Use Disorder (OUD), but real-world adherence is only about 10 percent at 6 months. One reason for poor adherence is the decline in plasma NTX levels to below therapeutic levels (>2 ng/ml) that occurs in some patients late in the dosing cycle. A longer-acting NTX formulation may improve adherence and therapeutic coverage. BIOPIN is a novel, bioabsorbable subcutaneous implant designed to achieve therapeutic plasma NTX levels for 6–12 months following a single administration.

Methods: In this randomized, double-blind, placebo-controlled Phase 1 trial, two sequential cohorts of healthy volunteers received either one BIOPIN (4.8 g naltrexone), two BIOPINs (9.6 g total), or placebo (6:2 ratio per cohort). Participants were followed for 12 weeks with serial pharmacokinetic sampling and safety assessments. Per FDA requirement, implants were explanted at Week 12.

Results: All sixteen participants (mean age 32 years; mean BMI 28 kg/m^2) completed the study. The subjects in the 9.6 g dose cohort maintained mean plasma naltrexone concentrations of greater than 2.5 ng/mL at all time points. The subjects in the 4.8 g dose cohort's mean plasma naltrexone levels declined below threshold after Week 7. At explantation, only 22% of implant drug content was released, consistent with the potential for 6–12 months of therapeutic exposure. BIOPIN was well tolerated, with no serious adverse events and only mild, transient implant-site reactions.

Conclusions: The 9.6 g BIOPIN NTX implant achieved sustained therapeutic plasma NTX exposure for 3 months with an excellent safety profile, supporting its potential as a treatment to improve adherence and reduce relapse in patients with OUD. It has been granted Fast-Track designation by the FDA. Longer-term studies are underway to confirm extended duration of action and clinical effectiveness.

Biography

Dr. Steven M. Cohen is Co-Founder and CEO of Drug Delivery Company, LLC DBA Akyso Therapeutics which is developing long-acting subcutaneous naltrexone and buprenorphine implants for opioid use disorder. Dr. Cohen has led multiple NIH-funded projects and clinical trials and has published extensively.

Tanay Panja
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Dementia AI: A low-cost, privacy-preserving mobile application for automated dementia screening using multinomial logistic regression and computer vision

Dementia is a global health challenge, with over 55 million diagnosed cases and a significant portion of undiagnosed individuals, particularly in low-income countries. Early detection is critical for effective intervention, yet traditional screening methods like the Clock Drawing Test (CDT) are prone to bias due to manual scoring. This study introduces Dementia AI, an AI-based mobile application designed to automate dementia screening using multinomial logistic regression, computer vision, and machine learning. The application leverages a dataset of 16,209 CDT images, trained using Create ML and Scikit-learn, to classify clock drawings into ordinal scores (0-5) indicating dementia likelihood. The iOS-based app integrates CoreML for on-device processing, ensuring privacy and eliminating the need for internet connectivity.

Dementia AI represents a significant improvement over prior research in several key areas. Unlike existing solutions that rely on pre-trained Convolutional Neural Networks (CNNs) or digital pen technology, which are limited to binary outputs ("pass" or "fail") or require specialized hardware, Dementia AI provides an ordinal scoring system (0-5) that quantifies the severity of cognitive impairment. This nuanced approach allows for more precise screening and early detection of mild cognitive decline, which is often missed by binary systems. Additionally, while prior methods often depend on cloud-based processing or expensive MRI imaging, Dementia AI operates entirely on a smartphone, using only a pencil, paper, and the device's camera, making it low-cost, accessible, and privacy-preserving. The app's ability to process images locally without internet connectivity further enhances its usability in resource-limited settings.

The developed model achieved a 95% accuracy in classifying CDT images, with the create ML model outperforming scikit-learn in F1 score (0.95 vs. 0.86). The app's robustness was tested under varying lighting conditions, revealing no significant difference in accuracy between low and medium brightness settings ($p=0.348$). This demonstrates the model's reliability across environments. Dementia AI offers a low-cost, privacy-preserving, and user-friendly solution for dementia screening, with potential for remote use and early intervention. Future work includes expanding to Android platforms, exploring additional algorithms, and integrating multimodal AI approaches for enhanced screening capabilities. This project highlights the potential of mobile AI applications in healthcare, particularly for underserved populations.

Biography

Tanay Panja is passionate about leveraging technology, particularly Artificial Intelligence (AI) and Machine Learning (ML), to solve real-world problems. He has received numerous prestigious awards, including the Congressional Innovation Award, National STEM Challenge Champion, and STEM Innovator Award from the Michigan Governor. With a strong interest in physical sciences, sustainability, healthcare, and environmental applications, Tanay has developed several projects focused on using AI and ML for social good. His work includes innovative solutions for improving public health, addressing environmental challenges, and promoting sustainable practices. Tanay's project, Dementia AI, reflects his commitment to creating accessible and impactful technologies for underserved communities, combining AI, healthcare, and sustainability in a meaningful way.

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Effect of trehalose treatment in a pharmacological model of Alzheimer's disease in mice

Induction of autophagy is a prospective approach to the treatment of neurodegeneration. In the recent decade, trehalose attracted special attention. It is an autophagy inducer with negligible adverse effects and is approved for use in humans according to FDA requirements. Trehalose is glucose disaccharide with a flexible α-1-1'-glycosidic bond which has unique properties: induction of mTOR-independent autophagy (with kinase AMPK as the main target) and a chaperone-like effect on proteins imparting them natural spatial structure.

In the treatment of experimental neurodegeneration with disaccharide trehalose, various regimens are used, predominantly a 2% solution, drunk for several (2-4) weeks. We studied the effects of different regimens of dietary trehalose treatment in an Amyloid-β (Aβ) 25-35-induced murine model of Alzheimer's Disease (AD). Aβ-treated mice received 2% trehalose solution daily, 4% trehalose solution daily (continuous mode) or every other day (intermittent mode), to drink for two weeks. We revealed the dose-dependent effects on autophagy activation in the frontal cortex and hippocampus, and the restoration of behavioural disturbances. A continuous intake of 4% trehalose solution caused the greatest activation of autophagy and the complete recovery of step-through latency in the passive avoidance test that corresponds to associative long-term memory and learning. This regimen also produced an anxiolytic effect in the open field. The effects of all the regimens studied were similar in Aβ load, neuroinflammatory response, and neuronal density in the frontal cortex and hippocampus. Trehalose successfully restored these parameters to the levels of the control group. Thus, high doses of trehalose had increased efficacy towards cognitive impairment in a model of early AD-like pathology. These findings possibly could be taken into account for translational studies and the development of clinical approaches for AD therapy using trehalose.

In general, trehalose can reduce the accumulation of neurotoxic aberrant/misfolded proteins. Trehalose has also an anti-inflammatory effect and inhibits detrimental oxidative stress partially owing to the enhancement of endogenous antioxidant defence represented by the Nrf2 protein. This disaccharide activates lysosome and autophagosome biogenesis pathways through the protein factors TFEB and FOXO1. Future study of trehalose effect on autophagy in different cells is necessary.

Biography

Dr. Tatiana Korolenko studied Medicine and Chemistry at the Novosibirsk Medical University, Russia (former USSR) and graduated as MS in 1965. She then joined the research group of Prof. R.I. Salganik, Institute of Cytology and Genetics, Russian Academy of Sciences, Novosibirsk, Russia; then Prof. Y. Natori at the Tokushima University, Japan and later Laboratory of Prof. H. Fritz at the Ludwig-Maximilians-Universität in Munchen, Germany. She received her PhD degree in 2020 at the Novosibirsk Medical University; after 1-year postdoctoral fellowship she obtained the position of Professor at the Novosibirsk Medical University. She has published more than 70 research articles in SCI (E) journals.)

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Cannabis and neuropsychiatric disorder: Relationship and management

Cannabis is a commonly used substance around the world. Cannabis can be divided into two main groups based on psychological effects: 1) Psychoactive compounds, such as Tetra Hydro Cannabinol (THC), which can lead to neuropsychiatric problems, including addiction and hallucinations. 2) Non-psychoactive compounds, such as Canna Bi Diol (CBD), which do not cause addiction. THC primarily exerts its effects by stimulating the Canna Binoid type 1 (CB1) receptors in various brain regions. This activation leads to a range of pharmacological effects, both beneficial and adverse effects. Beneficial effects include analgesia, antiemetic effects and appetite stimulation. However, it can also cause neuropsychiatric disorders, such as addiction, hallucinations, and cognitive impairment. For cognitive impairment, THC has been shown to impair multiple cognitive domains, including verbal learning and memory, attention, and executive function. Moreover, individuals who begin using cannabis during adolescence, a critical period for brain development, may experience persistent cognitive impairments. Clinical studies have found that although cognitive function tends to improve after cessation of cannabis use, those who started using cannabis in adolescence may not fully recover to their baseline level of cognitive performance. Therefore, the use of THC should be avoided in children and adolescents. THC-induced addiction and hallucinations are primarily associated with its ability to increase dopamine levels in the mesolimbic tract. Clinical studies have shown that approximately 8.9% of individuals who use cannabis over their lifetime develop cannabis use disorder. While this rate is lower than that of substances such as alcohol, tobacco, or methamphetamine, the gateway hypothesis suggests that cannabis use may increase the risk of subsequent use of other illicit substances, such as cocaine and heroin. The mainstay of treatment for cannabis use disorder is non-pharmacological therapy, particularly psychotherapy. Pharmacological treatment is considered as adjunctive treatment, and current evidence supporting its use remains limited. Medications with some evidence of benefit include N-Acetyl Cysteine (NAC) at a dose of 2,400 mg/day and gabapentin 1,200 mg/day. For cannabis-induced psychosis, the primary treatment is the use of antipsychotic medications. A key clinical observation is that higher doses and longer treatment durations are often required to alleviate symptoms compared to methamphetamine-induced psychosis. This may be related to findings that THC can induce P-glycoprotein function (P-glycoprotein inducer) at the blood-brain barrier, which may lead to increased efflux of antipsychotic drugs from the brain, thereby reducing their therapeutic effectiveness. In summary, THC is associated with a range of neuropsychiatric disorders. Therefore, its use should be avoided in high-risk individuals or in cases where the potential risks outweigh the benefits.

Biography

Thanompong Sathienluckana, PharmD, Board Certified Pharmacotherapy (BCP), is a clinical pharmacy lecturer in the Faculty of Pharmacy, Siam University. Current position is Associate Dean for Academic Services at Faculty of Pharmacy, Siam University and Academic chair of Pharmacotherapy council of Thailand. My area of interest is the pharmaceutical care in neurologic and psychiatric disorders. I also practice with multidisciplinary team at the Somdet Chaopraya Institute of Psychiatry, Bangkok, Thailand. I graduated Pharm. D. degree at faculty of pharmacy, Srinakharinwirot University, Thailand in 2009. Then, I graduated pharmacy residency program at The College of Pharmacotherapy of Thailand and received Board Certified Pharmacotherapy (BCP).

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Neuropathic foot pain: Therapeutic insights from a biomechanical perspective

Neuropathic foot pain is a significant clinical issue, as its persistent and distressing nature severely impacts patients' quality of life. Neuropathic foot pain arises from damage or dysfunction within the somatosensory nervous system, leading to pain that is often disproportionate to the initial injury. The etiology of this condition is multifactorial, encompassing various systemic, local, and iatrogenic factors. A leading contributor is diabetic peripheral neuropathy, which occurs as a result of prolonged high blood sugar damaging small blood vessels that supply nerves. Peripheral nerve compression disorders like tarsal tunnel syndrome and Morton's neuroma involve mechanical pressure on nerves in the foot, producing symptoms such as sharp, burning, or tingling sensations. These symptoms often worsen with physical activity or prolonged standing. Traumatic injuries to the nerves, whether from accidents, sports injuries, or surgical procedures, can result in persistent neuropathic pain. This may occur due to improper nerve healing or the development of neuromas—tangled masses of nerve tissue at the injury site. Infections, such as herpes zoster, may also trigger neuropathic foot pain. Another increasingly common cause is chemotherapy-induced peripheral neuropathy, particularly in cancer patients receiving neurotoxic agents. This condition frequently leads to numbness, tingling, or pain in the feet, and significantly diminishes patients' quality of life.

Biomechanical strategies are fundamental in managing neuropathic foot pain without medication, focusing on decreasing abnormal mechanical loads and enhancing movement capabilities. A key method includes orthotics that help redistribute pressure across the sole, improve foot positioning, and support fragile tissues. These devices help to relieve nerve pressure and lessen repetitive injury, which are common causes of neuropathic pain. Adjustments to gait and posture are also critical elements of biomechanical treatment, as improper walking mechanics can worsen nerve irritation. Physical therapy with therapeutic exercises aimed at correcting biomechanical dysfunctions, strengthening muscles, and stabilizing joints. Furthermore, tools such as specially designed shoes and braces provide passive assistance to reduce mechanical stress during walking. Preventative measures, including ongoing biomechanical evaluations and timely interventions, are vital to slowing disease progression and enhancing patient well-being. Together, these biomechanical interventions work alongside medical therapies by targeting the mechanical origins of neuropathic foot pain.

Biography

Dr. Tung-Liang Lin studied in medicine school at the National Yang Ming Chiao Tung University, Taiwan and graduated as MD in 2007. He subsequently completed his residency training at Taichung Veterans General Hospital and obtained board certification in Physical Medicine and Rehabilitation. He currently has 17 years of clinical practice experience in Neuro rehabilitation at the public medical center. Throughout his career, he has developed a particular research interest in peripheral neuropathic pain, with a special focus on neuropathic symptoms of the foot and plantar region. He has personally performed over 700 cases of orthotic therapy and gait/biomechanical correction treatment. He also serves as a clinical assistant professor at the National Defense Medical School. He has published more than 15 research articles in SCI (E) journals and conferences.

Uma Mahesh R N

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Deep Convolutional Neural Network (CNN) for threedimensional (3-D) objects classification using phase-only digital holographic information

A deep CNN-based binary classification of three-dimensional (3-D) objects for phase-only digital holographic information has been presented. The 3-D objects considered for the binary classification task are 'triangle-square', 'circle-square', 'square-triangle', and 'triangle-circle'. The 3-D object 'triangle- square' is considered for the TRUE class and the remaining 3-D objects 'circle-square', 'square-circle', and 'triangle-circle' are considered for the FALSE class. The 3-D object volume 'triangle-square' was constructed in such a way that the feature triangle was considered in the first plane and the feature square was considered in the second plane. Each plane is separated by various distances $d1$, and $d2$ respectively. The remaining three 3-D objects were constructed similarly except that the different features were considered in the first and second planes respectively. The digital holograms of 3-D objects have been formed using the two-step Phase-Shifting Digital Holography (PSDH) technique and computationally post-processed to obtain phase-only digital holographic data. The phase-only image dataset was prepared by performing a rotation of 0.5° on each phase image. Then the training of the deep CNN was performed on a phase-only image dataset consisting of 2880 images to produce the results. The results such as the loss and accuracy curves, confusion matrix, Receiver Operating Characteristic (ROC), and precision-recall characteristic are shown for the confirmation of the work. The classification of phase images implies the classification of 3-D objects using deep CNN.

Biography

Uma Mahesh is an Assoc.Prof at ATME College of Engineering, Mysore, Karnataka, India. He has served as an Asst. Prof, Guest Lecturer, and lecturer for eight and half years. He has pursued his research in Vellore Institute of Technology (VIT) Chennai and also qualified UGC-NET Exam in Dec 2019. He obtained his master's degree, M Tech in VLSI Design and Embedded Systems from VTU, Karnataka, India in 2012 and bachelor's degree, B E in Electronics and Communication Engineering from Visveswaraya Technological University (VTU), Karnataka, India in 2009. He is a member of the Optical Society of America (OSA). His current research interests are in the areas of digital holography, artificial intelligence, and machine learning.

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Facilitating emotional regulation through brain-computer interfaces

Neurological and physiological disorders such as Autism Spectrum Disorder (ASD), ADHD, PTSD, and Bipolar Disorder uniquely impair emotional regulation, presenting complex challenges for therapeutic intervention. This research explores the potential of EEG-based Brain-Computer Interfaces (BCIs) as a unified yet personalized technological solution to assist individuals with such disorders in recognizing and managing their emotional states. Specifically, the study focuses on developing a novel neural network architecture capable of classifying emotional states from EEG signals, leveraging power spectral density analysis and data complexity augmentation through multiscale entropy and Gaussian noise simulation to mirror neurological disorder patterns. EEG emotion data was sourced from the Open Neuro DENS dataset and strategically filtered to extract signals from electrode positions compatible with consumer-grade EEG devices. A comprehensive preprocessing pipeline—including bandpass filtering, standard score normalization, and oversampling via SMOTE—was implemented to prepare the dataset. Simulated disorder complexity was achieved by modulating entropy, allowing for realistic training conditions without direct patient data. To process the EEG signals, power spectral density values were transformed into 2D matrices suitable for CNN-based classification. Transfer learning models, including ResNet50-v2, Inception-v3, and MobileNet-v2, were trained and evaluated for binary and categorical emotional classification. Among these, ResNet50-v2 achieved the highest accuracy (96.4% binary classification) and robust performance in real-time conditions. The findings indicate a high potential for deploying lightweight, real-time EEG-BCI systems that deliver automated, responsive interventions—such as calming stimuli, guided breathing, or affirmations—based on detected emotional states. These systems may offer substantial improvement over traditional therapeutic approaches by enabling continuous, personalized emotional support with minimal external involvement. Future work includes collecting EEG data from individuals diagnosed with neurological disorders to increase sample diversity and model generalizability, as well as integrating advanced architectures such as attention-augmented RNN ensembles. This research represents a step forward in building accessible, adaptive BCI technologies for emotional regulation across diverse neurophysiological conditions.

Biography

Vedant Mehta is a student researcher at Lambert High School with a focus on machine learning, neuroscience, and biomedical engineering. He has conducted research on EEG-based Brain-Computer Interfaces (BCIs) for emotional regulation, presenting novel neural network architectures for real-time emotion classification. Vedant has published and presented work at international conferences, received recognition from competitions such as Genes in Space and the Junior Science and Humanities Symposium, and holds a patent pending on a biomedical invention. He is passionate about developing accessible technologies that support neurological health and has collaborated with institutions including Stanford and Georgia Tech.

Dr. Vijayan Gurumurthy Iyer M. Tech., Ph.D., PDF, PDF (Elab.), D.Sc., LL.D., DL, Faculty (Climate Change)
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Case study and check of Environmental Health Impact Assessment (EHIA) process for addiction medicine, behavioral health and psychiatry for agricultural and horticultural processes

In this research, investigations are provided in context to entitled "Environmental Health Impact Assessment (EHIA) Process for Agricultural and Horticultural Process-Case Study is Ginning of Indian Seed-Cotton (or Kapas)". Strategic Environmental Assessment (SEA) process has been aimed to incorporate environmental and sustainability factors in to organizational project planning and decision-making process, for example, cotton roller ginning process that included polices, programs, plans and legislative actions. The EHIA process for agriculture and horticulture has to protect the environmental health. Three of the significant terms while complying with the requirements of Agricultural and horticultural process are "environmental health inventory", "environmental health impact assessment process", and "environment health impact statement". EHIAs of sustainable design of roller gin rollers for seed-cotton (or kapas) ginning were investigated undertaken in order to protect environmental health. The purpose of the EHIA process is to encourage the consideration of the environmental health in seed-cotton ginning organizational planning and decision-making process. Historically, the choice of proposed projects, policies, plans, programs, permits, procedures or legislations was primarily based on only one criterion called economic viability. It is required to consider three criteria of economic, environmental and social viabilities. Agricultural and horticultural project planning and decision-making should include the integrative consideration of technical, economic, environmental, ethical and social factors. Environmental Health Impact Assessment (EHIA) process is systematic identification and evaluation of potential environmental health effects of proposed agricultural and horticultural projects, plans, programs, policies, plans or legislative actions relative to the physical-chemical, biological, cultural and socio-economic components of the total environmental health.

Steps to Conduct Environmental Health Impact Assessment:

Step-1: Identification of quantity and quality characteristics of concerned environmental health of proposed project.

Step-2: Preparation of description of existing environmental health conditions.

Step-3: Procurement of relevant environmental health quantity and quality standards. Step-4: Environmental health impact predictions,

Step-5: Assessment of environmental health impact significance,

Step-6: Identification and incorporation environmental health mitigation measures Conduct of Environmental Health Impact Assessment (EHIA) Study and check;

1. Prediction and assessment of impacts on surface water environmental health,
2. Prediction and assessment of impacts on soil and ground environment,
3. Prediction and assessment of impacts on the air environment,
4. Prediction and assessment of impacts on the noise environment,
5. Prediction and assessment of impacts on the biochemical environment,
6. Prediction and assessment of impacts on the biophysical chemical environment,
7. Prediction and assessment of impacts on the radioactive environment,
8. Prediction and assessment of impacts on the ecological environment,
9. Prediction and assessment of impacts on the visual environment,
10. Prediction and assessment of impacts on cultural environment,
11. Prediction and assessment of impacts on archaeological environment,
12. Prediction and assessment of impacts on architectural environment,
13. Prediction and assessment of impacts on historical environment,
14. Prediction and assessment of impacts on anthropological environment,
15. Prediction and assessment of impacts on socio-economic environment.

Based on present investigations, this paper elucidates the occupational and non-occupational hazards of chromium contamination and pollution caused in the use of Chrome Composite Leather-Clad (CCLC) rollers commonly used in cotton roller ginning industries and attempts to eliminate the chromium contamination and pollution during this Environmental Impact Assessment (EIA) process. The cotton roller ginning process is the mechanical separation of cotton fibres from their seeds by means of one or more rollers to which fibres adhere while the seeds are impeded and struck off or pulled loose. Most of the cotton ginning operations are done using roller gins. The CCLC roller coverings contain about 18,000 to 30,000 mg/kg (ppm) as total chromium of trivalent and hexavalent forms which are toxic to human health. When the seed-cotton is ginned, due to the persistent rubbing of CCLC rollers over the fixed knives, the cotton and its products get contaminated with the total chromium of trivalent and hexavalent forms. Gin mill workers are exposed to the cotton dust and chromium pollution and are susceptible to health hazards such as premature death, cancer, byssinosis, and ulcers in cotton ginning air environment since toxic effects are produced by prolonged contact with airborne or solid or liquid chromium compounds even in small quantities. Noise pollution of agricultural ginning machinery in seed-cotton ginning mills has been found out to be 102-103 dB(A) decibel levels. To offset this problem, pollution-free Rubberized Cotton Fabric (RCF) eco-friendly rollers for both the laboratory and commercial studies have been designed, fabricated and used in experiments in rollers gins. This nullifies chromium contamination and pollution

during the complete process. Cotton technological parameters are well proven for commercial acceptance.

Keywords: Agriculture, Seed-Cotton, Environment, Hazards, Health, Horticulture, Impact, Medical.

Biography

Dr. Vijayan Gurumurthy Iyer studied Environmental Science and Engineering at the Indian School of Mines, Dhanbad, India and graduated as M. Tech. in 1998 and Ph.D. (Sc & Engg.) in 2003. He then joined the WSEAS of Prof. Nikos E. Mastorakis at the World Scientific Engineering Academy and Society(WSEAS), Athens, Greece. He received his Post Doctoral Fellow (PDF) in 2006 and PDF elaboration at the same institution in 2010. After seven years postdoctoral fellowship supervised by Dr. Nikos E Mastorakis at the WSEAS Greece for 75 WSEAS research publications, Dr. Vijayan Gurumurthy obtained the position of full Professor in Environmental Science and Engineering at the Institute of Technology, Haramaya University, Ethiopia, East Africa in 2014-2015. He has published more than 460 research articles in SCI journals and Proceedings. He has published more than 80 books of abstracts and more than 100 eBooks. Hirsch index 60. He has visited East Africa, China, Thailand, Germany, Greece, Germany and Andaman, Nicobar and Havelock Islands for research and extension work. He has more than 5000 citation and more than 600 citation index database. Dr. Vijayan Gurumurthy is presently serving as a faculty in Bihar Institute of Public Administration & Rural Development, Gaya, Bihar, India.

Dr. Vraj Champaneria
Teaching University Geomedi LLC, Tbilisi, Georgia

Paroxysmal dyskinesia: Unraveling the complexities of a rare movement disorder

Paroxysmal Dyskinesia (PD) stands as a rare and heterogenous group of movement disorders represented by sudden, involuntary movements. The term “paroxysmal” means it appears instantaneously, and the term “dyskinesia” means movements of the body that are involuntary. This presentation explores intricate sides of paroxysmal dyskinesia, the avatar of PD, intrinsic case vignette, surrounding clinical features, diagnostic methods, and current treatment approaches. Important differential diagnosis of PD includes episodic ataxia, juvenile myoclonic epilepsy, and nocturnal frontal lobe epilepsy. The main goal is to acknowledge distinct types of PD and their respective types like paroxysmal kinesigenic dyskinesia, paroxysmal non-kinesigenic dyskinesia and paroxysmal exercise-induced dyskinesia. Genetics plays a vital role in PD etiology. PRRT2 which stands for Proline-rich transmembrane Protein 2 accounts for most cases of PD. Currently, the abnormal Basal ganglia-thalamic-cortical circuit is related to the pathophysiology basis of paroxysmal dyskinesia. Clinical features of PD relied on their types. Onset occurs before age 18, although later onset is possible. PEDs stands for paroxysmal exercise-induced dyskinesia, induced by vigorous jerky movements or sometimes under emotional influence. In neurology the term “AURA” used in migraine attacks is also applied here as person starts to feel nauseated or anxious before PD attacks. It could be unilateral or bilateral. limbs are commonly involved, but the face, neck and trunk may also be affected. Even sudden sound or anxiety may lead to attack of PD. Consciousness is preserved and attacks last less than 1 minute, although they can go longer in different individuals. The frequency of attacks is wavering from about 50 per day to less than 2 per month. Diagnosis is clinical based on all the core symptoms of PD and specific gene testing. Neurophysiological assessment, Head MRI, and other Tests like EEG and strong familial background suggests paroxysmal dyskinesia. Treatment relies upon pharmacotherapy and psychotherapy. Treatment with anticonvulsants like carbamazepine and oxcarbazepine reported complete or partial relief of attacks. The initial dose ranges between 50- z0 mg and can be adjusted. The rarity of PD, coupled with its diverse presentation, underscores the need for heightened awareness among clinicians. Additionally, the impact of PD on individuals quality of life causes a holistic, multidisciplinary approach to care, addressing not only the motor symptoms but also the psychological aspects.

Biography

Dr. Vraj from India who studied Medicine at the Teaching University Geomedi LLC, Georgia and graduated as MD in July 2024.Dr. Vraj is so passionate about Neurology and always stays eager for next opportunities in Neurology. During Medical Training Dr. Vraj joined a Research training program and gave active interest in Neurology and related brain disorders. Meanwhile Dr. Vraj Supervised by Neurology department head and Epilepsy Specialist Dr. Maia Alkhidze, she actively took part in Research and on mentorship.

Yanick Hicks PharmD
Maxwell Leadership, United States

The ripple effect: How influential leaders elevate mental health and addiction recovery

The global healthcare system is under tremendous strain, particularly in the domains of addiction medicine, behavioral health, and psychiatry. Leadership plays a pivotal role in addressing these challenges, yet leaders often struggle to foster environments that prioritize mental health and well-being for their teams. This session is designed to equip healthcare leaders with the tools they need to combat burnout, reduce stigma, and drive organizational transformation through compassionate, effective leadership.

The presentation focuses on empowering leaders to foster resilience within their teams, improve communication, and create supportive environments that prioritize mental health. Participants will learn actionable strategies to promote holistic wellness, drive retention, and create a culture of inclusion and understanding around behavioral health issues. Through real-world examples, evidence-based approaches, and interactive discussions, this session provides practical solutions for overcoming the critical challenges faced by healthcare organizations.

This session emphasizes the role of leadership in addressing mental health challenges at both individual and organizational levels. By empowering leaders to drive meaningful change, we can build more resilient systems that support healthcare professionals and improve patient outcomes.

Learning Objectives

1. **Foster Resilience to Combat Burnout and Enhance Mental Health:** Participants will learn practical leadership strategies to build team resilience, combat burnout, and create a culture of well-being within healthcare organizations.
2. **Create Supportive Environments for Behavioral Health:** Attendees will gain actionable insights into reducing stigma around mental health, supporting employee well-being, and fostering a supportive workplace environment.
3. **Enhance Team Dynamics and Drive Retention:** Leaders will develop tools to improve communication, manage conflict effectively, and promote holistic wellness strategies to reduce turnover and enhance team cohesion.

Biography

Dr. Yanick Hicks is an Executive Director and keynote speaker specializing in leadership, teamwork, and communication. With over seven years of professional speaking experience, he delivers 80+ engagements annually, inspiring audiences at organizations like Medtronic, McDonald's, and Wells Fargo, as well as associations such as the Virginia and Georgia Associations of Community Services Boards, Aspire Behavioral Health, and others in the mental health field. A licensed pharmacist with a PharmD from Marshall University, Yanick combines clinical expertise with leadership experience from Walgreens. Known for his storytelling and actionable strategies, he empowers leaders to foster resilience, enhance collaboration, and prioritize mental health.

Younok Dumortier Shin PhD, MBA
OnusBio, New Jersey, USA

Challenges in translating science into medicine in the field of brain health

From dementia to depression to pain, neurological diseases affect almost everyone at some point in our lives. The medical research has advanced tremendously, thanks to the advanced technologies such as high-resolution imaging systems, genetic diagnostic tools, and high-throughput target engagement screenings. Despite of such advanced technologies, the drug development in the field of brain health still suffers from high failure rates. In addition, many drugs that are approved to treat brain health lead to addiction problem of its own further decreasing the treatment options available for the patients in need. To make the matter worse, two recent events, opioid crisis and the controversy in the Aduhelm approval created a dampen effect in the investor's community creating a roadblock for the investments from getting into the brain health research activities. All those factors add to the reasons why we continue to face slow progress in drug development in the field of neurological diseases and brain health. In this presentation, I will provide an overview of the current challenges and potential solutions facing developing drugs to treat brain diseases. This presentation will contain four subsections as follows: (1) an overview of different types of drug classes that failed in clinical trials despite of promising scientific data, (2) latest FDA regulatory requirements that further complicates the clinical trial design, (3) challenges in lack of evidences linking the scientific data to the disease state measurement, and (4) several recommendations on what we can do to overcome the current challenges including the importance of multidisciplinary approaches in every step of research efforts. This presentation will end with suggestions on the next steps that can help promoting our collaboration effort so that more medicines can become available to help patients suffering from neurological disorders.

Biography

Younok Dumortier Shin, PhD, MBA. has more than 20 years of experience in pharmaceutical and biotech industry including GlaxoSmithKline, Bristol Meyers Squibb, Johnson and Johnson, Allergan, Dermelix and Avalo Therapeutics. During her career, she oversaw many multibillion-product launches around the world, owned responsibilities for uninterrupted commercial supply, and championed creating innovative drug development programs to accelerate the clinical and regulatory approval timelines. Currently, she is serving as the CEO of Alaired, a company that focuses on integrated drug development best practices to bring new innovative treatments for the patients in need.

Zeeshan Ahmed
King Edward Medical University, Pakistan

Frequency and association of Irritable Bowel Syndrome (IBS) and Attention Deficit Hyperactivity Disorder (ADHD) among university students and graduates in Pakistan: A cross-sectional analysis

Background: Irritable Bowel Syndrome (IBS) and Attention Deficit Hyperactivity Disorder (ADHD) are prevalent conditions that significantly impact quality of life. However, their co-occurrence and potential associations remain underexplored, especially among university students and graduates in Pakistan.

Objectives: To determine the frequency of IBS and ADHD, explore their associations, and identify related risk factors among university students and graduates in Pakistan.

Methods: This cross-sectional study included 163 participants aged 18–35 years, recruited through convenience sampling using an online questionnaire. IBS was assessed using Rome IV criteria, while ADHD symptoms were evaluated with Part A of the Adult ADHD Self-Report Scale (ASRS). Statistical analyses included chi-square tests and logistic regression to identify associations and adjust for potential confounders.

Results: The prevalence of IBS was 41.1%, significantly associated with gender (Adjusted Odds Ratio [AOR]: 0.38; 95% CI: 0.19–0.72, p=0.003), depression (AOR: 5.99; 95% CI: 3.07–11.69, p=0.002), and anxiety (AOR: 1.60; 95% CI: 0.79–3.25, p=0.002). ADHD prevalence was 31.9%, with protective factors including moderate physical activity (AOR: 0.18; 95% CI: 0.02–0.65, p=0.026) and enrollment in pharmaceutical fields compared to MBBS (AOR: 0.28; 95% CI: 0.10–0.91, p=0.035). No significant association was observed between IBS and ADHD (AOR: 1.08; 95% CI: 0.55–2.10, p=0.831).

Conclusions: IBS and ADHD are prevalent among university students and graduates, with distinct associations and risk factors. IBS was significantly associated with gender and regression analysis revealed that it is more associated with female gender compared to male, while ADHD was less likely in those with moderate physical activity and pharmaceutical field enrollment. However, no significant association was found between IBS and ADHD, underscoring the need for further research to explore shared mechanisms and confounding factors.

Keywords: IBS, ADHD, Prevalence, University Students, Risk Factors, Pakistan.

Md Zubiar Haque*, Ganesh Arunachalam*, Dr Robert Ghosh

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Uncommon presentation of spontaneous intracranial hypotension in an older adult: A case complicated by bilateral cerebral venous sinus thrombosis

Spontaneous Intracranial Hypotension (SIH) is a rare condition caused by reduced Cerebrospinal Fluid (CSF) pressure, often secondary to spontaneous CSF leaks. Although classically presenting with orthostatic headaches, SIH can have atypical manifestations, making diagnosis challenging.

We present a case of SIH in a woman in her early 70s who reported chronic frontal headaches, intermittent imbalance, and brief episodes of hand weakness. Initial evaluation suggested sinusitis; however, CT imaging revealed hyper density in the superior sagittal sinus and cortical veins, and CT venography confirmed bilateral Cerebral Venous Sinus Thrombosis (CVST). She was started on Rivaroxaban.

During a subsequent admission for transient facial droop, MRI revealed bilateral subdural hygromas, particularly on the right. Additional tests, including carotid Doppler and EEG, were unremarkable. The presence of subdural collections and CVST, along with her imaging findings, raised suspicion of SIH. Though her Bern score was not fully met, a multidisciplinary review concluded SIH as the most likely diagnosis.

Her anticoagulation was switched to Warfarin. On follow-up, the patient remained asymptomatic, resumed daily activities, and imaging confirmed resolution of the CVST. This case demonstrates how SIH can present atypically in elderly patients and underscores the diagnostic value of imaging even when the Bern score is incomplete.

Importantly, it highlights that anticoagulation can be safely administered in patients with CVST and coexisting subdural hygromas, provided haemorrhage has been excluded via imaging. This case also emphasizes the need for early involvement of multidisciplinary teams and suggests that SIH should be considered in patients with bilateral CVST or subdural collections, particularly when no clear risk factors are present.

In conclusion, SIH remains a diagnostic challenge, but early recognition of SIH and its complications, can significantly impact patient outcomes through targeted investigation and safe, effective treatment.

Biography

Dr. Md Zubiar Haque studied Medicine at Dhaka University, Bangladesh, and graduated with an MBBS in 2018. He completed his internship at Mymensingh Medical College and Hospital, followed by a medical officer post at Universal Medical College, Dhaka. He later moved to the UK, working at Royal Devon Healthcare NHS Foundation Trust and currently serves as a Trust Grade Doctor in Elderly Medicine at Princess Alexandra Hospital, Harlow. He has completed ALS, POCUS, and teaching courses, and has participated in clinical audits and teaching sessions. Dr. Haque is passionate about clinical education, quality improvement, and leadership in healthcare.

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12th Edition of International Conference on

Neurology and Brain Disorders

6th Edition of Global Conference on

Addiction Medicine, Behavioral Health and Psychiatry

OCT

20-22

POSTER PRESENTATIONS

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Effects of probiotic supplementation on behaviour and hippocampal neurometabolites in pregnant rats exposed to chronic stress

Introduction: Chronic stress during pregnancy increases the risk of anxiety and adverse outcomes in mothers and offspring. Probiotics may improve mental health and modulate biochemical processes during pregnancy, as supported by clinical and preclinical studies. In our previous work, *Lacticaseibacillus rhamnosus* JB-1 mitigated mood-related disturbances and restored neurochemical balance in a rat stress model. Here, we investigated whether JB-1 influences neurometabolic and behavioural outcomes in a preclinical model of gestational stress.

Materials and Methods: Female Wistar rats were mated and assigned to stressed or control conditions. Stressed rats (n=12) underwent Chronic Unpredictable Mild Stress (CUMS) during gestation, receiving either JB-1 bacteria or placebo (phosphate-buffered saline), while control rats (n=13) were supplemented the same but were not exposed to stress. At Gestational Day (GD) 18, anxiety-like behaviour was assessed using the Open Field (OFT) and Elevated Plus Maze (EPM) tests. On GD19, Magnetic Resonance Spectroscopy (MRS) was performed in the hippocampus with a 7T Bruker animal MRI system. Spectral data were processed with jMRUI software. Statistical analysis was performed using two-way ANOVA with Tukey's multiple comparisons test.

Results: There was a significant effect of stress on the number of entries to the center arena ($F_{(1,21)}$=5.30, p=0.03) and on moving time in the OFT ($F_{(1,21)}$=8.69, p=0.008), indicating reduced exploratory behaviour and locomotor activity in stressed groups compared to controls. No significant effects were observed in the EPM test, and bacteria did not affect behaviour in either task. While stress effects were evident in OFT parameters, Tukey's post hoc tests did not identify significant pairwise differences among groups. MRS analysis revealed a significant

stress×bacteria interaction for GABA ($F_{(1,21)}$=6.02, p=0.02), although no significant post hoc group differences were detected. For glutamate, both an interaction ($F_{(1,21)}$=5.89, p=0.02) and a main effect of stress ($F_{(1,21)}$=4.51, p=0.05) were found; post hoc analysis indicated that JB-1 bacteria reduced glutamate levels under stress (Control:JB-1 vs. Stress:JB-1, p=0.02). For choline, a significant interaction was observed ($F_{(1,21)}$= 9.99, p=0.005), with post hoc tests showing higher choline levels in the Control: JB-1 group compared to Control: Placebo (p=0.03) and Stress: JB-1 (p=0.02). Finally, a main effect of stress was detected for N-acetylaspartate ($F_{(1,21)}$=4.87, p=0.04), but without significant post hoc differences.

Conclusion: Chronic stress during pregnancy reduced exploratory behaviour and locomotor activity, confirming effective stress induction. While JB-1 supplementation did not alter behavioural outcomes, MRS analyses revealed metabolite-specific effects, including modulation of glutamate and choline under stress. These findings suggest that JB-1 may influence neurometabolic responses to gestational stress, even in the absence of overt behavioural changes.

Funding: National Science Centre, Poland, grant no: 2021/41/N/NZ4/01767.

Biography

Dr. Agata Chudzik earned her M.Sc. in Biology from Maria Curie-Skłodowska University in Lublin, Poland, where she later worked in the Department of Biochemistry. She subsequently joined Dr. Greg Stanisz's research group at the Medical University of Lublin, completing her Ph.D. in 2023, and then becoming an assistant professor. She undertook a six-month postdoctoral fellowship at the University of Miami, and in early 2025 joined the Sunnybrook Research Institute, fully affiliated with the University of Toronto, as a postdoctoral fellow. Her research focuses on neurobiology, particularly the microbiome–gut–brain axis, chronic stress, and glioblastoma biology, with a strong emphasis on advanced MRI techniques.

Akhil Medikonda

Dublin Jerome High School, Dublin, Ohio, United States of America

Using speech acoustics as biomarkers in the early detection of early-onset Parkinson's disease

Early-Onset Parkinson's Disease (EOPD) is a neurodegenerative disorder caused by the degeneration of dopaminergic neurons in the substantia nigra. Over 500,000 individuals in the U.S. have been diagnosed with Parkinson's disease, but the actual number, including undiagnosed cases, may reach 1,000,000. Current subjective motor diagnostic methods, like physical examinations, often result in delayed or inaccurate diagnoses, highlighting the need for alternative approaches. This study explores the potential of speech-based machine learning models for early EOPD detection, leveraging acoustic features such as jitter, shimmer, Harmonic-to-Noise Ratio (HNR), amongst other biomarkers.

We hypothesized that EOPD patients' speech would exhibit significant differences in multiple acoustic features due to impaired motor control affecting vocal stability. To test this, a Random Forest Classifier was trained on datasets from UCI Parkinson's and Parkinson's Telemonitoring, with separate validation and test sets. The model achieved a training accuracy of 94.40% and a test accuracy of 94.81%, outperforming other classifiers such as Support Vector Machines (SVM) and logistic regression. These results confirm the efficacy of using speech features to differentiate EOPD patients from healthy individuals with high precision.

These findings underscore the potential of speech analysis as a simple, cost-effective, non-invasive diagnostic tool for EOPD that can be achieved remotely via telephone or video consultation. Traditional diagnostic methods rely on clinical assessments that may not capture early-stage symptoms, whereas machine learning models trained on speech features provide an objective and accessible alternative. Most existing studies focused on structured speech tasks or patients who have already developed Parkinson's Disease, which may not have an impact in time to treat EOPD. Future research should incorporate conversational speech, longitudinal data, and EOPD data to improve model robustness and generalizability.

This study establishes a foundation for integrating speech-based biomarkers into clinical screening for EOPD. By refining predictive models and expanding datasets, speech analysis could enhance early detection, reducing misdiagnoses and enabling timely intervention. Additionally, targeted therapies—such as vocal training or neuromodulation—could be developed to address specific speech deficits, improving patient outcomes and quality of life.

Our findings demonstrate that machine learning models trained on acoustic speech features can effectively identify Early-Onset Parkinson's Disease. By advancing speech-based diagnostics, this approach has the potential to facilitate earlier detection, enhance clinical decision-making, and ultimately improve disease management.

Biography

Akhil Medikonda is a junior at Dublin Jerome High School in Dublin, OH with a deep passion for neuroscience, particularly in the mechanisms behind neurodegenerative diseases. His research interests include neurodegenerative diseases, glioblastoma, and the signaling cascades in these diseases. Akhil aims to use neuroscience as a tool to develop early diagnosis and progression solutions. He remains dedicated to impacting society by using scientific research to address real-world problems.

Alexis Angelette
NYP-Weill Cornell, United States

TCD HITS and infective endocarditis: Illustrative case report and series

Introduction: Infective Endocarditis (IE) has a high risk of neurovascular complications, including ischemic and hemorrhagic stroke from septic emboli, and mycotic aneurysms. Treatment of this condition requires antibiotics and often valve replacement surgery, however the optimal timing for surgery is complicated by concomitant strokes and risk of hemorrhagic conversion with heparinization during the procedure. Transcranial Doppler (TCD) studies assessing for High Intensity Transient Signals (HITS) can detect ongoing microemboli. Here we present an illustrative case report and describe a series of patients with stroke from IE and TCD HITS studies.

Case report: A male patient in his 3rd decade of life with history of IV drug use presented with acute ischemic right MCA stroke (Figure 1A) and fever, not a candidate for acute intervention. CTA showed a right distal M2/M3 occlusion, no mycotic aneurysms identified. He was started on antibiotics daptomycin and ceftaroline with infectious disease consulted, had a transthoracic echo with a 1.5 x 0.75 cm2 mitral valve vegetation. He had a TCD HITS study on hospital day 6 which showed a right MCA HITS (Figure 1B). The following day, a stroke code was activated for unresponsiveness, CT head with hemorrhagic right MCA stroke with IVH and midline shift (Figure 1C). The patient progressed to brain death on hospital day 13.

Methods: Retrospective chart review; 41 patients at to our institution with IE and stroke who had TCD HITS studies for 30 minutes for their stroke work up were included.

Results: Of the 41 patients with TCD HITS studies, 14.6% (6/41) has positive HITS. Of those patients 87.8%(36/41) had ischemic strokes and 19.5% (8/41) died.

Conclusion: TCD HITS studies are non-invasive imaging tests that can detect ongoing septic emboli for patients with IE. In a previous case series of 26 IE patient with TCDs, only 4 had 30 minute studies and only one had microemboli1. In our cohort, of the 41 patients with TCD HITS studies, 14.6% has positive HITS. Of those, 87.8% had further strokes and 19.5% died. TCD HITS has the potential to identify high risk IE patients and to change management in these patients by with antibiotics and guiding surgical timing, hopefully to improve outcomes. More research is necessary.

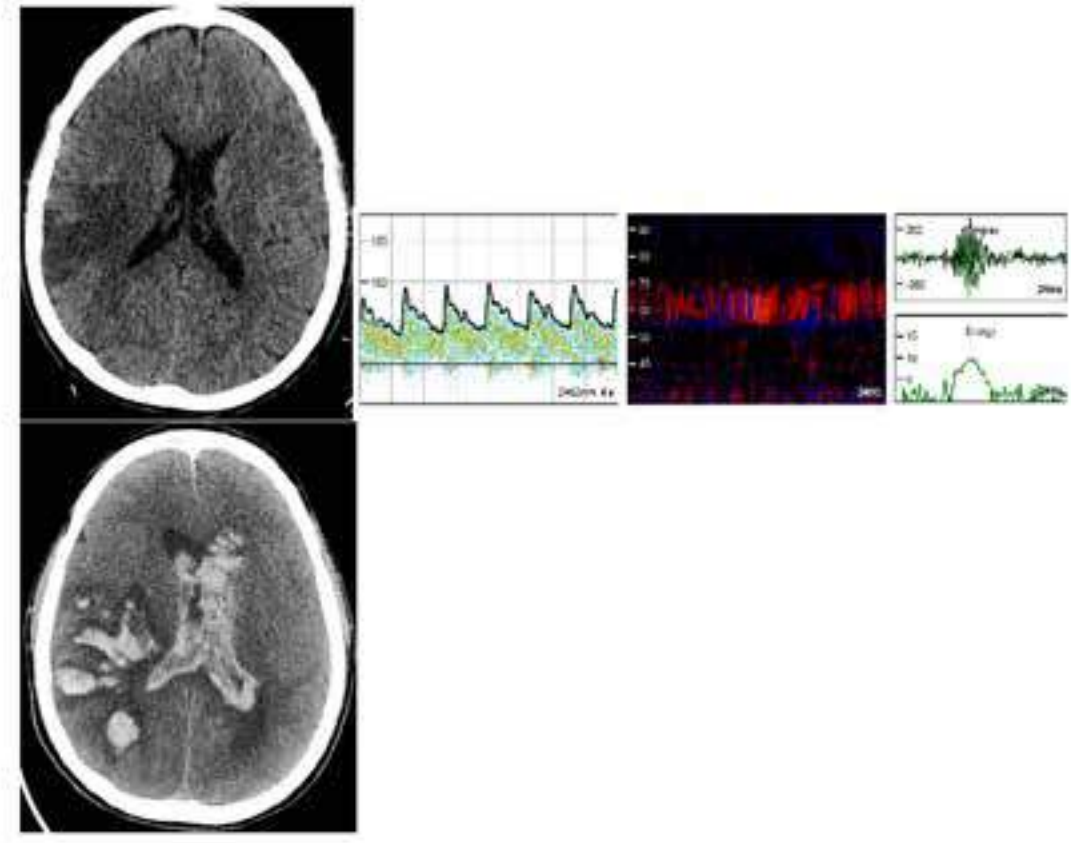

Figure 1. A) CT Head without contrast, evolving acute/subacute right MCA infarct (hospital day 0). B) TCD HITS/Microemboli study detected 1 high intensity transient signal (HITS) in the right MCA (hospital day 7). C) CT Head without contrast, large right hemispheric hemorrhagic stroke with IVH and malignant cerebral edema (hospital day 8).

Anushka Chavan
Warwick Medical School, University of Warwick, Coventry, England, United Kingdom

The management of relapses in relapsing-remitting multiple sclerosis from 2014 to 2024: A systematic review

Background: Multiple Sclerosis (MS) is an inflammatory condition associated with the demyelination of axons. The inflammatory phase of MS is named “relapse”, and the following recovery phase is named “remission”.

The MS which cycles between relapses and remissions is referred to as Relapsing-Remitting MS (RRMS). Each relapsing incident will produce axonal irreversible damage known as degeneration, and the amount of axonal irreversible axonal damage is determined by the relapse severity, duration, and the speed of intervention.

If a relapse does not receive prompt and correct intervention, it can cause an irreversible damage changing RRMS to Secondary Progressive MS. This progression causes accumulation of physical, cognitive, and psychological disability, quantified by the Extended Disability Severity Scale (EDSS). Optimal management for MS Relapse (MSR) hopes to prevent the accumulation of disabilities, keep the EDSS of a patient low, and delay or even prevent the progression of MS.

Aim: The aim of this study was to systematically review the management of relapses in relapsing-remitting MS from 2014 to 2024.

Methods: Three databases, Medline, EMBASE, and Cochrane Library, were systematically searched for peer-reviewed studies from 2014 to 2024, adhering to a pre-determined search strategy. These studies were accessed through the University of Warwick Library Catalogue. 10 papers remained following criteria-driven screening. Risk of bias was assessed using JBI Critical Appraisal Tools’ checklists. Data was extracted and analysed using Synthesis Without Meta-Analysis (SWiM), due to heterogeneity between the studies.

Results: IV Methylprednisolone (IVMP), Therapeutic Plasma Exchange (TPE), Immunoadsorption (IA), Repository Corticotropin Injection (RCI), and rHIgM22 were all found to improve their measured outcomes. IVMP was found to be effective in improving EDSS of relapse patients, though blood glucose may affect its efficacy. TPE, IA and RCI were all found to be effective in treating MSR and Steroid-Refractory MS relapse (SRMSR). rHIgM22 decreased EDSS in all treatment groups, however this was not significantly different to the placebo group, whose EDSS also decreased.

Conclusion: This study records the advances in the management of MSR from 2014 to 2024. TPE, IA, and RCI were found to be valid management options for MSR, though deeper understanding is required to compete with IVMP. rHIgM22 is not currently a viable management option. Further research into rHIgM22 is needed.

Biography

Anushka Chavan studied Biochemistry at Queen Mary University of London, United Kingdom, for which she received a Certificate of Higher Education in 2020. She went on to study Biomedical Sciences at the University of Southampton, United Kingdom, and graduated as BSc(Hons.) in 2022. She is currently studying Medicine at the University of Warwick, United Kingdom, and is in her final year.

Bryn Taylor*, Karen Wheeler-Hegland, Charles Ellis
University of Florida, Gainesville, FL, USA

Racial disparities in access to deep brain stimulation surgery

Deep Brain Stimulation (DBS) surgery is an elective surgery offered to Parkinson disease (PD) patients who meet certain symptom criteria. Despite the success of DBS and increasing use, racial disparities in utilization are prevalent [1, 2]. To date, no study has carefully examined the wide range of factors potentially contributing to observed disparities in DBS use. Therefore, the goals of this study are to a) identify patient predictors for referral for DBS surgery using a large database and b) explore patients' perception of key factors that drive the acceptance of DBS and determine the specific factors that differ by race.

Methods: This study utilizes a mixed quantitative-qualitative design. For Aim 1, several demographic and disease severity variables and whether or not they were referred for DBS evaluation were collected from the medical charts of 537 participants in the patient research database of a Parkinson Center of Excellence. The milestone reached in the DBS receipt process (referral, multidisciplinary evaluation, approval for surgery, and receipt of surgery) were collected for each patient. Logistic regressions were run to investigate racial differences in the filtering of potential DBS candidates at each milestone to identify clinical procedural sources of inequity.

For Aim 2, 17 participants were recruited from the participant pool studied in Aim 1 belonging to four groups: white participants with (n=5) and without DBS (n=5) and black participants with (n=2) and without (n=5) DBS. Participants participated in a semi-structured online interview over Zoom.

Thematic analysis and cognitive mapping of the healthcare decision making process were conducted on responses to build comparative conceptual frameworks of the primary influences on the decision to receive DBS between participants of black and white race.

Results: Holding all other predictor variables constant, the odds of being counseled on DBS by a medical provider decreased by 80% when a participant was Black compared to White (95% CI 0.12, 0.37), decreased by 58% when a participant was Hispanic versus White (95% CI 0.23, 0.75), decreased by 8% for every 1 year increase in age (0.91, 0.96), and increased two-fold when the participant had private health insurance (1.29, 4.00).

The odds of being referred for multidisciplinary evaluation decreased by 96% when a participant was Black versus White(95% CI 0.014, 0.12), decreased by 84% when a participant was Hispanic versus White (95% CI 0.07, 0.38), and decreased by 11% for every 1 year increase in age (95% CI 0.87, 0.91).

After the second filter, there were too few non-White cases to continue the analyses.

Thematic analysis of participant responses during semi-structured interviews revealed principle themes of trust in medical team, personal communal support, and belief in potential benefit outweighing risk of surgery as primary holders of decision-making power, independent of participant race. Black participants expressed enhanced caution towards neurosurgery and higher tolerance of Parkinson symptoms.

Biography

Bryn Taylor is in her final year of the Rehabilitation Science Doctoral program at the University of Florida, mentored by Karen Hegland and Charles Ellis in the Department of Speech, Language, and Hearing Sciences. She completed her clinical fellowship in speech-language pathology at the Normal Fixel Institute for Neurological Disease. Her work has centered around health disparities in access to advanced care for neurological disease, in particular Parkinson disease. She was most recently awarded a grant from the American Parkinson Disease Association to complete her dissertation work in this area.

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Caregiver-reported needs assessment for emerging adults with cerebral palsy

Cerebral Palsy (CP) is the most common cause of childhood-onset physical disability; it is a group of non-progressive movement disorders that require coordinated, multidisciplinary care. Adolescents with CP often face significant challenges during the transition from pediatric to adult healthcare, and no standardized transition tool currently exists for properly managing all psychosocial and medical needs. This study aims to identify unmet transition needs and stakeholder priorities, clarify the relationship of these unmet needs to demographic and clinical profiles, and identify opportunities to intervene using clinic-based support for emerging adults with CP.

This study was conducted at the Phelps Center for Cerebral Palsy. Caregivers of adolescents and young adults with CP aged 12–23 years (N=44) completed a structured demographic and clinical survey assessing needed support (yes/no) in 34 specific areas, grouped into five domains. Each domain's importance was rated on a 5- point Likert scale. We identified the areas where more than 50% of caregivers reported the need for support. Descriptive statistics, using Spearman's rho correlations, evaluated associations between demographic/functional variables and perceived importance of each domain. A regression analysis was conducted to predict the total needs and Likert scale results with regard to health insurance profiles, race, and motor abilities.

Participants had a mean age of 17.1±3.29 years. The cohort was 64.6% male and racially diverse. It showed variable functional profiles (GMFCS E+R: 3.91±1.43; MACS: 3.91±1.13; CFCS: 3.23±1.26). Commonly reported unmet needs included access to recreational programs (73%), forming new friendships (68%), and community engagement (68%). Significant negative correlations were observed between functional status measures and the importance of vocational wellbeing, healthy living, and financial management. Vocational wellbeing was inversely associated with impairment across all three scales: GMFCS (ρ=-0.319, p=0.037), MACS (ρ=-0.455, p=0.002), and CFCS (ρ=-0.516, p=0.0004). Additionally, a greater number of reported needs was positively correlated with the importance placed on financial management (ρ=0.469, p=0.001), whereas a greater number of cohabitants was negatively correlated (ρ=-0.343, p=0.023).

Emerging adults with CP face complex functional and societal barriers during transition. The significant association between higher functional impairment and lower prioritization of vocational, daily living, and financial domains may suggest an underlying perception of the child not being cognitively capable of meaningfully participating in those areas. Future research should focus on scalable, individualized transition programs that account for functional variability and reinforce social work infrastructure to support comprehensive, community-integrated care.

Biography

Carlos A. Herrero-Rivera is a rising second-year medical student at Ponce Health Sciences University, Puerto Rico. He graduated magna cum laude from the University of Dayton in 2023 with a B.S. in Biology and a minor in Neuroscience. Passionate about community health and translational research, he has volunteered in clinics across Puerto Rico, Ohio, and Panama. He has contributed to various Alzheimer's studies, posters, and a scientific manuscript. As a 2025 Dr. James A. Ferguson Fellow at Kennedy Krieger Institute, he researches adulthood transitions in cerebral palsy. Herrero-Rivera aims to become a physician-researcher focused on health equity and hollistic care.

Courtney Austin[1*], M.D, Aaron Carrillo[1&3], M.D, Jennifer Rojas Huen[1&2], M.D

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A puzzling case of visual disturbances ends with a diagnosis of a fatal protein disease

Creutzfeldt-Jakob Disease (CJD) is a rare neurodegenerative disease in which early diagnosis is complicated by the presence of early non-specific and atypical presentations. Sporadic CJD, the most common type of CJD, is caused by the spread of a disease-forming prion known as PrPSc. PrPSc multiplies and binds to the normal form of prion, or PrP, converting it to an abnormal, structurally altered disease form that spreads throughout the brain. 1 We report the case of a 65-year-old Hispanic male who presented with a rapidly progressive neurodegeneration hallmarked by visual and spatial impairments, sleep disturbances, static epilepticus, myoclonus, and ataxic gait. He was previously diagnosed with autoimmune encephalitis at a different facility due to elevated protein levels in his CSF. However, his final diagnosis of sCJD was delayed by frequent diagnostic procedures and imaging. He was found to have positive 14-3-3-tau proteins in his cerebrospinal fluid, slowing of electroencephalographic activity, and hyperintensities of cortical gyri in bilateral parietal, frontal, and occipital lobes consistent with sporadic CJD. One thing to note is that the patient did not initially experience cognitive decline, as seen in 35% of sCJD. After confirmation of diagnosis, the patient was enrolled in hospice care, approximately 9 months after the initial onset of symptoms. In this case report, we discuss the barriers to a timely sCJD diagnosis and efforts to improve end-of-life care for those with suspected/confirmed sCJD.

Biography

Courtney Austin is a 4th-year medical student at the University of Texas Rio Grande Valley School of Medicine. She graduated from the University of Texas at Austin in 2017 with a Bachelor of Science in Computational Biology and a certificate in Scientific Computation. She then attended UT Austin McCombs School of Business to pursue a Health Informatics and Health Information Professional Certificate in 2019. She is currently completing a research fellowship at the University of California, San Francisco (UCSF) Children's Communication Clinic in the Otolaryngology – Head and Neck Surgery under the supervision of Dr. Dylan Chan, M.D., Ph.D.

Cristina Hayes[1,2*] (B.S.), Jennifer Jaein Jung[2] (B.A.), Rachel Branco[1] (Ph.D)

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Variation of amphetamine effects on women based on their stage in the menstrual cycle

Background: The female reproductive cycle plays a pivotal role in modulating the neurochemical and behavioral responses to amphetamines. Amphetamine is absorbed efficiently across the mucosal membrane, with metabolism primarily via CYP2D6 enzymes. The drug enhances synaptic monoamine levels by acting on dopamine, norepinephrine, and serotonin transporters, leading to increased euphoria, focus, and energy. Fluctuations in hormone levels, particularly estrogen and progesterone, throughout the menstrual cycle modulate both neurochemical and behavioral responses to amphetamines, with heightened sensitivity during the follicular phase (high estrogen levels) and reduced sensitivity during the luteal phase (high progesterone levels). This review explores the pharmacokinetic, pharmacodynamic, and behavioral variations in amphetamine responses across the menstrual cycle. Understanding these variations is critical for advancing addiction medicine, as they impact vulnerability to substance use disorders and the efficacy of stimulant-based therapies.

Key Findings:

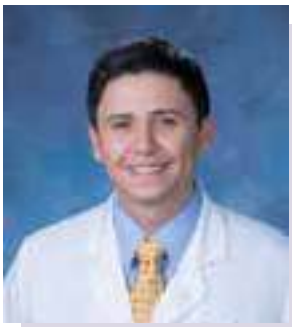
- **Neurochemical Modulation:** Estrogen amplifies dopamine signaling by enhancing receptor activity, whereas progesterone dampens this effect. These hormonal shifts influence subjective responses to amphetamines, including euphoria and craving.
- **Behavioral Sensitivity:** Women in the follicular phase reported greateramphetamine-induced stimulation, craving, and salivary cortisol levels compared to the luteal phase. This aligns with the role of estrogen in promoting heightened dopaminergic activity during the follicular phase.
- **Addiction Potential:** Female-specific responses suggest that hormonal fluctuations contribute to differential addiction risk, with higher susceptibility during the follicular phase.

Applications: Findings underscore the importance of hormonal influences on amphetamine response, with implications for treating addiction and managing stimulant-based therapies for ADHD and other neurodevelopmental disorders. Personalized treatment regimens accounting for hormonal cycles may enhance therapeutic efficacy and reduce overdose risk.

Conclusion: This research highlights the critical role of the menstrual cycle in shaping amphetamine response and addiction vulnerability in bodies undergoing menstrual cycles. Future studies should integrate hormonal considerations into addiction medicine and psychiatric care to ensure effective and equitable treatment outcomes.

Biography

Cristina Hayes is a current medical student at the University of Massachusetts T.H. Chan School of Medicine after graduating from the University of Notre Dame with her Bachelor of Science in Neuroscience and Behavior in 2023. During her time at Notre Dame, Cristina became passionate about Substance Use Disorder and conducted research on the topic as well as becoming the student leader of the Substance Use Disorder Elective at the University of Massachusetts T.H. Chan School of Medicine.



Daniel Gonzales-Portillo*, Bhavya Vashi, Jorge Cervantes

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A systematic review and meta-analysis on the effect of metformin on glioblastoma multiforme

Glioblastoma Multiforme (GBM) is a highly aggressive disease with a poor prognosis for most of the patients. The costs of care can overwhelm these patients at times where work is difficult, so there is a need to evaluate affordable alternatives. There exists a body of literature that has shown that metformin has the potential to act as an anti-neoplastic agent. Here we examined the effects of metformin on GBM in humans, in vivo (experimental animals), and in vitro.

Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines were followed to do the review. We calculate the effect size on median overall survival in humans, the Hazard Ration (HR) on murine overall survival, and the Standard Mean Difference (SMD) for in vitro cell viability. In humans, rodents, and in vitro, totals of 469, 566, and 230 studies were screened respectively. Of these studies, 4,7,8 studies respectively were compatible for the meta-analysis. In humans, data analysis demonstrated an increase in median overall survival for GBM patients up to 18 months compared to controls (p=0.00197). Pooled data analysis in mouse model suggests an increase in overall survival in mice receiving metformin (p=0.055). Random-effects model on these same studies also supports this finding (HR [95% CI]: 0.76 [0.39,1.46]). Random-effects model in vitro demonstrated an increase in cell viability upon treatment with metformin (SMD [95% CI]: 3.70 [2.28, 5.12]).

Overall, our findings support the efficacy of metformin as an anti-neoplastic agent. We anticipate further analyses to find dose-dependent relationships between metformin and the targeted survival outcomes. We will also explore the role of metformin when combined with current therapies such as temozolomide. We envision metformin to have the potential to become an inexpensive adjuvant to GBM cancer therapy.

Biography

Daniel Gonzales-Portillo studied Behavioral Analysis at the University of Florida and graduated with his B.S. in 2021. He later completed his master's in biomedical sciences at Nova Southeastern University in 2023 and currently attends Nova Southeastern University's Kiran C. Patel College of Allopathic Medicine.

Divya Jayam
The Wheatley School, Old Westbury, New York, United States

The use of cephalexin to inhibit α-synuclein aggregation: A new paradigm in Parkinson's disease therapy

Introduction: Parkinson's Disease (PD) is characterized by the degeneration of dopaminergic neurons due to the aggregation of a protein named α-synuclein in the substantia nigra region of the brain. Current therapies for PD do not address this pathology. This paper presents cephalexin, an antibacterial agent as potential treatment for PD; particularly addressing α-synuclein aggregation.

Methods: The protective effects of Cephalexin against PD were evaluated using MTT Proliferation Assays, Silica Molecular Docking, ELISA, and the *D.melanogaster* climbing assay. The results were validated using a two-tailed t-test.

Results: Within 36 hrs., Cephalexin demonstrated a notable reduction in neural cell mortality induced by rotenone, a pesticide known to induce parkinsonian symptoms in rodent models (43% to 26%, $p<0.05$). Cephalexin induced the expression of PARKIN, a critical protein that plays essential roles in protein degradation and mitophagy (116%, $p<0.05$). Silica molecular docking revealed that cephalexin binds to α-synuclein at the same location where α-synuclein binds to rotenone. In in vitro experimentation, compared to rotenone, cephalexin demonstrated under expression of LRP1 over both 24 hours (75.21% vs Rotenone's 99.976%, $p<0.05$) and 48 hours (-68.46% vs Rotenone's 20.83%, $p<0.05$). Finally, the in vivo *D.Melanogaster* climbing assay showed that cephalexin-treated flies climbed higher compared to the control by an average 75.52%, $p<0.05$ (Day 5).

Conclusion: Cephalexin shows considerable promise-reverses the effects of rotenone induced cytotoxicity while promoting induction of PARKIN and under expressing LRP1. *D.Melanogaster* models further demonstrated cephalexin's promise as a PD treatment by showcasing its ability to enhance motor functions.

Biography

Divya Jayam is a rising high school junior at The Wheatley School. She has done this research under the guidance of Prof Wei Zhu of the State University of New York, Old Westbury in Dr. Zhu's laboratory. Divya personally conducted all the assays and experiments in this project. Dr. Zhu trained and guided her through the process. Her research has won local and statewide recognition. She won first place in the State at the New York Science Congress 2024.

Faisal Attiah
Georgetown University, United States

Assessing the role of neurogenesis in learning & memory following exposure to High Frequency Head Impacts (HF-HI) and Controlled Cortical Impacts (CCI)

Neurogenesis in the Hippocampal Dentate Gyrus (HDG) is linked to learning and memory and contributes to normal hippocampal function, and TBI has been shown to disrupt the normal process of neurogenesis (Leng & Bonaguidi., 2018).Due to the different TBI models and available, the extent of neurogenesis occurrence remains contradictory while increased, decreased, and unchanged neurogenesis have been reported in the literature following TBI (Wang et al., 2016). This study compared neurogenic responses following two models of TBI in mice: Controlled Cortical Impact (CCI) and High-Frequency Head Impact (HFHI). Using Doublecortin (DCX) as a marker for immature neurons, we observed a significant decrease in DCX-positive cells in the dentate gyrus of CCI mice compared to both sham and HFHI groups at 3 days post-injury. This reduction may reflect either increased neuronal death or suppressed neurogenesis. Although HFHI mice showed a slight decrease in DCX-positive cells relative to sham, the difference was not statistically significant, suggesting reduced cell death in the HFHI model. Increasing the severity of CCI from 0.5 mm to 2.0 mm further reduced DCX expression, highlighting a dose-dependent impairment of neurogenesis. These findings were paralleled by behavioral deficits on the Morris Water Maze (MWM) test, indicating that injury severity is linked to impaired hippocampal function. The loss of neurogenesis may stem from the heightened vulnerability of newborn neurons to TBI-induced apoptosis. Future studies should quantify apoptotic markers across time points to better understand the temporal dynamics of post-injury neurogenesis.

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Exploring the possible roles of TBK1 and its fly ortholog IK2 gene in nervous system function

Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disease that affects nerve cells in the brain and the spinal cord. Many genetic mutations have identified in ALS patients, including the mutations found in gene TBK1, yet it is still not well understood how these mutations contribute to the pathogenesis of ALS. In this study, we tried to use Drosophila lines that lowered the expression of IK2 gene, the fly version of gene TBK1, to investigate the phenotypic and molecular changes of the affected flies. We found that lowering IK2 gene expression severely impaired larval crawling ability and the specific lowering of IK2 gene expression in adult eyes caused a characteristic neurotoxic rough eye phenotype. Further analysis on flies expressing wildtype and mutant TBK1 proteins are ongoing. These studies paved the way for new insights of how such TBK1 mutations contribute to the pathogenesis of ALS.

Biography

Dr. Fang He is an Associate Professor in the Department of Biological and Health Sciences at Texas A&M University-Kingsville. He earned his Ph.D. in Biological Sciences from Louisiana State University in 2011 and completed postdoctoral research at the University of Michigan. Since joining Texas A&M University in 2016, his research has focused on molecular mechanisms of ALS and ataxia, particularly nucleotide repeat expansions. He has published extensively, mentored graduate students, serves on editorial boards, reviews for journals and funding agencies, and has received awards recognizing his scholarly contributions.

Dr. Gulchekhra Usmanova*, Dr. Gulnora Rakhimbaeva

Department of Neurology and Medical Psychology at Tashkent State Medical University, Tashkent, Uzbekistan

Prognostic significance of vascular endothelial growth factor changes in the acute phase of hemorrhagic strokes

Background and Aims: Vascular Endothelial Growth Factor (VEGF) plays a crucial role in the regulation of angiogenesis and neurogenesis, particularly in response to cerebral injury. Experimental studies have demonstrated the presence of VEGF in brain tissue surrounding hemorrhagic sites at the very onset of stroke, suggesting its early involvement in the pathophysiological processes of Hemorrhagic Stroke (HS). This study aimed to investigate serum VEGF levels during the acute and subacute phases of HS and to evaluate the correlation between VEGF concentration and clinical severity and progression of the disease.

Methods: A total of 65 patients diagnosed with HS of varying localization and volume, due to hypertensive or atherosclerotic causes, were enrolled in the study. Of these, 58.5% (n=38) were male and 41.5% (n=27) were female, with a mean age of 64.2 years. The severity of neurological impairment was assessed using the National Institutes of Health Stroke Scale (NIHSS). Serum VEGF levels were measured using Enzyme-Linked Immunosorbent Assay (ELISA) during the acute phase (within the first 72 hours) and subacute phase (days 7 and 21) of the disease.

Results: The study revealed variable VEGF levels depending on the phase of HS and the clinical condition of the patient. Compared to the control group, patients exhibited significantly elevated VEGF levels in both acute and subacute phases. In the acute phase (1051 pg/ml), higher VEGF levels correlated with greater severity of stroke and more extensive brain edema. This suggests that elevated early VEGF may serve as a marker of severe neurological damage. In contrast, patients with subacute phases (1034 pg/ml) and favourable outcomes demonstrated the highest VEGF levels on days 7 and 21, reflecting its role in repair and neurovascular regeneration. Lower VEGF levels in the subacute phase were associated with poorer prognosis.

Conclusion: VEGF may serve as a valuable prognostic biomarker in HS. Elevated VEGF levels at stroke onset, followed by a decline by day 21, are associated with severe clinical conditions. In contrast, sustained or delayed VEGF elevation may indicate more favorable recovery dynamics.

Biography

Dr. Usmanova, MD, PhD, is a highly experienced physician with over 20 years of expertise in neuropathology. She earned her medical degree from Tashkent Medical University, where she currently teaches and mentors future physicians. Her clinical research has contributed to advancements in emergency response protocols and patient care practices. Dr. Usmanova has extensive experience treating neurological patients, particularly those with pre- and post-clinical manifestations of hemorrhagic stroke. Her work focuses on enhancing diagnosis, treatment, and rehabilitation in neurology. She is currently pursuing her postdoctoral dissertation, further advancing her contributions to neurological science and patient care.

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Ollier's disease with grade II astrocytoma case report and brief review of astrocytoma

Ollier's disease is a dysplasia of cartilage characterized by multiple enchondromas. Previous literature did not observe the concurrence of Ollier's disease and gliomas, however, the presence of these two comorbidities is now becoming evident. In patients with Ollier's disease, Isocitrate Dehydrogenase 1 (IDH1) and Isocitrate Dehydrogenase 2 (IDH2) mutations were shown to be a predisposing factor to the development of astrocytomas in conjunction with subsequent mutations in ATP-dependent helicase ATRX (ATRX) and Tumor Protein p53 (TP53). We present a case report of a 21-year-old male with an adolescent diagnosis of Ollier's disease who developed a grade II astrocytoma in early adulthood. The patient presented to the emergency room with seizures, was given anti-seizure medication, and later underwent chemotherapy and resection of the astrocytomas. A literature review showed 12 additional patients diagnosed with Ollier's disease who were subsequently diagnosed with a grade II astrocytoma later in life. We conclude this case report with a discussion of the genetics of Ollier's disease and emphasize the importance of performing routine cranial Magnetic Resonance Imaging (MRI) in these patients.

Biography

Hunter Slosser, BS is a medical student at Kansas City University with a strong interest in neuroscience and medical genetics. His research focuses on pharmacogenomics and rare neurological conditions, including Ollier's disease and its association with astrocytomas. He co-authored a case report highlighting the genetic links between isocitrate dehydrogenase mutations and tumor development. With experience as a Genetic Counselor Assistant and a Teaching Assistant in Neuroscience, Hunter is passionate about advancing precision medicine and understanding the genetic basis of neurological disorders.

Isabella Shen
Archbishop Mitty High School, San Jose, California, United States

Analysis of mutation-based ensemble approaches for glioma subtype prediction

Gliomas are tumors originating from glial cells that support and protect neurons in the nervous system, but they can grow to become malignant and quickly infect neighboring healthy brain tissue. Different glioma subtypes grow at different rates and respond differently to treatment options. Identifying the specific type of glioma will aid in determining the right treatment plan for the patient, which will ultimately impact the patient's prognosis. While many studies have differentiated between low-grade and high-grade gliomas, limited studies have closely examined the factors that distinguish glioma subtypes, which significantly impact prognosis. Thus, this project aims to address this knowledge gap by using genetic-mutation-based data to classify gliomas. Data was extracted from The Cancer Genome Atlas (TCGA) Project and Memorial Sloan Kettering Cancer Center (MSK), and the 20 most frequently mutated genes in gliomas were analyzed to predict 3 major glioma subtypes: oligodendroglioma, astrocytoma, and glioblastoma.

Preliminary modeling included three base models: multinomial logistic regression, random forest, and XGBoost, which were trained and evaluated independently, each offering distinct strengths. The multinomial logistic regression provided interpretability, the random forest model addressed non-linearity in the data, and the XGBoost model provided gradient boosting and improved model performance. Out-of-fold predictions from the base models were then combined to develop an ensemble XGBoost meta-model using Platt scaling for calibrated probabilities.

Our results found that the ensemble model outperformed individual base models, classifying glioblastoma, the deadliest subtype, most accurately. This study highlights how mutation-based machine learning frameworks can enable precision accuracy, especially in settings where clinical data may not be readily available.

Biography

Isabella Shen is a senior at Archbishop Mitty High School in San Jose, CA, with a strong passion for neuroscience and computational biology. She conducts independent and mentored research and also works as a student researcher at the Gabriel Lab at UCSD.

Jagjot Singh*, Ramanjot Kaur, Akrambir Singh Brar

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Faces, fantasies, and phantoms: A neurological case study on fregoli delusion, erotomania, and incubus syndrome

Objective: The study aims to present a rare case signifying the co-occurrence of Fregoli delusion, erotomania, and incubus syndrome in a patient with schizophrenia, and to explore neurological dysfunctions contributing to these overlapping delusions.

Introduction: Fregoli syndrome is a delusional misidentification disorder in which a person believes that different people are a single individual in disguise. Neurologically, right hemisphere dysfunction is associated with it, which impairs facial recognition and memory processing. Erotomania, or de Clérambault's syndrome, involves the delusion that someone of higher status is in love with the patient. Schizophrenia is associated with erotomania and neurologically involves dysfunction of the limbic system and dopaminergic pathway regulating emotional attachment. The delusional idea that an invisible entity is approaching a female patient for sexual purposes is the hallmark of Incubus syndrome. It is linked to temporal lobe dysfunction and REM sleep disturbances. All three syndromes highlight right hemisphere impairments affecting facial recognition, emotional attachment, and reality perception.

Case Report: A 49-year-old female with a 13-year history of schizophrenia, medication non-adherence, and a family history of psychiatric illness, presented with deteriorating symptoms over the past three months. Her delusions included a belief that a famous Bollywood actor was in love with her, wanted to marry her, and communicated with her through dreams and secret messages. She also reported tactile hallucinations and claimed the actor engaged in sexual acts with her during sleep. Further, she experienced multifocal Fregoli delusions. She believed that her family members were disguised as hospital ward staff. Due to her medication non-adherence, a long-acting injectable antipsychotic treatment was considered. There was no significant history of memory problems and sleep dysfunction. Neurological examination was insignificant. 3D MRI brain, and electroencephalogram were normal. Polysomnography was not performed due to lack of availability.

Conclusion: This case highlights the complex interplay between right hemisphere dysfunction, limbic system dysregulation, and temporal lobe abnormalities contributing to such complex presentation. The case also underscores the need for further research into the neurobiological mechanisms linking these rare psychiatric phenomena.

Biography

Dr. Jagjot Singh is an aspiring neurologist with a deep passion for neuroscience, clinical excellence, and academic research. He has authored over 25 publications and has presented his work at several prestigious national and international conferences. Beyond his medical and academic pursuits, Dr. Singh is the founder of SafeTricks.com, a widely followed technology blog where he shares expert guides on cybersecurity, digital privacy, and smart tech solutions. He is also the creator of MedSate.com, a platform focused on preventive health education and the development of user-friendly medical tools for both patients and professionals.

Jagjot Singh*, Ramanjot Kaur, Ripanbir Singh Kahlon

Department of Medicine, Government Medical College, Amritsar, Punjab, India

Role of glucocorticoids and re-introduction of hyponatremia in the management of osmotic demyelination syndrome

Osmotic Demyelination Syndrome (ODS) is a rare but serious complication that can occur following the rapid correction of chronic hyponatremia. Characterized by demyelination in the central pons and other brain regions, it presents with a wide spectrum of neurological deficits including quadriparesis, dysarthria, dysphagia, and altered consciousness. Currently, there is no definitive treatment for ODS once it develops, and management is largely supportive. Emerging animal studies, however, suggest a potential role for re-lowering serum sodium and administering glucocorticoids to improve outcomes. We report a case of a 65-year-old male with a history of hypertension, polycystic kidney disease, and parkinsonism who presented with altered sensorium and progressive weakness of all four limbs. He had been previously admitted for intractable vomiting and treated with rapid correction of hyponatremia using 3% hypertonic saline. His condition worsened over the next 48 hours, and MRI brain (FLAIR) revealed pontine demyelination, confirming a diagnosis of ODS. In response, serum sodium was carefully reduced from 136 mEq/L to 123 mEq/L over three days using intravenous 5% dextrose and enteral free water. Simultaneously, intravenous hydrocortisone was administered at 100 mg every 8 hours. The patient's sensorium began improving by the third day of steroid therapy, followed by gradual recovery of speech and limb strength over the next few days. This case supports the therapeutic potential of combining re-introduction of hyponatremia with glucocorticoid therapy in the management of ODS. While slow and controlled sodium correction remains the cornerstone of prevention, these interventions may offer a viable option for mitigating established cases. Our findings are in line with experimental studies demonstrating reduced mortality and demyelination in animal models treated with dexamethasone or with re-induced hyponatremia. Further clinical research is warranted to establish standardized protocols and validate the safety and efficacy of these approaches in humans.

Biography

Dr. Jagjot Singh is an aspiring neurologist with a deep passion for neuroscience, clinical excellence, and academic research. He has authored over 25 publications and has presented his work at several prestigious national and international conferences. Beyond his medical and academic pursuits, Dr. Singh is the founder of SafeTricks.com, a widely followed technology blog where he shares expert guides on cybersecurity, digital privacy, and smart tech solutions. He is also the creator of MedSate.com, a platform focused on preventive health education and the development of user-friendly medical tools for both patients and professionals.

Carmona-Huerta Jaime[1,2*], Durand-Arias Sol[3], Aldana López Alejandro[4], Cárdenas García Elsy[2], Arámbula-Román Carlos[2], Lastra-Gonzalez Veronica[2] Amezcua-Ramírez Trinidad[2]

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Baseline results of REINTEGRA: A comprehensive rehabilitation program for people with serious mental disorders

Introduction: Despite the increasing use of comprehensive rehabilitation models for people with Severe Mental Illness (SMI), there are still limitations to their implementation and replicability in a consensual way, particularly in Latin American countries. The REINTEGRA program aims to be a standardized model of comprehensive rehabilitation focused on psychosocial and cognitive improvement through a set of interventions on different areas of people's functionality, with the goal of reintegrating people with SMI into the labour market. In this paper we summarize the protocol for its subsequent implementation in a mental health institution in Mexico. This paper presents the initial results obtained at baseline.

Method: The protocol is based on a quasi-experimental, prospective longitudinal study, with a pragmatic or naturalistic control group. It will be carried out in three phases. Phase 1 consists of a series of interventions focused on psychosocial improvement; Phase 2 focuses on cognitive and behavioral improvement treatments; and Phase 3 targets psychosocial recovery through rehabilitation and reintegration into the labour market. The overall procedure will be monitored with standardized evaluations at different stages of the program.

Procedures: Seventy-eight working-age patients (31 women and 47 men) with SMI (schizophrenia, bipolar disorder, schizoaffective disorder) were recruited from CAISAME-EP to document their symptoms upon admission to REINTEGRA: psychiatric symptomatology (BPRS), mania (YMRS), depression (PHQ-9), social functioning (SOFS), internalized stigma (EI), functional recovery (RAS 24), and quality of life (WHOQOL) and cognitive domains (MCCB MATRICS). Those who accepted the program were assigned to the intervention group (n=19), while those who did not received only the scales (n=48).

Discussion: This study presents a model of integral rehabilitation of people with SMI. At the moment, one of the obstacles to overcome is the organization and procedural control of the different actors needed for its implementa tion (nurses, psychologists, doctors, companies, institutions, etc.). REINTEGRA will be the first comprehensive rehabili tation model that includes systematized procedures for job reinsertion for people with SMI in Mexico, which aims to be a standardized tool of easy adaptation and the replicability for other mental health centers and institutions.

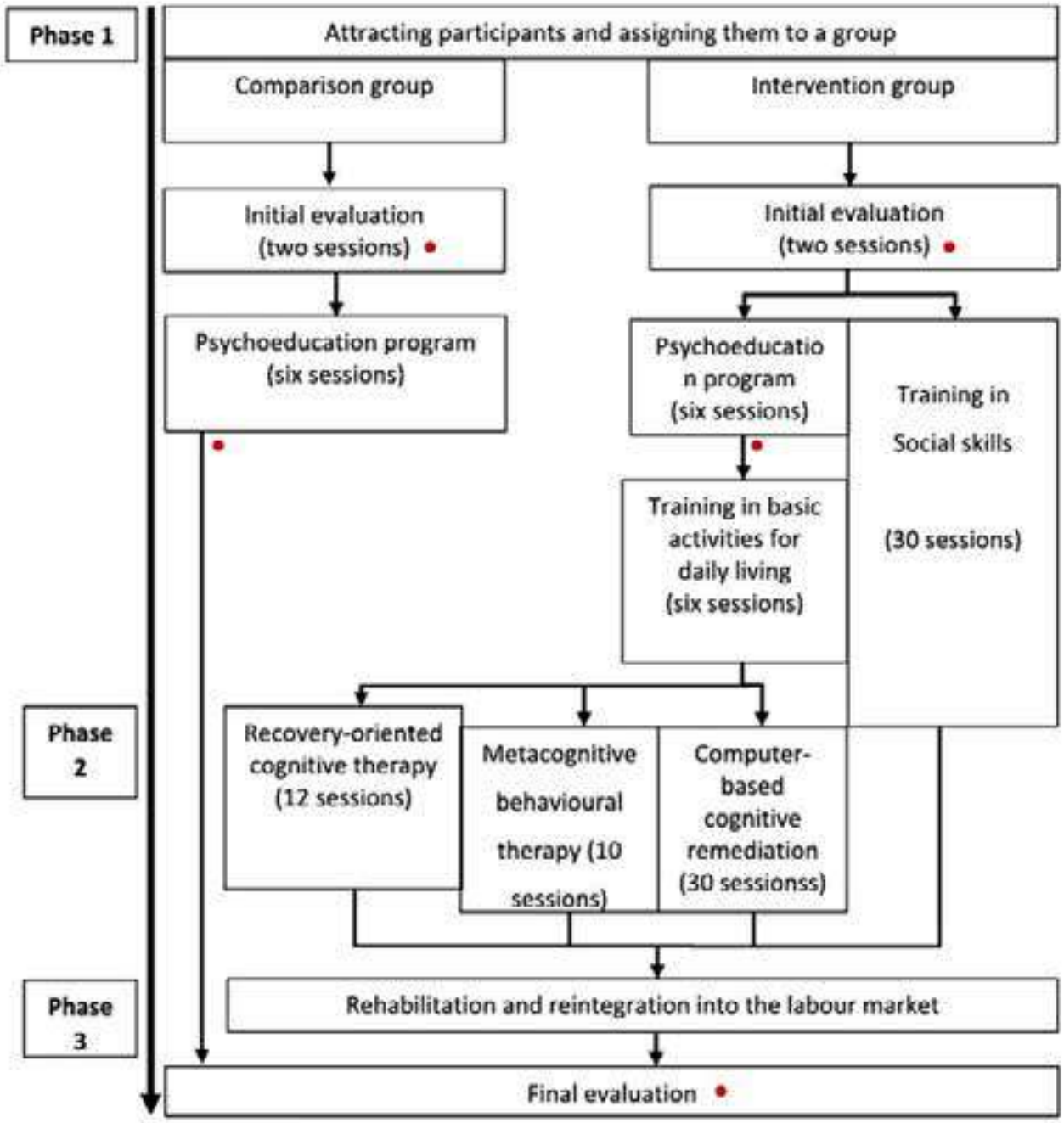

Fig. 1 Test Desing of the REINTEGRA project

Table 1. Sociodemographic data

Sex (n)	Intervención	Control	Total
Female	11	20	31
Male	8	39	47
Socioeconómic level (n)			
A/B	2	5	7
C	12	25	37
D	4	22	26
E	1	7	8
Educational level (n)			
Elementary school uncomplete	5	2	7
Elementary school	7	27	34
High school	4	24	28
university	3	6	9
Age			
Mean	40.2(8.3)	38.5(9.8)	39(9.4)

Table 2. Clinimetric measures

Diagnosis (n)	Intervention group	Control group	Total	Statistical test
schizoaffective disorder	3	4	7	
Bipolar disorder	4	15	19	
schizophrenia	12	40	52	
BPRS (mean, SD)				
Total score (18 - 126)	30.6 (8)	27.7 (10.5)	28.4 (10)	*U* (p = .120)
Shapiro-Wilk (*p*)	0.239	0.001		
YMRS (mean, SD)				
Total score (0 - 60)	0.7 (1.3)	3 (6.3)	2.4 (5.6)	*U* (p = .253)
Shapiro-Wilk (*p*)	< .001	< .001		
PHQ-9 (mean, SD)				
Total score (0 - 27)	8.8 (6.6)	5.3 (4.5)	6.1 (5.3)	*U* (p = **.048**) *
Shapiro-Wilk (*p*)	0.229	< .001		
SOFS (mean, SD)				
Total score (0 - 70)	17.5 (6.4)	20 (7.2)	19.4 (7)	*U* (p = .191)
Shapiro-Wilk (*p*)	0.261	< .001		
Internalized stigma (mean, SD)				
Total score (25 - 107)	58 (13.3)	49.5 (12.8)	51.5 (13.3)	*t* (p = .819)
Shapiro-Wilk (*p*)	0.137	0.771		
RAS-24 (mean, SD)				
Total score (24 - 120)	92.3 (15.7)	95.2 (12.4)	94.5 (13.3)	*t* (p = .819)
Shapiro-Wilk (*p*)	0.130	0.317		
WHO-QOL-Brief (mean, D.E)				
Total score (26 - 130)	77 (14.3)	85 (14)	83 (14.3)	*t* (p = .819)
Shapiro-Wilk (*p*)	0.932	0.248		

Table 3. Scale score MATRICS

Domain (mean T-scores, SD)	**Group**			
	Intervention	**Control**	**Total**	*t (p)*
Processing speed	46.7 (6.1)	45.3 (8.1)	45.9 (7.3)	*0.537*
Attention	44.1 (8.1)	41.3 (6.7)	42.4 (6.7)	*0.969*
Working memory	48.1 (7.9)	46 (6.9)	46.9 (7.3)	*0.662*
Verbal learning	39 (10)	37.8 (10.4)	38.3 (10)	*0.978*
Visual learning	44.9 (8.6)	42.2 (9.7)	43.3 (9.3)	*0.28*
Reasoning	49.6 (7.7)	49.8 (8)	49.5 (7.8)	*0.852*
Social cognition	45.5 (11.8)	47 (9.6)	46.4 (10)	*0.355*

Biography

Dr. Jaime Carmona studied medicine at the University of Guadalajara, Mexico, and graduated in 2007. He completed his master's degree in pharmacology in 2009 and his doctorate, also in pharmacology, in 2012. He then began his training as a psychiatrist that same year. He received his psychiatric degree in 2016 from the National Autonomous University of Mexico. He currently belongs to Mexico's National System of Researchers, works as a researcher at the University of Guadalajara and as a psychiatrist at the CAISAME (Extended Stay Center). He has published more than 20 research articles and specializes in psychopharmacology and serious mental disorders.

Jenna M. Peretin[1*], Jennifer A. Ross[1,2]

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Estrogen replacement therapy and Alzheimer's disease incidence in aging women: A TriNetX-based analysis

Alzheimer's Disease (AD) is a progressive neurodegenerative disease that accounts for more than 60% of cases of dementia worldwide. Notably, women are disproportionately affected, comprising nearly two-thirds of all AD diagnoses and experiencing more rapid and severe cognitive decline compared to men. While the underlying mechanism of this sex-based disparity has yet to be fully elucidated, estrogen decline following menopause has been proposed as a contributing factor. Estrogen is thought to exert neuroprotective effects through several pathways in the aging brain, including reduction of glutamatergic excitotoxic cell death and beta-amyloid-induced neurotoxicity. Further studies in rodents have reported accelerated plaque deposition and behavioral impairment in estrogen-knockout models. However, clinical studies investigating the relationship between Estrogen Replacement Therapy (ERT) and AD risk have yielded mixed results. The current retrospective cohort study utilizes the TriNetX Electronic Medical Record (EMR) database to investigate the incidence of AD among women above the age of 35 based on ERT usage (n=509 patients per cohort). A total of 1,018 patients (509 per cohort) were matched for eight common AD risk factors using propensity score matching. Results showed that women using ERT had a 4.12% significantly reduced incidence of AD compared to non-ERT users (p=0.0065). Our findings contribute to the growing body of research discussing ERT modulation in AD and the potential roles of estrogen in the neurodegenerative disease process.

Biography

Jenna Peretin is a rising second year medical student at Drexel University College of Medicine. She received her Bachelor's Degree in Neuroscience from the University of Pittsburgh in 2023 and has significant past research experience studying preclinical models of Alzheimer's disease and neurovascular coupling.

Josephine Yalovitser[1*] BA, Charles D MacLean[2] MD

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Association between GLP-1/SGLT2 medication use and alcohol consumption patterns: A cross-sectional survey study

Over 80% of Vermonters are overweight or obese, and more than 55,000 have diabetes. GLP-1 receptor agonists aid in blood sugar control and weight loss, and emerging case reports and small scale trials suggest they may also reduce alcohol use. Access to effective treatments for alcohol use disorder is limited by available therapies, provider availability, and many patient factors. Given the increased use of GLP-1s for diabetes and for weight management, the role of these agents in the treatment of alcohol misuse is important. This study investigates the association between GLP-1 and SGLT2 medications and alcohol cravings and use. A cross-sectional patient-reported survey was distributed across three primary care clinics (2 urban/suburban and 1 rural) in VT. Data elements included demographic information, alcohol consumption (subset of AUDIT measure), and questions regarding the impact of the GLP-1 or SGLT2 medication on alcohol use or craving. Data were analyzed using descriptive statistics, logistic regression, Wilcoxon signed-rank, and chi-square tests. 106 respondents (mean age 56 ± 11 years; 58% female; 59% with diabetes/pre-diabetes, and 27% non-drinkers) were included. 83% were using a GLP-1 and 17% were using an SGLT2. Among baseline drinkers, alcohol frequency significantly decreased after starting their medication ($z=5.53$, $p<0.001$). While GLP-1 users were more likely to report reduced use compared to SGLT-2 users, the difference was not statistically significant. Time to alcohol use decrease varied by diabetes status ($p=0.002$), with non-diabetics more likely to report decreased alcohol use within 1 week or 1 month. This pattern was not observed for appetite changes. Participants also reported fewer episodes of guilt with drinking and reduced binge episodes compared to before and after starting their medication. No association was found between time on medication and alcohol use change, magnitude of decreased drinking or overall satisfaction with the medication. In conclusion, GLP-1 medications may help reduce alcohol use and binge drinking, particularly among individuals without diabetes. Further research is needed to better understand the potential of these medications in addressing alcohol use disorder.

Biography

Josephine Yalovitser is a medical student at the University of Vermont Larner College of Medicine. She holds a degree in psychology and anthropology from Dartmouth College and has worked at Evolent Health, the American Red Cross, and the Department of Veterans Affairs. Ms. Yalovitser has more than 10 publications and presentations across fields including otolaryngology, primary care, neuromuscular disorders, and psychedelics, and is the author and illustrator of a forth coming series of children's books.

Sunwoo Choi[1,6], Ethan Liu[2,6*], Krishna Moorjani[3,6*], Abhay Murthy[4,6*], Ethan Liu*[2,6], Krishna Moorjani*[3,6], Abhay Murthy*[4,6], Arpit Rajkumar Ramani*[5,6]

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A multiscale systems biology framework integrating ODE-based kinetics and MD-derived structural affinities to model mBDNF–proBDNF-mediated bifurcation dynamics in CNS neurotrophin signaling

Brain-Derived Neurotrophic Factor (BDNF), a key member of the neurotrophin family, is implicated in the regulation of synaptic plasticity, neuronal differentiation, and long-term survival in the Central Nervous System (CNS). The dualistic signaling pathways mediated by the Mature form of BDNF (mBDNF) via TrkB receptors and the precursor form (proBDNF) via p75NTR introduce a dynamic molecular axis that governs a balance between neurogenesis and programmed cell death.

In this study, we developed a multi-computational framework incorporating a system of a multitude of Ordinary Differential Equations (ODEs) representing concentrations of proBDNF, BDNF, TrkB, p75NTR, tPA (cleavage enzyme), and the protein-receptor complexes. To parameterize the ODE system with biophysically accurate constants, Molecular Dynamics (MD) simulations were used to resolve energetically favorable conformations and receptor-binding affinities. Notably, these simulations enabled de novo structural elucidation of a previously uncharacterized isoform of proBDNF, increasing the biological relevance of the ODE model with heightened accuracy. A hill-type sigmoid function was then applied to the ODE system to create a nonlinear representation of the interaction between TrkB and p75 activation, translating directly to the topological rewiring of the neuronal model via modulation of edge weights for determination of overall neuronal death or survival.

This model provides insights towards emergent phenomena such as neurotrophin-dependent synaptic pruning, and it facilitates the identification of bifurcation thresholds in the proBDNF:mBDNF ratios that can signify early-stage neurodegeneration and can serve as biomarkers for various neurodegenerative diseases. The model also holds translational potential for therapeutic target discovery as well, and can be utilized to analyze the implications of different drugs on the neurotrophic ratio, hence providing further information on neurodegenerative states.

Biographies

Krishna-Moorhan studied Computational Neurobiology at Boston University in Boston, Massachusetts as part of the highly esteemed and selective Research in Science & Engineering (RISE) program. His team's work was completed under the guidance of Ph.D. student Karla Montejo at MIT Brain and Cognitive Sciences and postdoctoral researcher Dr. Shankar Ramachandran who earned his Ph.D. in Biological Sciences at the University of Illinois at Chicago.

Ethan Liu studied Computational Neurobiology at Boston University in Boston, Massachusetts as part of the highly esteemed and selective Research in Science & Engineering (RISE) program. His team's work was completed under the guidance of Ph.D. student Karla Montejo at MIT Brain and Cognitive Sciences, and postdoctoral researcher Dr. Ramachandran who earned his Ph.D. at the University of Illinois at Chicago.

Abhay Murthy studied Computational Neurobiology at Boston University in Boston, Massachusetts as part of the highly esteemed and selective Research in Science & Engineering (RISE) program. His team's work was completed under the guidance of Ph.D. student Karla (Ale) Montejo at MIT Brain and Cognitive Sciences, and postdoctoral researcher Shankar Ramachandran who earned his Ph.D. in Biological Sciences at the University of Illinois at Chicago.

Arpit Ramani is a 12th-grade student at Wheeler Magnet High School. For the past four years, he has conducted independent research on Alzheimer's disease drug development, creating computational pipelines to model and evaluate therapeutic candidates. He also conducts research at Emory University using statistical genetics to identify biomarkers for Alzheimer's disease. Arpit's most recent work was done through the BU RISE program, in which he expanded his research by applying neuronal modeling to study brain health. Arpit hopes that his current efforts in Alzheimer's disease research will serve as a foundation for his future pursuit of medicine and neurodegenerative drug development.

Madison Newell*, Arsula Rajesh

Embry-Riddle Aeronautical University, Daytona Beach, FL, USA

Cognitive-based emulation: Recreating the mind & human cognition through temporal space understanding

This project introduces Cognitive-Based Emulation (CBE), a new theoretical field that reframes trauma, cognition, and identity through symbolic systems and recursive feedback. CBE distinguishes biologically inherited traits from those formed by symbolic reinforcement, proposing that many personality disorders are not fixed but are reconfigurable via targeted symbolic intervention.

Drawing from neuroscience, psychology, literary theory, and physics, CBE is grounded in conservation principles and developed from first-principles reasoning rather than empirical precedence. It reinterprets psychoanalytic concepts—such as transference—within a feedback-based symbolic model and treats literary structures as generative, not just reflective, tools for cognitive reorganization. We justify this through our developed epistemic framework that informs one does not require empirical or expert justification, but instead recursive frameworks (based in math, logic, or philosophy) to prove the existence of a field, hypothesis, or concept.

By modeling cognition as an evolving symbolic system, CBE enables the development of AI frameworks that simulate not just logic, but emergent personality, creative reasoning, and affective response. Through an analogy to Feynman path integrals, the model allows symbolic "time-stepping" to reconstruct personality from initial conditions. Through this interdisciplinary justification empirical work and expertise is a consequence (not a requirement) to experimentally highlight or create a truly personality & logic integrated brain.

CBE ultimately offers a new paradigm in both therapeutic psychology and cognitive AI, positioning personality as symbolic, recursive, and redesignable.

Biography

Madison Newell has an academic background in physics and government, with a strong interest in interdisciplinary approaches that bridge science, technology, and policy. After graduating from Embry-Riddle Aeronautical University, she is developing theoretical frameworks focused on cognitive science and artificial intelligence. Her emerging work on Cognitive-Based Emulation (CBE), proposed in February during a humanities course, aims to integrate concepts from neuroscience, symbolic systems, and computational modeling to rethink personality and cognition. Though new to this specific field, Madison's expertise lies in interdisciplinary integration framed within physics.

Marta Kot*, Anna Pietraszewska, Wioletta Lech, Erkan Metin, Leonora Buzanska

Department of Stem Cell Bioengineering, Mossakowski Medical Research Institute, Polish Academy of Sciences, Pawinskiego 5 Str, 02-106 Warsaw, Poland.

Cell culture preconditioning before transplantation influences the inflammatory response of distant brain regions

Stroke is a significant cause of mortality and disability globally. It can disrupt the Blood-Brain Barrier (BBB), leading to neuroinflammation. Stem cell therapy is a fundamental part of regenerative medicine, enabling the repair or replacement of damaged tissues using living cells. Furthermore, the paracrine properties and immunomodulatory capabilities of mesenchymal stem cells play a crucial role in this therapeutic process.

This study aimed to evaluate the effects of the transplantation of human Wharton's jelly mesenchymal stem cells (WJ-MSCs) into the rat striatum on the hippocampus, a region distant from the transplant site, during the first 7 days after ischemic stroke. Cells were cultured under 21% (standard) or 5% (physiological) oxygen conditions and delivered within either a platelet lysate scaffold or in saline. In adult rats, ischemic stroke was induced following ouabain injection into the striatum. We evaluated the modulation of inflammatory and anti- inflammatory responses, as well as the integrity of the BBB in the rat hippocampus after the injury and following transplantation of human WJ-MSCs into the rat striatum. Quantitative real- time PCR (RT-PCR) and Western blot analyses were performed on the rat hippocampus.

WJ-MSCs cultured under 21% oxygen enhanced blood-brain barrier repair by upregulating tight junction proteins, but also promoted neuroinflammation. In contrast, WJ- MSCs preconditioned in physioxia stabilized BDNF signaling, reduced Galectin–3–linked neuroinflammation, and activated the ERK1/2-c-Fos pathway. Encapsulation in a scaffold helped the cells to mitigate the pro-inflammatory effects.

WJ-MSC culture preconditioning before transplantation plays a crucial role in shaping their therapeutic effects at sites distant from the graft location. Therefore, to use stem cells in translational medicine, it is essential to establish appropriate in vitro conditions for cell preconditioning, ensuring that the cells acquire the necessary properties to treat specific disorders and achieve the desired therapeutic effect.

Statutory Funds from MMRC PAS, FBW-022 and National Science Centre grant no.

2019/35/N/NZ5/03723 supported the study.

Biography

Marta Kot currently works at the Mossakowski Medical Research Institute of the Polish Academy of Sciences. Marta received an MSc in Microbiology (1999) and Biotechnology (2000) from Maria Curie-Skłodowska University in Lublin, Poland. Marta obtained her Ph.D. and habilitation in Medical Sciences from the Polish Academy of Sciences—the former in 2007 from the Institute of Pharmacology, and the latter in 2021 from the Mossakowski Medical Research Institute. Her research focuses on neuropharmacology.

Naomi Harsha*, James Raymick, Sumit Sarkar

Department of Biomedical Research, National Center for Toxicological Research, Jefferson, AR, United States

Gender and age effects on amyloid plaque deposition in a rat Alzheimer's disease model

Background: Alzheimer's Disease (AD) is a neurodegenerative disorder characterized by the accumulation of Amyloid Beta (Aβ) plaques and neurofibrillary tangles in the hippocampus and cerebral cortex of the brain. This may result in cognitive impairment, inflammation, and neurological damage to the brain. Understanding how age and sex affect the quantity of plaque can provide insight into AD pathogenesis. This study examines the progression of Aβ plaque deposition in male and female transgenic (AD model) and non-transgenic (control) rats using Congo Red Staining across different ages. The purpose of this study is to determine how age and sex influence plaque deposition and density in specific regions of the brain. Distribution and density in specific regions of the brain.

Methods: Fresh frozen rat brain sections (25 µm thick) were cut and collected in phosphate buffer saline solution from transgenic and non-transgenic male and female rats at 6, 16, and 20 months old. Congo Red, a dye that binds to β-pleated sheet structures found in amyloid plaques, was used to visualize the deposition of amyloid plaques in the brain. Fluorescence microscope was used to examine and document plaque distribution in rat brain sections, and quantitative analysis of plaque area and density was carried out using ImageJ software. Data was analyzed using Graph Pad Prism statistical software.

Results: In transgenic rats, plaque accumulation increased significantly in the hippocampus and cortex from ages 6 months to 20 months of age. Additionally, female transgenic rats exhibited greater plaque accumulation than males across most age groups. Conversely, non-transgenic rats showed little to no plaque deposition across all age and sex groups.

Conclusion: The study demonstrates that sex and age have a significant impact on Aβ plaque accumulation in transgenic rats. Female rats showed greater plaque than males at older ages, suggesting genetics may influence the progression and severity of alzheimer's disease. These findings highlight sex and age as important variables in alzheimer's research.

Biography

Naomi Harsha is a high school junior at Walnut Grove High School in Prosper, Texas. She is an active leader in school clubs and organizations and enjoys volunteering. She has conducted research under the mentorship of Dr. Sumit Sarkar, Ph.D., at the National Center for Toxicological Research, focusing on Alzheimer's Disease (AD) and amyloid plaque progression in the brain. Naomi hopes to learn more about neuroscience to deepen her understanding of neurodegenerative diseases and further contribute to AD research.

Nathan Chang
Branham High School, San Jose, CA, USA

A method of diagnosis: Variations in the connection of nodes in triple-network model due to tension

The triple network model—comprising the Salience Network (SN), Default Mode Network (DMN), and Central Executive Network (CEN)—provides a framework for understanding how anxiety alters brain connectivity. We investigated these network interactions using a previously published fMRI dataset (Yeshurun et al., 2017), in which anxiety was experimentally induced through narrative manipulation. Participants listened to Pretty Mouth and Green My Eyes with either an anxiety-inducing or neutral backstory, allowing us to examine functional connectivity at peak tension.

We hypothesized that heightened anxiety would lead to increased functional connectivity within and between the SN, DMN, and CEN, with the CEN acting as a bridge between emotional processing (DMN) and salience detection (SN). Our findings supported this hypothesis, revealing significantly greater network density in the anxiety group compared to the control group. Notably, connectivity between the SN and specific DMN regions increased, suggesting a more vigorous interplay between salience processing and self-referential thought under tension. Additionally, the CEN's role as a bridge between the SN and DMN may reflect increased cognitive engagement and attention allocation during emotionally charged moments.

These results have important implications for understanding anxiety-related neural mechanisms. Current anxiety diagnostics rely heavily on subjective self-reports, whereas brain imaging provides a more objective measure of neural activity. However, many fMRI studies use artificial stressors that may not accurately reflect real-life anxiety experiences. Our study demonstrates the potential of naturalistic stimuli, such as narratives, to elicit meaningful neural responses to anxiety. By using ecologically valid stimuli, we gain a more realistic understanding of how anxiety dynamically alters brain connectivity in real-world settings.

This research provides a foundation for developing diagnostic biomarkers based on functional connectivity patterns. By comparing these patterns in individuals with and without anxiety disorders, clinicians may refine diagnostic criteria and improve treatment monitoring. Furthermore, our findings suggest that interventions targeting network-specific disruptions—such as cognitive therapies aimed at modulating SN-DMN connectivity—could be personalized to different stages of anxiety disorders.

In conclusion, our study highlights how anxiety reshapes the functional connectivity of key brain networks, emphasizing the CEN's role in integrating emotional and attentional processes. Understanding these dynamic interactions may enhance diagnostic precision and inform targeted treatments, ultimately improving outcomes for individuals with anxiety disorders.

Biography

Nathan Chang is a junior at Branham High School in San Jose, CA, with a deep passion for neuroscience, particularly its ability to connect brain activity with real-world emotions and behaviors. His research interests include mental health, decision-making, and personalized treatments, focusing on how neural mechanisms shape human experiences. Nathan aims to apply neuroscience to develop evidence-based education, healthcare, and social equity solutions. By bridging scientific research with real-world applications, he hopes to drive innovations that enhance well-being, accessibility, and the broader understanding of brain science's societal impact.

Noah Lim*, Eileen K., Maria T

General Neurology, Neuro Youth Club, San Jose, CA, USA

The effects of sleep deprivation on memory recollection through visual and written representation

Teenagers today are sleeping less than past generations, largely due to the ongoing digital revolution as Seton and Fitzgerald discuss, “Technology is largely to blame for keeping people perpetually connected in the digital world which is in turn driven by changing social demands for immediacy as a form of intimacy” (Seton & Fitzgerald, 2021) In this era of connectivity, sleep is often seen as a waste of time. However, the lack of sleep can lead to mood changes and reduced academic performances.

The idea of sleep deprivation and its negative effects on performance and the brain has been widely investigated in episodic memory, as Newbury explains, “sleep deprivation before learning may be detrimental specifically for the encoding of hippocampal-dependent declarative memories,” (Newbury, 2021).

In the current study, we investigate the effects of sleep deprivation on memory for written contents such as stories, articles, journals and memory for visual representations of content, such as films, movies. In our effort to contrast memory for the two different modalities, we look at the brain as well as the behavioural performance of memory. Specifically, reading written texts utilize several cognitive areas in the brain, such as left fusiform gyrus and occipital lobe (Buchweitz, A., et al., 2009). Similarly, processing of visual content activates several brain regions, but the primary ones to note are the prefrontal cortex and inferotemporal cortex (Mandel, A., et al., 2014).

Successful retrieval of memory requires reactivation of brain regions initially involved in the processing of information (Rasch & Born, 2007). We study how sleep deprivation impacts this reactivation of the written vs. visual content processing regions.

Biography

Noah Lim is currently a sophomore at Valley Christian High School, and member of Neuro Youth Club since 2024 where he has demonstrated a keen interest in neuroscience and cognitive psychology. Noah has pursued group research project exploring the connection between sleep and memory recollection through visual and written representation. His commitment to scientific inquiry is complemented by active involvement in academic and volunteer work thru club involvement. Noah aspires to further his studies in neuroscience

Pablo García Cortina

Researcher and Journalist, M.A. in Image, Advertising and Corporate Identity, Camilo José Cela University, Madrid, Spain

Arbitrary criminalization through chemical equivalence: The misuse of GBL valuation as GHB in Spanish criminal law

This study critically examines the singular case of Gamma-Butyro Lactone (GBL) in Spain—a substance that was initially controlled in 2002, together with GHB and its salts, esters, and ethers, under the national schedule of psychotropic substances. In 2006, after strong pressure from the Spanish chemical industry and following consultation with affected sectors, GBL and all esters and ethers of GHB were expressly removed from the national controlled substances list. The main justification was to prevent severe competitive disadvantages for Spanish industry, since GBL remained widely used as a chemical solvent, had no established therapeutic value, and was not subject to international or European criminal scheduling. Since then, GBL has not been subject to any criminal or administrative scheduling, and its trade is governed only by general chemical and commercial regulations—not by any special regime for controlled substances.

Paradoxically, while this 2006 legal reform effectively protected the interests of the chemical industry— removing both administrative and criminal controls over GBL for industrial operators—this exclusion has not been mirrored in the judicial-penal arena. Spanish criminal courts and forensic experts have continued to treat GBL as if it were Gamma-Hydroxy Butyric acid (GHB), an internationally scheduled substance, justifying prosecutions under Article 368 of the Spanish Criminal Code. This legal fiction is operationalized through forensic valuations that equate GBL to GHB in both quantity and economic value, based on the well-established scientific fact that GBL is rapidly and completely converted to GHB in vivo. However, while this biochemical equivalence is undisputed, its legal application to justify criminal prosecution of GBL users—despite the substance's explicit exclusion from controlled drug schedules—raises serious concerns regarding the principle of legality and proportionality in criminal law.

The research combines doctrinal legal analysis with an empirical review of more than one hundred court decisions (2006–2025), showing that these prosecutions rely on arbitrary and inconsistent methods, sometimes based on outdated or repealed regulations. Statistical modeling demonstrates a greater likelihood of conviction when GBL appears in chemsex contexts or among LGTBIQ+ defendants, indicating a pattern of indirect discrimination and stigmatization. This effect is especially pronounced in urban areas and among men who have sex with men, where the criminalization of GBL intersects with broader patterns of social stigma, targeted policing, and barriers to health and harm reduction services. The Spanish experience thus reflects not only a legal anomaly, but also the reproduction of structural vulnerabilities for sexual minorities in the context of emerging drug trends.

At the international level, both the United Nations and the International Narcotics Control Board (INCB) have explicitly recommended that the scheduling of GBL be decided at the national level, as it is not subject to international control. Regulatory approaches thus vary widely: some countries, such as the United States, the United Kingdom, and Latvia, have chosen to criminalize GBL directly, while others have imposed only administrative restrictions or precursor controls, and a few have shifted positions over time. Notably, GBL is not included in any official European Union schedules—neither as a psychotropic substance nor as a listed chemical precursor—further underscoring the singularity of Spain's legal trajectory and the gap between industrial and criminal policy.

These findings demonstrate that such practices amount to de facto criminalization of a non-scheduled substance through the misuse of forensic interpretation, in direct contradiction to Spain's explicit legal framework and the principle of legality. The Spanish case illustrates how "emerging drug trends" can result not only from new psychoactive substances, but also from institutional inertia, selective enforcement, and the persistence of outdated legal fictions—ultimately frustrating the legislative intent and producing disproportionate and unjust outcomes for individuals.

Biography

Pablo García Cortina is a researcher, journalist, and communication specialist based in Madrid. He holds an M.A. in Image, Advertising and Corporate Identity from Camilo José Cela University. With experience in public sector communications, he has collaborated with national and international organizations on issues related to drug policy, LGTBIQ+ rights, and criminal justice. His work focuses on legal certainty, chemsex-related stigma, and the intersection of drug enforcement with human rights. In 2024, he presented a study on stigma and barriers to treatment access in Madrid at the Lisbon Addictions Conference. He is currently conducting an empirical and legal investigation into the criminalization of GBL in Spanish court.

Bagirova Qamarabonu
Central Asian University, Medical School Tashkent, Uzbekistan

Shared and distinct pathological mechanisms in Alzheimer's and Parkinson's diseases

Introduction: Alzheimer's Disease (AD) and Parkinson's Disease (PD) are the two most common neurodegenerative disorders. Both conditions are progressive, reduce quality of life, and represent a major burden for aging populations worldwide.

Objective: This review compares pathological mechanisms, risk factors, and clinical features of AD and PD.

Methods: Studies published between 2015 and 2024 were reviewed using PubMed and Google Scholar. Search terms included "alzheimer's disease," "parkinson's disease," "neurodegeneration," and "risk factors". Reviews, meta-analyses, and selected original studies were included. Special attention was given to abnormal protein aggregation, genetic predisposition, and lifestyle influences.

Results: Alzheimer's comes from β-amyloid plaques and tau tangles impairing neuronal communication, causing memory loss and confusion. Parkinson's hits dopamine-making cells in the substantia nigra and forms α-synuclein Lewy bodies, leading to tremors, stiffness, and slow movements. Both share issues like oxidative stress (oxidative stress), mitochondrial dysfunction, and some genetic risks. Staying active, eating well, and keeping your brain sharp might help lower risks. Better scans and tests are catching these early, but no cures yet.

Conclusion: AD messes with memory, PD with movement, but they've got some common roots. Knowing this helps us find ways to prevent or treat them. As future docs, this is big since more people are getting these as they age. Ongoing research and education are essential.

Keywords: Alzheimer's Disease, Parkinson's Disease, Neurodegeneration, Risk Factors, Prevention.

Biography

Qamarabonu Bagirova is a second-year medical student at the Central Asian University, Medical School, Tashkent, Uzbekistan. She is particularly interested in neurology and neurodegenerative diseases. Her motivation to study Alzheimer's disease comes from personal experience, as her grandmother suffered from this condition. This inspired her to explore research on Alzheimer's and Parkinson's diseases, focusing on their mechanisms and potential treatments. She actively participates in academic conferences and workshops to broaden her knowledge and gain international exposure. In the future, she aims to pursue a career in clinical neurology and medical research, contributing to the improvement of brain health.

Jagjot Singh, Ramanjot Kaur*

Department of Medicine, Government Medical College, Amritsar, Punjab, India

Eosinophilic granulomatosis with polyangiitis presenting as mononeuritis multiplex in a patient with longstanding asthma

Eosinophilic Granulomatosis with Polyangiitis (EGPA), previously known as Churg-Strauss Syndrome, is a rare systemic autoimmune vasculitis affecting small to medium-sized vessels. It is characterized by a triad of asthma, eosinophilia, and necrotizing vasculitis, and typically presents in individuals between the ages of 40 and 60. EGPA is a multisystem disorder that may involve the lungs, heart, skin, gastrointestinal tract, and peripheral nervous system. Neurological manifestations, particularly mononeuritis multiplex, are common and may significantly impair quality of life.

We present the case of a 59-year-old female with a 15-year history of bronchial asthma who developed paraesthesia and progressive weakness in the right upper and lower limbs, culminating in wrist and ankle drop. On examination, she demonstrated distal sensory deficits and motor weakness consistent with mononeuritis multiplex. No skin involvement or cranial nerve abnormalities were noted. Laboratory investigations revealed leukocytosis with marked eosinophilia (76.6%) and elevated inflammatory markers. Autoimmune screening was notable for positive p-ANCA, while ANA and RF were negative. Nerve conduction studies revealed a sensorimotor polyneuropathy with predominant axonal features. Sural nerve biopsy confirmed eosinophilic vasculitis, with fibrinoid necrosis and mononuclear infiltration around the vasa vasorum. Chest imaging revealed lower lobe consolidations and nodules, confirmed by HRCT.

The diagnosis of EGPA was established based on the constellation of bronchial asthma, peripheral eosinophilia, mononeuritis multiplex, p-ANCA positivity, and characteristic nerve biopsy findings. The patient was treated with pulse methylprednisolone followed by oral corticosteroids and cyclophosphamide. Neurological symptoms began to improve following immunosuppressive therapy.

This case underscores the importance of considering EGPA in patients with asthma who develop neurological symptoms, particularly mononeuritis multiplex. Early diagnosis using ACR/EULAR 2022 criteria and prompt initiation of immunosuppressive therapy can significantly reduce morbidity. The Five Factor Score (FFS) should guide treatment intensity, with cyclophosphamide recommended in patients with multi-organ involvement. This case highlights the role of detailed neurological assessment and tissue biopsy in establishing the diagnosis of EGPA, which may initially present with subtle yet disabling extrapulmonary features.

Biography

Ramanjot Kaur is a medical graduate and PCMS Rank 1 officer currently working as a Medical Officer in Punjab. She has completed USMLE Step 1 and Step 2 CK, and holds ECFMG certification. Her interests include neurology and internal medicine, with research experience focused on neurodegenerative disorders, autonomic dysfunction, and biomarkers in neurological disease. She has published work in cardiovascular medicine and is expanding her research in neurology. She has U.S. clinical experience through observerships and rotations. Ramanjot is dedicated to evidence-based medicine, clinical excellence, and contributing to research that improves patient care and outcomes.

Jagjot Singh, Ramanjot Kaur*, Pooja

Department of Medicine, Government Medical College, Amritsar, Punjab, India

A case of infantile GM1 gangliosidosis with recurrent infections and neurodegeneration

GM1 gangliosidosis is a rare lysosomal storage disorder inherited in an autosomal recessive pattern. It is caused by a deficiency of the enzyme beta-galactosidase, encoded by a gene on chromosome 3. The resulting enzymatic defect leads to pathological accumulation of GM1 gangliosides within lysosomes, predominantly affecting neural and visceral tissues. The infantile form is the most severe and typically manifests within the first six months of life, characterized by progressive neurodegeneration, hepatosplenomegaly, coarse facial features, hypotonia, and developmental regression.

We present a case of a 10-month-old male child who was developmentally normal until 8 months of age, after which he began to exhibit progressive loss of milestones across all domains. Ten days prior to presentation, he developed high-grade intermittent fever, followed by respiratory symptoms including cough, rhinorrhea, and noisy breathing. Subsequently, the child displayed altered sensorium and focal seizures, characterized by sudden jerky movements involving all four limbs without facial involvement or postictal confusion.

Birth history revealed delayed cry and prior respiratory distress at two months requiring hospitalization. Antenatal history was significant for three first-trimester abortions and oligohydramnios in the current pregnancy. Developmentally, the child had partial neck holding and roll-over milestones but failed to achieve crawling or unsupported sitting. Regression began at 8 months.

On examination, the child exhibited hypotonia, frog-leg posture, coarse facial features, extensive Mongolian spots, hepatosplenomegaly, and facial dysmorphism. Neurologically, the child had reduced tone and power in all limbs, with exaggerated deep tendon reflexes and bilateral extensor plantar responses. EEG showed generalized delta-theta slowing suggestive of diffuse cortical dysfunction. Fundoscopic evaluation revealed bilateral cherry-red spots, a classic finding in GM1 gangliosidosis.

This case highlights the diagnostic challenges and clinical spectrum of infantile GM1 gangliosidosis, emphasizing the importance of early recognition in infants presenting with neuroregression, seizures, and systemic involvement. Timely diagnosis is essential for genetic counseling and supportive management, as the condition remains progressive and currently has no definitive cure.

Biography

Ramanjot Kaur is a medical graduate and PCMS Rank 1 officer currently working as a Medical Officer in Punjab. She has completed USMLE Step 1 and Step 2 CK, and holds ECFMG certification. Her interests include neurology and internal medicine, with research experience focused on neurodegenerative disorders, autonomic dysfunction, and biomarkers in neurological disease. She has published work in cardiovascular medicine and is expanding her research in neurology. She has U.S. clinical experience through observerships and rotations. Ramanjot is dedicated to evidence-based medicine, clinical excellence, and contributing to research that improves patient care and outcomes.

Roshan Amurthur

Department of Science, The Harker School, San Jose, California, United States

Neorhythm: A neurocardiac electrophysiology based explainable EEG and ECG system for detection of neonatal seizures

Neonatal seizures go frequently undetected since an estimated 85% lack obvious clinical signs. This poses significant risk of severe neurological damage or mortality if not promptly diagnosed and treated. Existing technologies are complex and rely on expert interpretation, which is costly and inconsistent. Current neonatal seizure detection algorithms lack basis in seizure physiology, rendering them opaque to Neonatal Intensive Care Unit (NICU) physicians. This undermines clinician confidence and limits adoption in clinical practice. NeoRhythm, a novel seizure detection system is proposed. It is the first AI-driven system to integrate Electro Encephalo Graphic (ECG) data with Electro Encephalo Graphic (EEG) signals via a multimodal fusion Deep-Learning (DL) architecture. We hypothesize that integrating physiologically based multi-modal data within an explainable deep-learning framework yields enhanced seizure detection accuracy and transparent clinical insights. We employed four-step engineering methodology that begins with robust data preprocessing (filtering, segmentation, artifact removal), proceeds to deep-learning model training to address class imbalance, integrates explainable AI (XAI) to provide clinically interpretable justifications, and concludes with clinical protocol that centralizes signal acquisition and interpretability. Experimental results demonstrate that incorporation of ECG into EEG-based detection algorithms improves performance across benchmark models. Fusion architecture yields 94.9% sensitivity and 94.2% specificity, outperforming the current standard of care. Explainability features provide clinicians with transparent insights into physiology-based decision-making, building trust. Neurocardiac correlates provide confirmatory markers of seizure, augmenting deep-learning based models. NeoRhythm builds on existing vital-sign monitors and may assist resource-limited NICUs that lack on-site neurologists. NeoRhythm has the potential to improve neurological outcomes for newborns globally.

Biography

Roshan Amurthur is a junior at The Harker School with a strong interest in neuroscience. For the past four years, his research has explored both computational and circuit-level analysis of brain function and disorders, focusing on alcohol addiction, neuromodulation, and seizures. He co-founded his school's neuroscience club, where he enjoys teaching hundreds of middle and high school students about the brain. Outside of the lab, he is one of the top high school Lincoln-Douglas debaters in the country and enjoys blogging about the intersection of philosophy and cognitive science.

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The impact of different video features for long term memory

As the world is shifting more towards relying on technology and the internet, videos are being more commonly used for information intake. This study aims to identify the features of video that can improve content retention, which may contribute to the development of more effective learning materials for high school and undergraduate students. Our research aims to support the development of more effective learning materials for high school and undergraduate students by identifying the video features that impact content retention in memory. We focus on how feature types, such as video length, and the presence of subtitles, interact to influence memory retention and information intake in the long term and how hippocampus activity supports the effect of different video features on memory. Our methods include a total of 1000 high school and undergraduate students (mean age of 21) that will be split into 4 groups to undergo fMRI scans and behavioral testing. Overall, short videos and having captions would improve memory. However, the impact of adding captions would be greater in short than long videos. On the other hand, the hippocampus activity will be more active during longer videos because the hippocampus marks its memory with temporal conditions, using its time cells to organize and store the information. We concluded that students given short films including captions will have better test scores, but students given long films including captions have higher hippocampus levels. This study discovers that by adding captions and by segmenting the content into shorter parts can improve content retention, leading to development in the deliverance of educational content for students.

Biographies

Miss Seoyun is a rising sophomore at Archbishop Mitty who has joined the Neuroscience Club in her school since her freshman year. She pursues to look more into the impact of neuroscience in the status quo for minority groups. Recently, Seoyun has been interested in the impact of technology for information intake on the brains of teenagers. She has completed a group research project on this topic with Noelle Lim and Diane Kim in the summer of 2025. Seoyun hopes to further her knowledge in the brain through constant research, questioning, and getting constructive feedback from people deeper in this field of neuroscience.

Noelle Lim is currently a freshman at Valley Christian High School, and a member of Neuro Youth Club since 2024, where she has demonstrated a keen interest in neuroscience and cognitive psychology. Noelle has pursued a group research project exploring the impact of different video features on long-term memory. Her commitment to scientific inquiry is complemented by active involvement in academic and volunteer work through club involvement. Noelle aspires to further explore her studies in neuroscience.

Diane Kim is currently a sophomore at Westwood High School, and a member of Neuro Youth Club since freshman year. Diane has pursued a group research project exploring the impact of different video features on long-term memory during the summer of 2025. She aspires to further pursue her studies in neuroscience and medicine through contributing in volunteer work and research opportunities.

Shereen Tajalli* MD, Anjum Hashim MD

Children's Hospital of New Jersey at Newark Beth Israel Medical Center Pediatric Neurology, United States

Diagnostic yield of whole exome sequencing in pediatric neurology practice: A retrospective study

Background: In pediatric neurology practice, a significant number of patients present with neurological symptoms lacking a definitive etiological diagnosis. Many are given diagnoses such as global developmental delay, cerebral palsy, autism, unspecified epilepsy, intellectual impairment or remain as unidentified syndromes. This uncertainty can be challenging for both families and physicians. Despite extensive evaluations and targeted genetic testing, many remain undiagnosed. Whole Exome Sequencing (WES), a next-generation sequencing approach, offers a single-test method to identify a broad range of genetic disorders, though its clinical use is limited due to access and cost.

Methods: A retrospective observational cohort study was conducted in a single pediatric neurology outpatient clinic between 2023 and 2025. Patients between the ages of 0 to 21 years old with undiagnosed neurological conditions who had WES through Gene Dx, a clinical genetic testing company, during this timeframe were used in the study. The WES results were categorized as positive (a definitive diagnosis), negative, or Variants of Uncertain Significance (VUS).

Results: A total of 87 patients (38 male, 49 female) underwent WES. Of these, 23 (26.4%) received a definitive diagnosis, and 41 (47.1%) had VUS findings. The 6–10-year-old age group had the highest diagnostic yield. The majority of VUS results were found in the 0-5-year-old age group.

Conclusion: WES provided a definitive diagnosis in over a quarter of pediatric neurology patients with previously unexplained conditions and identified VUS in nearly half. These findings support the early integration of WES in pediatric neurology to improve diagnostic accuracy, inform management, and guide genetic counseling.

Biography

Dr. Shereen Tajalli received her BS from University of Central Florida in 2017 and her MD from St. George's University School of Medicine in 2023. She is currently a third year resident physician at Rutgers - Newark Beth Israel Medical Center/Children's Hospital of New Jersey. She is currently working with the Neurology department focusing on Neurogenetics in the pediatric population.

Dr. Shradha Kakde[1*] MBBS, Meghnath Kakde[2] MBBS

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Stroke- diagnosis and treatment methods

Background: Stroke is a major global health burden, representing a leading cause of death and long-term disability. Rapid diagnosis and effective intervention are critical to improving patient outcomes.

Objective: This abstract aims to provide an updated overview of current diagnostic tools and treatment modalities for stroke, emphasizing recent advances and evidence-based practices.

Methods and Findings: Early identification of stroke type is essential and primarily relies on neuroimaging modalities such as non-contrast CT for rapid triage and MRI for detailed evaluation. Advanced techniques like CT perfusion and diffusion-weighted imaging now aid in extending treatment windows for select patients. For acute ischemic stroke, intravenous thrombolysis with Tissue Plasminogen Activator (tPA) remains the first-line therapy within 4.5 hours, while endovascular thrombectomy has revolutionized care for large vessel occlusions, with treatment windows extending up to 24 hours in eligible cases. Hemorrhagic stroke management focuses on blood pressure control, reversal of coagulopathy, and neurosurgical intervention when necessary. Secondary prevention strategies—including antithrombotic therapy, statins, and lifestyle modifications—are essential to reduce recurrence risk.

Conclusion: Recent advancements in diagnostic imaging and reperfusion therapies have significantly improved stroke outcomes. Continued innovation, timely intervention, and multidisciplinary coordination remain essential for optimizing stroke care.

Keywords: Stroke, Thrombolysis, Thrombectomy, Neuroimaging, Ischemic Stroke, Hemorrhagic Stroke, Secondary Prevention.

Biography

Dr. Shradha Kakde studied at MGM medical college, Aurangabad, India. She has completed her MBBS. She graduated in 2023 and has done one year internship at the same institute. During her internship she has worked at various departments including worked in neurology out patient department along with Dr. Anand Soni (MBBS, MD, DM(Neurology).

Sophia Wong

Arnold O. Beckman High School, Irvine, California, USA

Blindneuralgen: Synthesizing EEG signals given visual cues to artificially implant sight to the blind

This research introduces Blind Neural Gen, a brain-inspired deep learning framework that synthesizes electroencephalogram (EEG) signals from visual inputs, bridging artificial and biological vision systems. Inspired by neurophysiological processes, the architecture incorporates neural mechanisms found in the visual cortex through a hybrid design combining convolutional neural networks with Gated Recurrent Units (GRUs) to process both spatial and temporal dependencies in visual information processing. The framework's key innovation is applying contrastive learning to EEG representation, ensuring that visually similar inputs produce corresponding neural activity patterns in feature space. This approach reflects how the brain forms categorical neural representations while maintaining distinct patterns across visual classes. Additionally, the implementation of Instance Norm normalization preserves individual signal characteristics while stabilizing training, mimicking the brain's ability to normalize neural responses. Trained on paired image-EEG data from 23 participants viewing character images, the model (10.1 million parameters) outperformed traditional CNN baselines with a Root Mean Square Error of 83.445 and Peak Signal-to-Noise Ratio of 14.987. Most notably, performance improvements were highest in occipital electrodes E5 and E10 (33.6% and 75.7% respectively), precisely corresponding to the brain's primary visual processing regions. Analysis of synthesized EEG signals reveals that rather than replicating exact responses to specific images, Blind Neural Gen generates patterns representing visual categories – effectively simulating how the brain forms conceptual neural representations. This research advances our understanding of neural encoding principles while demonstrating how artificial systems can implement brain-inspired computational strategies, contributing to the foundation for future non-invasive neural interfaces.

Biography

Sophia Wong, 16, is a junior at Arnold O. Beckman High School. Although this research was independently conducted, she works on language and Parkinson's disease with Professor Dr. Oehrn of UC Davis. She is interested in acquiring the support needed to make non-invasive EEG stimulation possible one day.

Sunwoo Choi
Westwood High School, United States

The effects of differing cognitive stimulation on adolescent working memory and neural activity

Current developments in online content have led to widespread debates on the neural effects of cognitive stimulation through short-form content such as TikTok and Instagram Reels, particularly among the adolescent age group. To better understand the dynamics behind short-form content and teenage cognitive function, this study gathered data on working memory performance before and after cognitive stimuli through an N-back working memory task. We gathered data after 15 minutes of aerobic exercise, an activity that has been previously associated with improved cognitive function, and after 15 minutes of short-form content scrolling to compare the effects between these two cognitive stimuli. We also utilized a Muse 2 electroencephalogram (EEG) headband during the N-back task to record the neural activity of the adolescents in the prefrontal cortex during these tests. It was seen that both the 15minute aerobic exercise and short-form content scrolling activities increased working memory significantly. Interestingly, the amount of working memory increase before and after each activity was proportional by individual, showcased by the positive linear correlation between working memory increase after aerobic exercise and working memory increase after social media. The EEG data revealed no significant changes after the social media condition, but significant increases in the delta and theta EEG band levels after the aerobic exercise. Although this research did not directly measure dopamine, the patterns in working memory and neural activity demonstrated through the results display strong similarities to previous studies on dopamine. These findings encourage future research investigating the roles of specific neurochemicals such as Dopamine behind cognitive stimuli such as short-form content and aerobic exercise.

Biography

Sunwoo Choi is currently a Senior at Westwood High School in Austin, Texas. He became fascinated in Neuroscience after experiences with various people with neurological conditions. Over the years, he has grown particularly interested in the fields of dopamine systems and computational psychiatry.

Sanat Kumar Dash[1], Mohammad Asikur Rahman[2], Bofang Yi[2], Yanyan Li[2], Gretchen J. Mahler[1], Tao Zhang[2*]

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Physiologically based pharmacokinetic model to predict lofexidine level during lactation

Lofexidine (LUCEMYRA®) is currently the only FDA-approved treatment for opioid withdrawal that is both non-opioid and non-addictive, making it especially important for use in pregnant and postpartum women amid the opioid crisis. However, limited information exists regarding its transfer into breast milk. This study seeks to address that gap by combining three complementary models: (1) a microfluidic blood-milk barrier chip, (2) a static transwell system using human mammary epithelial cells, and (3) a Physiologically Based Pharmaco Kinetic (PBPK) lactation model. These tools aim to predict lofexidine secretion into breast milk and support safe treatment strategies for both mothers and infants.

A novel mammary epithelium-on-a-chip system was created using microfluidics, and a static transwell model was constructed using a non-cancerous human mammary epithelial cell line capable of forming tight junctions. Both models were applied to assess lofexidine permeability across the mammary cell barrier. The unbound fraction of lofexidine in breast milk was measured via a Rapid Equilibrium Dialysis (RED) assay. Eleven methods were employed to estimate the Milk-to-Plasma (M/P) ratio, including a previously established In Vitro to In Vivo Extrapolation (IVIVE) method and other established techniques. A whole-body PBPK model using the Simcyp® v22 platform was also developed to simulate the time-course of lofexidine concentrations in plasma and breast milk.

A subline of MCF10A human mammary epithelial cells (MCF10A-TJ) was identified and cultured under optimized conditions to achieve Trans-Epithelial Electrical Resistance (TEER) values exceeding 1000 $\Omega \cdot cm^2$, indicating tight barrier formation. The chip-based model exhibited slightly higher permeability for lofexidine than the static transwell model. M/P ratio predictions varied from 0.40 to 15.88; four approaches yielded values below 1, while seven produced estimates above 1—primarily in the range of 1.35 to 5.48. The PBPK model predicted an M/P ratio of around 2.0, consistent with the mid-range of these estimates.

Together, these integrated experimental and computational approaches offer a comprehensive framework for predicting lofexidine transfer into breast milk. The findings suggest a tendency for higher concentrations in milk than in plasma, highlighting potential safety implications. Further clinical pharmacokinetic studies in lactating women are warranted to confirm these predictions.

Biography

Tao Zhang received his PhD in pharmaceutical sciences from the University of Michigan in 2010. He then worked in the Drug Metabolism and Pharmacokinetics (DMPK) Department at Novartis Pharmaceuticals in New Jersey from 2010 to 2014, before joining the faculty at Husson University. Currently, he serves as an Associate Professor and Director of the Pharmacokinetics and Bioanalysis Facility at the Department of Pharmaceutical Sciences at SUNY-Binghamton University. His research focuses on assessing drug safety and efficacy by In Vitro and In Vivo Extrapolation (IVIVE) approaches. He has authored over 50 peer-reviewed publications, which have been cited over 4,000 times.

Timothy Choo*, Kendall Lee, David Shin

Carlmont High School, United States

How musical tempo affects pre-grade school childrens' episodic memory

Introduction: Musical tempo has not been definitively proven to alter memory such as storage and retrieval (Proverbio et al. 2015; Cournoyer Lemaire et al. 2019; Kwon et al. 2022). Prior studies have shown little research toward the effect of differing music tempos on the storage and retrieval of memories. Few studies have tested the effects of music tempo on young children; this study follows research done on children aged 3-5 to expand knowledge about this correlation. Understanding the relationship of music tempo on memory processes could provide more resources in healthcare and education, and improve the overall wellbeing of young children.

Methods

Participants: 20 children, 10 male and 10 female, were recruited from around the globe. The youngest of them was 60 months old, and the oldest was 71 months old. Their average age was 4. All participants were ensured to have no previous exposure to learning music, or to have any visible preference to specific types of music. These specifications have basis in previous literature (Kwon Y-S, Lee J and Lee SS 2022).

Procedure: Prior to the study, the participants were randomly assigned to one of the five conditions. The conditions were as follows: slow tempo music in storage, slow tempo music in retrieval, fast tempo music in storage, fast tempo music in retrieval, no music during either. All participants were orally given a list of 10 simple words and told to memorize them. Then they were given a rest period of 30 minutes. During this rest period, music was played for the groups with slow/fast music during storage. After the rest, subjects were given a memory test. The test consisted of 40 words, 10 of which were part of the previous list. While the test was administered, the same slow/fast music was played for those in the music during retrieval groups.

Tools Utilized: Electroencephalography was used to track attention, specifically alpha waves (8-12 Hz) (Kwon Y-S, Lee J and Lee SS 2022). We commission a new musical piece with no vocals from a classical composer in order to ensure no prior bias (Halpern, A. R., & Müllensiefen, D. (2008), Proverbio et al.,).

Discussion: This study was designed to show the effects of music tempo on memory storage and retrieval of young children. Our hypothesis stated that fast music during retrieval would yield the highest score of correct memories, which is supported by the results. The significant increase of correct scores when fast music was played during retrieval/recall indicates that fast-paced music has a positive effect on memory. This group of participants had an average of score of 67.5% correct answers out of 40 questions. However, the study additionally proved that

music during memory tasks can increase memory capacity. The group without music on either storage or retrieval showed the lowest scores with an average result of 42.5%. These results could help significantly to improve education practices to enhance learning. With fast-paced music, educators can engage their students during lessons and assessments to enhance memory encoding and retrieval. Further research could explore the specific music types and genres that increase successful recall. The results from this study align with the research done by other studies such as Cournoyer Lemaire et al. (2019) and Ferreri et al. (2015), both of which researched the effect of background music on memory on adults.

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Combining repetitive transcranial stimulation with transcranial direct current stimulation for psychiatric conditions: A scoping review

Background: Repetitive Transcranial Magnetic Stimulation (rTMS) and Transcranial Direct Current Stimulation (tDCS) have been thoroughly explored in the treatment of various psychiatric disorders and neuropsychiatric symptoms. There is an increasing number of studies exploring the combination of both modalities to treat mental illness. In this scoping review, we summarize all existing studies that have combined rTMS and tDCS to remedy psychiatric disorders and symptoms.

Methods: We comprehensively searched four databases (Embase, PsycINFO, MEDLINE and CENTRAL) in addition to grey literature. Studies necessarily consisted of at least one patient who received both rTMS and tDCS for a psychiatric condition or symptom. Multiple validated tools were used for appraisal of quality and risk of bias.

Results: Fourteen studies were reviewed, which related to unipolar depression (five), bipolar disorder (two), obsessive-compulsive disorder (two), chronic insomnia (two), Alzheimer's Disease (one), stress (one) and depressive and anxiety symptoms (one). Three Randomized Controlled Trials (RCTs) on unipolar depression generally showcased superior depressive

symptom improvement, response and remission rates compared to rTMS or tDCS alone. One RCT on chronic insomnia noted greater improvements in sleep quality/efficiency and depressive symptoms compared to monotherapy. The frequency of side effects with combined treatment was comparable to monotherapy. The reviewed studies noted no significant adverse events.

Conclusion: The current body of evidence highlights a likely superior efficacy of combining rTMS and tDCS for unipolar depression compared to either modality alone. Future studies can extend combined treatment to other psychiatric conditions using protocols that have shown previous success in monotherapy studies.

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Trends in prevalence, treatment patterns, and barriers to care among U.S. adults with co-occurring mental disorders and substance use disorders: Findings from 2021-2023 NSDUH

Background: Adults with co-occurring mental disorders and Substance Use Disorders (SUDs) experience poor health outcomes and face substantial barriers to treatment. Evaluating national trends in prevalence, treatment engagement, and barriers can inform pharmacist-led interventions.

Research Question: What are the trends in prevalence, treatment patterns, and perceived barriers among U.S. adults with co-occurring mental disorders and SUDs from 2021 to 2023?

Study Design: Repeated cross-sectional analysis using nationally representative survey data.

Methods: Data were obtained from the 2021–2023 National Survey on Drug Use and Health (NSDUH). Adults meeting criteria for both Any Mental Illness (AMI) or Serious Mental Illness (SMI) and SUD were included. Weighted prevalence estimates were calculated annually. Treatment patterns were categorized into four mutually exclusive groups: both SUD and mental health treatment, mental health only, SUD only, or neither. Among those with unmet treatment needs, weighted proportions of endorsed barriers were reported. Z-tests were used to assess changes across years.

Results: The prevalence of co-occurring AMI and SUD increased slightly from 7.8% (2021) to 8.4% (2023), while SMI and SUD remained stable at 2.6%. In 2023, 53.2% of adults with co-occurring conditions received no treatment, 34.7% received mental health treatment only, 3.4% SUD treatment only, and just 8.7% received both. Among those untreated, leading barriers included: treatment not a priority (85.0% for SUD, 80.8% for mental illness), stigma (71.8%, 67.9%), affordability (61.3%, 66.5%), access issues (64.2%, 72.3%), and lack of readiness (70.5%, 49.8%).

Conclusions: From 2021 to 2023, treatment engagement among adults with co-occurring mental disorders and SUDs remained critically low. Addressing modifiable barriers—particularly stigma, cost, and access—is essential. Clinical pharmacists are uniquely positioned to deliver targeted interventions, improve treatment linkage, and support integrated care.

Biography

Dr. Lin Yiwei graduated from Capital Medical University with a Clinical Medicine degree in 2016. She earned her Master's degree in 2019 from China Medical University's Psychiatry Center, focusing on psychopharmacology research under Professor Li Xiaobai. She completed her doctorate at Peking University Sixth Hospital in 2022, specializing in bipolar disorder and schizophrenia research. Since 2022, she has worked in child mental health at Beijing Anding Hospital, Capital Medical University, and has published 5 SCI papers.

BOOK OF ABSTRACTS

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