



14th Mind-Body Interface International Symposium PNIRSA Asia-Pacific Symposium

第十四屆身心介面國際研討會 | 智創未來·數位科技:身心醫療新時代

Minds & Megabytes:

Optimizing Mental Health in the Digital Age



20
24

Oct. 19-21
Taichung, Taiwan

Contents

CHAIRMAN'S MESSAGE.....	2
COMMITTEES	3
ACKNOWLEDGMENT.....	5
PROGRAMME OVERVIEW	6
PROGRAMME DETAILS.....	7
PK1. PLENARY KEYNOTE SPEECH	13
S11. DIGITAL PSYCHIATRY.....	14
Lunch Symposium (AI-associated solution session)	18
PK2. PLENARY KEYNOTE SPEECH	21
S12. Recent Advances for Better Sleep & Mood.....	22
WK1. 青年身心健康與心理治療 Youth Mental Health and Psychotherapy	26
S21. 5-min Poster Blitz & Overseas Travel Award Session.....	28
S22. AI Application in Psychiatry	30
WK2. 身與心的滋養：大腦健康整合照護實務工作坊 Nourishing the Mind & Body: An integrative Approach to the Practice of Mental Wellness	33
S23. Nutritional Psychiatry	36
PK3. PLENARY KEYNOTE SPEECH	39
S24. PNIRASia-Pacific Session: Emerging Tech in Mental Health	40
WK3. 科技賦能身心健康時代 The New Era of Digital Mental Wellness.....	43
AWARD CEREMONY & CLOSING REMARKS.....	45
LIST OF POSTER PRESENTATIONS	46
OCTOBER 19. WELCOME DINNER.....	49
OCTOBER 21. MBI TECHNICAL TOUR.....	49

CHAIRMAN'S MESSAGE



Dear colleagues and friends,

It is my great pleasure to announce that the 14th Mind-Body Interface (MBI) International Symposium is to be held physically in Taichung, as well as going virtual on Oct. 19-21, 2024. Organized annually by the Mind-Body Interface Research Center ([MBI-Lab](#)) at China Medical University Hospital, we are delighted to co-chair this 3-day international conference with the PNIRASia-Pacific Symposium for seven consecutive years in a row. The main theme of this year's symposium is "***Minds & Megabytes: Optimizing Mental Health in the Digital Age***". The MBI International Symposium has been vigorously promoting a global agenda of translational neuroscience by encouraging interdisciplinary research, and integrating biomedical discovery and development focused on patients, to provide better care and service in the field of mental health. With the introduction of Chat-GPT and other AI-driven technologies, health care becomes more accessible to the general public, and will definitely revolutionize the way we manage physical and mental health.

This year, we will focus on artificial intelligence (AI) in medicine, telehealth, digital health, and how innovative wearable technology is used in healthcare. The utilization of AI in healthcare systems is crucial and imperative due to its ability to enhance precision and accuracy while reducing the time required for various aspects of the system. However, there might be several limitations with AI utilization, thus, we hope this year's symposium will help address the potential role of AI in current and future healthcare.

The symposium will also feature other important topics, including immunology, metabolic processes and molecular science, psychopharmacology, psychology, addiction science, and the brain-gut-microbe axis as well as biological processes and factors underlying the links between diet, nutrition, and mental health from the perspective of Western medicine and traditional Chinese medicine (TCM). Furthermore, there will be a strong focus on the use of brave approach and big data, neuroimaging, personalized medicine, lifestyle intervention, health promotion and disease management, and epidemiology and population studies in brain disorders.

The MBI Symposium is insightful and inspiring with active discussion among participants. With the great Taiwanese hospitality and richness of cultural and natural heritage of Formosa, the 14th MBI Symposium is guaranteed to be another wonderful event as it has been in the previous years. We look forward to greeting our biomedical researchers, psychiatrists, and other health professionals worldwide in Taichung.

Kuan-Pin Su, MD, Ph.D.

Chairman, 14th MBI International Symposium

Professor, College of Medicine, China Medical University, Taichung, Taiwan

Director, Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan

Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan

Founding President (2016-2022), Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Associate Editor, Journal of Brain, Behavior, and Immunity

COMMITTEES

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Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan
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President of International Society for Nutritional Psychiatry Research (ISNPR)
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ACKNOWLEDGEMENT

Organizers



台灣營養精神醫學研究學會
Taiwanese Society for Nutritional Psychiatry Research



Co-organizers



SPONSOR



PROGRAMME OVERVIEW

Day 1 (Oct. 19, 2024)			Day 2 (Oct. 20, 2024)			Day 3 (Oct. 21, 2024)
Stanford Lecture Hall	Room 203		Stanford Lecture Hall	Room 203		Mihu Village
0800-0840	Registration		0800-0900	Registration		One-day MBI Technical Tour
0840-0900	Opening Ceremony					
0900-0950	PK1. Plenary Keynote Prof. Akane Sano, Ph.D.		0900-1030	S22. AI Application in Psychiatry Chair: Jane Pei-Chen Chang, MD, Ph.D. Prof. Albert Yang, MD, Ph.D. Chih-Sung Liang, MD, Ph.D. Hsin-An Chang, MD Prof. Taishiro Kishimoto, MD, Ph.D.	0900-1010 S21. 5-min Poster Blitz Awards & Oversea Travel Awards (OTA) session	
0950-1010	Coffee Break				1010-1030 coffee break	
1010-1200	S11. Digital Psychiatry Chair: Paola Pedrelli, Ph.D & Prof. David Mischoulon, MD, Ph.D (Co-chair) Prof. David Mischoulon, MD, Ph.D. Paola Pedrelli, Ph.D. Aderonke Pederson, MD Kate H. Bentley, Ph.D. Richard T. Liu, Ph.D.		1030-1050	Coffee Break		
			1050-1210	S23. Nutritional Psychiatry Chair: Prof. Chin-Kun Wang, Ph.D. & Wolfgang Marx, Ph.D. (Co-chair) Prof. Julia Rucklidge, Ph.D. Annabel Mueller-Sierlin, Ph.D. Prof. Chin-Kun Wang, Ph.D.	1030-1210 WK2. 身與心的滋養工作坊 Nourishing the Mind & Body: An integrative Approach to the Practice of Mental Wellness (Workshop in Mandarin) 張麗芝老師 黃茵齡營養師 許麗娟老師 陳雪均老師	
1200-1335	Lunch break	Lunch symposium: AI-assisted Solution Session (SPONSORED) Chair: Prof. Kuan-Pin Su, MD, Ph.D. Yi-Hung Liu, Ph.D. Che-Sheng Chu, MD	1210-1340	Lunch break		
1335-1425	PK2. Plenary Keynote Prof. Chi-Chun Lee, Ph.D.		1340-1430	PK3. Plenary Keynote Prof. Carmine Pariante, Ph.D.		
1425-1455	Coffee Break		1430-1500	Coffee Break		
1455-1700	S12. Recent Advances for Better Sleep & Mood Chair: Prof. Tae Kim, MD, Ph.D. Prof. Tae Kim, MD, Ph.D. Paolo Cassano, MD, Ph.D. Agung Julius, Ph.D. Weronika Michalak, DPHI, MBA Annamaria Cattaneo, Ph.D.	1530-1710 WK1. 青年身心健康與心理治療工作坊 Youth Mental Health and Psychotherapy (Workshop in Mandarin) 魏秀年心理師 洪敬倫醫師 黃筑蓋執行長 蘇冠寰教授	1500-1640	S24. PNIRASia-Pacific Session: Emerging Tech in Mental Health Chair: Prof. Keith W. Kelley, Ph.D. & Melissa A. Rosenkranz, Ph.D. (Co-chair) Caroline GL Cao, Ph.D. Margaret Thairu, Ph.D. Phan Ngoc Minh Thu, BSc. Cyrus Su Hui Ho, MBBS, Ph.D.	1500-1640 WK3. 科技賦能身心健康時代 The New Era of Digital Mental Wellness (Workshop in Mandarin) 林煜軒醫師 梁志頌醫師 張俊鴻醫師 陳泓勳助理教授	
1830-2030	Welcome Dinner		1640-1700	Award Ceremony & Closing Remark		

PROGRAMME DETAILS

Saturday, October 19

MAIN CONFERENCE

Conference Venue: Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan

Lunch Symposium venue: Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan

Welcome Dinner: Quan Duck House: No. 403, Shizheng North 2nd Rd, Xitun District, Taichung City, 407

0800-0840	Registration
0840-0900	Opening Ceremony
0900-0950	PK1. Plenary Keynote Jane Pei-Chen Chang, Taiwan (Chair) Akane Sano, Japan Human-Centered Multimodal AI for Mental Health and Wellbeing
0950-1010	Coffee Break
1010-1200	S11. Digital Psychiatry Paola Pedrelli, United States (Chair) (V) Feasibility Results from the Sensor-Based Characterization of Depression (SENSCODE) Study David Mischoulon, United States (Co-chair) (V) Digital Psychiatry: Is it Ready for Prime Time? Aderonke Pederson, United States (V) Design of a Mobile Mental Health Stigma Reducing Intervention Towards Optimization of Care for Black Adults with Depression and Anxiety Kate H. Bentley, United States (V) Results from a Pilot Micro-Randomized Trial of a Just-in-Time Intervention for Suicide Risk Reduction Richard T. Liu, United States (V) An Ecological Momentary Assessment Study of Social Stressors and Suicidal Ideation in an Adolescent Clinical Sample
1200-1335	Lunch Break
1200-1335	Lunch symposium. AI-Assisted Solution Session (sponsored by Hipposcreen Neurotech Corp) Kuan-Pin Su, Taiwan (Chair) Yi-Hung Liu, Taiwan Development of AI-Assisted EEG Solution Assessment (SEA) System Che-Sheng Chu, Taiwan Application of SEA System in Clinical Practice
1335-1425	PK2. Plenary Keynote Kuan-Pin Su, Taiwan (Chair) Chi-Chun Lee, Taiwan Trustworthy Technology Toward Computing Human's States and Traits
1425-1455	Coffee Break
1455-1700	S12. Recent Advances for Better Sleep & Mood Tae Kim, South Korea (Chair) How Can Transcranial Near-Infrared Photobiomodulation Enhance Sleep? Paolo Cassano, United States (V) Photobiomodulation and Sleep: Wellness or Medical Applications?

Agung Julius, United States (V)

Signal Processing and Optimization Algorithms in Circadian Rhythms and Sleep Research

Weronika Michaluk, United States

Revolutionizing Neurological Treatment Through Software as a Medical Device

Annamaria Cattaneo, Italy

Immunometabolic Biological Features and Mobile-Based App Mapping Clinical Domains
in Depression: Implications for Personalized Interventions

1830-2030 Welcome Dinner

PK: Plenary Keynote, S: Session, V: Virtual

EDUCATIONAL WORKSHOPS

Workshop Venue: Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

1530-1710

張倍禎主任 (Chair)

WK1. 青年身心健康與心理治療工作坊 Youth Mental Health and Psychotherapy

蘇冠寶, Taiwan

心靈滿足的快樂台灣：結合人工智能和科技創新的兒青精神健康

洪敬倫, Taiwan

生成式 AI: 青少年身心健康的神救援？

黃筑葢, Taiwan

創新青少年心理健康：AI 語音情緒辨識的早期介入

魏秀年, Taiwan

青少年的內在世界與網絡世界的交融

WK: Workshop

Sunday, October 20

MAIN CONFERENCE

Conference Venue: Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

5 min Poster Blitz & OTA Venue: Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan

0800-0900	Registration
0900-1010	S21. 5-min Poster Blitz & OTA Cheng-Hao Tu, Taiwan Mu-Chun Lin, Taiwan Increased Risk of Suicide Attempt in Patients with Atopic Dermatitis: A Nationwide Population-Based Cohort Study. Yindee Boontra, Thailand Unlocking Cognitive Clarity: A Pilot RCT on Integrative Electroacupuncture for Depressive Patients with Cognitive Complaints. Tzu-Han Chen, Taiwan Effectiveness of Mental Health Chatbots in Depression and Anxiety for Adolescents and Young Adults: A Meta-analysis of Randomized Controlled Trials. Fumiya Nakai, Japan Clinical Task-Based Dementia Detection Using Wearable EEG. Ayesha Zafar Iqbal, Pakistan Psychosocial Well-Being of Adolescents during the Recovery Phase of the COVID-19 Pandemic in Taiwan. Suet-Kei Wu, Malaysia Effect of Omega-3 Polyunsaturated Fatty Acids on Depressive Symptoms in Patients with Major Depressive Disorder with and without Overweight/Obesity: Preliminary Results of a Double-Blind, Placebo-Controlled, Randomized Clinical Trial. Overseas Travel Awardees (OTA) Sofiia Lahutina, Germany Digitalized Secondary Prevention of Stress-Related States Among War Victims in Ukraine Wee Jian Chin, Malaysia Development of a Machine Learning Model for Schizophrenia Diagnosis Using Brain Transcriptomics. Elisa Mombelli, Italy The Effect of a Probiotic Formulation on Modulating Peripheral Inflammation and Bacterial-Derived Metabolite Levels in Alzheimer's Disease Patients
0900-1030	S22. AI Application in Psychiatry Jane Pei-Chen Chang, Taiwan (Chair) Albert Yang, Taiwan Unlocking the Potential – Exploring the Role of AI in Mental Health Chih-Sung Liang, Taiwan Comparing the Performance of ChatGPT GPT-4, Bard, and Llama-2 in the Taiwan Psychiatric Licensing Examination and Differential Diagnosis with Multi-Center Psychiatrists Hsin-An Chang, Taiwan Diagnosing and Treating Depression with AI and Machine Learning Taishiro Kishimoto, Japan Developing a Software as a Medical Device (SaMD) for Psychiatric Disorders

1030-1050	Coffee Break
1050-1210	<p>S23. Nutritional psychiatry Chin-Kun Wang, Taiwan (Chair) Wolfgang Marx, Australia (Co-chair) (V) Julia Rucklidge, New Zealand (V) From Womb to World: The Role of Micronutrients in Supporting Maternal and Infant Mental Health. Annabel Mueller-Stierlin, Germany (V) Role of Nutrition Professionals Working in Mental Health Settings Chin-Kun Wang, Taiwan The Effect of Betel Quid Chewing on Neuronal Response and Potential Contributing Natural Materials.</p>
1210-1340	Lunch Break
1340-1430	<p>PK3. Plenary Keynote Kuan-Pin Su, Taiwan (Chair) Carmine Pariante, United Kingdom (V) Depression and Inflammation: A New Perspective on A Classic Story</p>
1430-1500	Coffee Break
1500-1640	<p>S24. PNIRASia-Pacific Session: Emerging Tech in Mental Health Keith W. Kelley, United States (Chair) Melissa A. Rosenkranz, United States (Co-Chair) (V) Caroline GL Cao, United States Empathy Training Using XR and AI Technologies: A Human Factors Perspective Margaret Thairu, United States Behavior, Biology, and Well-being: Investigating Changes in the Gut Microbiome in Response to App-Based Well-Being Training Huong Thi Thanh Ha, Vietnam Assessing the Feasibility of Cognitive Intervention via Brain Train Cognitive Gaming Application for Mild Cognitive Impairment Patients Cyrus Su Hui Ho, Singapore Interpretable Deep Learning Model for Major Depressive Disorder Assessment Using Functional Near-Infrared Spectroscopy</p>
1640-1700	Award Ceremony & Closing Remark

PK: Plenary Keynote; **S:** Session; **WK:** Workshop; **PNIRS:** Psychoneuroimmunology Research Society **V:** Virtual

EDUCATIONAL WORKSHOPS

Workshop Venue: Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan

1030-1210

蘇冠賓教授、林煜軒醫師 (Chair)

WK2. 身與心的滋養工作坊 Nourishing the Mind & Body: An Integrative Approach to the Practice of Mental Wellness

賀茵懿, Taiwan

從營養的角度談心理韌性

張蕙芝, Taiwan

由內而外的療愈之道：瑜伽在身心健康照護的應用

陳雪均, Taiwan

創傷與意象體現：身體取向榮格心理分析

許儷絹, Taiwan

從體現經驗的觀點來看身體與心理健康的關係

1500-1640

蘇冠賓教授、林煜軒醫師 (Chair)

WK3. 科技賦能身心健康時代 The New Era of Digital Mental Wellness

林煜軒, Taiwan

從手機的數位足跡探索具有臨床價值的「數位生物指標」

梁志頌, Taiwan

大型語言模型在學術寫作中的應用：以論文摘要生成為例

張俊鴻, Taiwan

如何用 AI 導入臨床和研究工作

陳泓勳, Taiwan

生物節律與智慧手機數據：人工智慧在工作心理活動與睡眠模式研究中的應用

WK: Workshop

PROGRAMME DETAILS

October 19, 2024

Opening Ceremony

Time: 08:40-09:00

Venue: Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Opening Remark by the Symposium Chairman

Kuan-Pin Su, M.D., Ph.D.

*Professor, College of Medicine, China Medical University, Taichung, Taiwan
Director, Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan
Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan
Founding President (2016-2022), Taiwanese Society for Nutritional Psychiatry Research (TSNPR)*

Opening Remark by Honorary Guest

Chen, Lian Yu MD, Ph.D.

Deputy Director General, National Health Insurance Administration, Ministry of Health and Welfare

PK1. PLENARY KEYNOTE SPEECH

TIME 09:00-09:50, Sat, Oct. 19, 2024
VENUE Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Human-Centered Multimodal AI for Mental Health and Wellbeing

Moderator: Jane Pei-Chen Chang, MD, Ph.D.

Assistant Professor, College of Medicine, China Medical University, Taiwan

Chief, Child Psychiatry Division, Department of Psychiatry, China Medical University Hospital, Taiwan

Deputy Director, Mind-Body Interface Research Centre, China Medical University Hospital, Taiwan

President, Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Akane Sano, Ph.D.

Assistant Professor at Rice University, Department of Electrical Computer Engineering, Computer Science, and Bioengineering.

Summary

Sensors and computing systems facilitate non-disruptive monitoring of human daily life behaviors and responses and enable real-time interventions. Combining diverse and multimodal measurements, such as clinical and remote sensing data, has demonstrated potential in predicting and managing mental health. However, challenges related to data collection, modeling, feedback, and deployment still remain. In this talk, I will address these challenges and showcase progress and future directions for measuring, predicting, and supporting mental health and wellbeing.

Specifically, I will highlight developing robust and fair inference models using unlabeled and multimodal data, the potential of leveraging social graph networks, and the development of adaptive and diverse sensing and interpretable feedback systems.

S11. Digital Psychiatry

TIME	10:10-12:00, Sat, Oct. 19, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Digital Interventions in Psychiatric Disorders

Chair: Paola Pedrelli, Ph.D.

*Associate Professor, Harvard Medical School;
Massachusetts General Hospital*

Co-Chair: David Mischoulon, MD, Ph.D.

*Director, Depression Clinical and Research Program, Massachusetts General Hospital, Boston, MA, USA;
Joyce R Tedlow Professor of Psychiatry, Harvard Medical School, Boston, MA, USA*

Summary

The session will explore different modalities employed in the digital realm for the management of mood disorders and psychiatric illness in general. Dr David Mischoulon will present a short overview and commentary about the potential benefits and liabilities that may result from increased digital technology application in psychiatry. Dr Paola Pedrelli will present feasibility results from the Sensor-Based Characterization of Depression (SENSCODE) study, which employs machine learning and artificial intelligence to digitally phenotype depression using various devices, including wearable wrist sensors and smartphones. Dr Aderonke Pederson will present on user-centered design results for the development of a mobile mental health app that leverages storytelling and lived experience to address medical mistrust and reduce mental illness stigma for underserved communities. Dr. Kate Bentley will present the results from a recent micro-randomized trial for digital just-in-time interventions for suicide risk reduction during the post-hospitalization period. Dr Richard Liu will present a study of social stressors and suicidal ideation in an adolescent clinical sample, using ecological momentary assessment.

TIME: 10:20-10:40

Digital Psychiatry: Is it Ready for Prime Time?

David Mischoulon, MD, Ph.D.

*Director, Depression Clinical and Research Program, Massachusetts General Hospital
Joyce R. Tedlow Professor of Psychiatry, Harvard Medical School*

The rapidly growing digital technologies such as wearable devices, interfaces with smartphones, artificial intelligence (AI), and apps specifically for mental health issues have been making significant inroads with regard to diagnosis and treatment of mental illness. In an environment where increased demand for mental health far outweighs clinician supply, these technologies could increase access to care, by accelerating diagnosis and treatment selection, and even bypassing clinicians altogether when none are readily available. Nonetheless, these promising technologies, have also raised concerns about a number of ramifications. For example, subjectivity is important in how we diagnose and assess patients, and digital technologies might be too reductive, depicting psychiatric disorders as a sum of symptoms and physiologic findings. Likewise, focus on objective data from monitors and clinical questionnaires may reduce discussion about topics unrelated to clinical symptoms per se, but equally important for an understanding of the patient. Finally, the Hawthorne effect might result in devices “putting pressure” on the patient to feel better, and paradoxically worsening symptoms. We envision these technologies as a complement to clinical judgment, not a replacement for it or for the critical doctor-patient relationship. Wearables and related technologies are not ready to be used as a main criterion for clinical evaluation, but may help clinician diagnosis, and guide treatment selection in a more personalized way, e.g., by accelerating the selection of the optimal pharmacotherapy for a particular patient and eliminating many potentially ineffective treatment trials.

TIME: 10:40-11:00

Feasibility Results from the Sensor-Based Characterization of Depression (SENSCODE) Study

Paola Pedrelli, Ph.D.

*Associate Professor of Psychology, Department of Psychiatry, Harvard Medical School, USA
Ph.D. Investigator Clinical, Psychiatry, Mass General Research Institute, Massachusetts General Hospital, USA*

Background: Major Depressive Disorder (MDD) is a prevalent psychiatric condition, impacting approximately 21 million adults in the United States during their lifetime. Monitoring depression is critical for timely treatment delivery, yet conventional methods impose burdens on both healthcare providers and patients, challenging long-term sustainability. Recent advancements in computer science allow for continuous, sensor-based monitoring of biological and behavioral indices (e.g., sleep quality, activity level, heart rate variability) to estimate depression presence and severity. However, existing algorithms require further improvement before implementation. This study aims to develop a machine-learning model using data from wristband sensors and mobile devices to assess depression severity.

Method: Participants diagnosed with MDD were asked to install a tracking app, wear wristband sensors daily, complete surveys, and undergo weekly clinician assessments over 12 weeks. Sixty-two participants completed the study, with four more expected by the conference.

Results: Participants wore wristbands for an average of 75% of the 84-day maximum, recording 16.9 hours of sensor data daily with a 77% compliance rate. They submitted 88% of daily surveys and completed 98% of weekly assessments. Machine learning models demonstrated strong performance (Normalized Mean Absolute Error < 0.10), identifying 33 key features from 528 sensor-derived ones. Electrodermal activity (EDA), heart rate, motion, and location signals were most influential. Depression severity correlated with circadian rhythms of EDA and heart rate.

Conclusion: Preliminary findings suggest smartphone and wrist sensor monitoring of MDD patients is feasible, offering potential breakthroughs in personalized care and depression management.

TIME: 11:00-11:20

Design of a Mobile Mental Health Stigma Reducing Intervention towards Optimization of Care for Black Adults with Depression and Anxiety

Aderonke Pederson, MD, Ph.D.

*Assistant Professor of Psychiatry, Harvard Medical School, Boston, MA
Vice Chair, Massachusetts General Institutional Review Board (IRB)*

Background: Major depressive and anxiety disorders contribute to mortality and morbidity. Stigma refers to negative attitudes or beliefs about mental illness, or negative behaviors toward persons with mental illness (PWMI), and is a fundamental cause of health inequities. Contact interventions are premised on the idea that positive and voluntary contact with PWMI can reduce mental illness stigma. Interventions to reduce stigma among Black adults remain understudied, and the role of medical mistrust is rarely examined. User centered design (UCD) is a methodology that gives voice to end-users in the design of mobile health technology.

Method: The authors conducted iterative user centered design cycles using a prototype feedback model. Using low fidelity prototypes and mock-ups with participants, short video clips and images with narratives of illness and recovery were shared. The intervention was refined into a final prototype for a clinical trial. We incorporated feedback from end-user participants, a diverse community advisory board, experts in the field, and the software developer to finalize the intervention prototype.

Results: We reached saturation in themes and feedback with elicitation interviews (qualitative methods) and lab testing activities, completing 23 key informant interviews (n=13). Using a grounded theory inductive approach, key themes include accessibility and affordability; optimal length of video - 4-6 minutes; focus on end-users; representation of diverse experiences; integration of the app into daily routines; and benefits of rewards/gamification.

Conclusion: The intervention has public health benefit and may be implemented in both clinical and non-clinical settings towards optimization of health service engagement.

TIME: 11:20-11:40

Results from a Pilot Micro-Randomized Trial of a Just-in-Time Intervention for Suicide Risk Reduction

Kate H. Bentley, Ph.D.

*Assistant Professor, Department of Psychiatry, Harvard Medical School;
Director, Suicide Prevention Research Program, Center for Precision Psychiatry, Massachusetts General Hospital*

Background: There is currently a deficit of scalable, effective interventions that prevent suicide during the highest-risk time: the weeks after inpatient psychiatric hospitalization. Using coping strategies to mitigate suicidal crises can prevent suicidal behavior. However, 60% of patients who develop a safety plan (i.e., a stepwise list of coping strategies for suicidal crises) in the hospital do not use it after discharge. This presents an opportunity to optimize coping strategy use when it is most needed. Leveraging mobile devices to promote in-the-moment coping strategy use through a just-in-time adaptive intervention (JITAI) may address this need. Our aim is to use a micro-randomized trial (MRT) design to evaluate the effects of automated, smartphone-based coping strategy recommendations sent during periods of elevated suicidal thoughts.

Method: Seventy-five (N=75) adults hospitalized for suicide risk were enrolled in our recent MRT. Of these, 37 participants were randomized (to just-in-time intervention vs. no intervention) at least once based on their endorsement of elevated suicide urge or intent on brief, momentary smartphone-based surveys.

Results: Interim results show that the likelihood of using a coping strategy was significantly higher following just-in-time intervention (vs. none). Intensity of suicidal intent following an intervention was also significantly lower when compared to no intervention. Presented results will include exploratory analyses comparing the effects of general versus personalized recommendations and contextual moderators.

Conclusion: Given the urgent need for scalable, effective interventions to reduce suicide risk over short, high-risk periods, such as after psychiatric hospitalization, studies that provide foundational guidance for JITAIs are crucial.

TIME: 11:40- 12:00

An Ecological Momentary Assessment Study of Social Stressors and Suicidal Ideation in an Adolescent Clinical Sample

Richard T. Liu, Ph.D.

Associate Professor, Harvard Medical School;

Director of Suicide Research, Division of Child and Adolescent Psychiatry, Massachusetts General Hospital

Background: Suicide is a leading cause of death among youth. Until recently, however, there has been a paucity of research on proximal predictors of suicide-related outcomes. This is important because knowledge of such predictors could inform prevention efforts with at-risk individuals. Recent technological advances provide a unique opportunity to address this need. The current study leverages one such innovation, ecological momentary assessment (EMA), to evaluate proximal predictors of suicidal outcomes as they occur in real-world settings. Within this context, life stressors are a particularly promising candidate for studying proximal risk for suicidal thoughts insofar as proximal risk factors tend to be state-sensitive or temporally delimited in nature. Social stressors may be particularly relevant in that they have been found in the empirical literature to be particularly pathogenic in relation to multiple forms of psychopathology, including suicidal thoughts and behaviors.

Method: The current study therefore evaluated two possible relationships between social stressors and suicidal thoughts: (1) stress exposure (i.e., social stressors precipitate suicidal thoughts), and (2) stress generation (i.e., suicidal thoughts temporally precede the occurrence of social stressors). Support for both hypotheses would implicate stress generation as a mechanism underlying recurrent suicidal thoughts, and therefore may explain chronic suicidal thoughts in individuals who experience them.

Results: In a sample of adolescent psychiatric inpatients (n=51) who completed EMA surveys over a 28-day period, we found partial support for the study hypotheses.

Conclusion: Social stressors were found prospectively to predict active suicidal thoughts, but no support was found for the stress generation hypothesis.

Lunch Symposium

TIME	12:00-13:00, Sat, Oct. 19, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

AI-assisted Solution Session

Chair: Kuan-Pin Su, MD, Ph.D.

Professor, College of Medicine, China Medical University, Taichung, Taiwan

Director, Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan

Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan

Founding President (2016-2022), Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Associate Editor, Journal of Brain, Behavior, and Immunity

Summary

AI technology is revolutionizing our lives, and its impact continues to be disruptive and innovative. In healthcare, AI applications are rapidly expanding, from accelerating drug development to enhancing the accuracy and speed of image-based diagnostics and streamlining healthcare management (such as electronic health records). Brainwave (EEG) technology is poised to become a hot topic for AI applications in promoting mental health. The Stress EEG Assessment (SEA) System represents a significant milestone: it's the first Taiwan FDA-approved Software as a Medical Device (SaMD) to assist in diagnosing Depression. By analyzing 90-second brainwave signals, the SEA System provides a quantifiable SEA Index, indicating the likelihood of Depression. Importantly, the system enables objective screening even in patients who may not recognize their condition and only report physical symptoms. During the presentation, Dr. Liu will delve into the technical aspects of developing diagnostic aids for depression and potentially other conditions. Meanwhile, Dr. Chu will share how the SEA System is currently used in clinical practice to enhance patient insight and treatment adherence.

TIME: 12:20-12:40

Development of an AI-assisted EEG Solution Assessment (SEA) System

Yi-Hung Liu, Ph.D.

Professor, Institute of Electrical and Control Engineering, National Yang-Ming Chiao Tung University

Major depressive disorder (MDD) is a global healthcare issue and one of the leading causes of disability. Machine learning combined with non-invasive electroencephalography (EEG) has recently been shown to have the potential to diagnose MDD.

We collected resting-state EEG data from 400 participants across four medical centers and tested classification performance of four common EEG features. Various methods were used to determine the optimal subset and improve classification. The current results suggest that the coherence-based connectivity is a more reliable feature for achieving high and generalizable MDD detection performance in real-life clinical practice.

TIME: 12:40-13:00

Application of SEA System in Clinical Practice

Che-Sheng Chu, MD

Attending Physician, Division of Geriatric Psychiatry, Department of Psychiatry, Kaohsiung Veterans General Hospital (KVGH); Secretary General, Taiwanese Society of Geriatric Psychiatry (TSGP)

While the prevalence rate of depression in Taiwan is not as high as in Western countries, the issue remains under-diagnosed and undertreated (treatment rate 60% in US vs. 27% in TW). Research indicates that untreated depression significantly increases the risk of dementia. Therefore, enhancing depression diagnosis is crucial, especially in an aging society like Taiwan. EEG (electroencephalogram) is widely used for brain evaluation and serves as a valuable indicator for predicting depression. The SEA System developed could be a very useful tool in improving the diagnosis of Depression. Cases will be shared how this system is used in clinical settings to enhance patient insight and treatment adherence.



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宏智生醫科技股份有限公司

HippoScreen Neurotech Corp



關於我們 About Us



宏智生醫科技是由仁寶電腦投資陽明交大劉益宏教授研究團隊及技術，於2019年共同成立的新創公司。本公司以腦波信號處理及人工智慧技術為核心，開發腦健康相關的輔助診斷及評估的醫療服務。其自主開發的腦波儀已通過台美FDA審查並獲得醫療器材許可證，成為國內第一家醫療等級的腦波儀製造商。

HippoScreen Neurotech Corp is a startup company established in 2019 by Compal Computer's direct investment in the research team and technology of Professor Yi-Hung Liu. The company uses brainwave signal processing and artificial intelligence technology as its core to develop medical products for the diagnosis and evaluation related to brain health. Its self-developed electroencephalograph has obtained FDA/TFDA approval.

憂可視 腦波壓力評估系統

Stress EEG Assessment (SEA) System



系統介紹

System Introduction

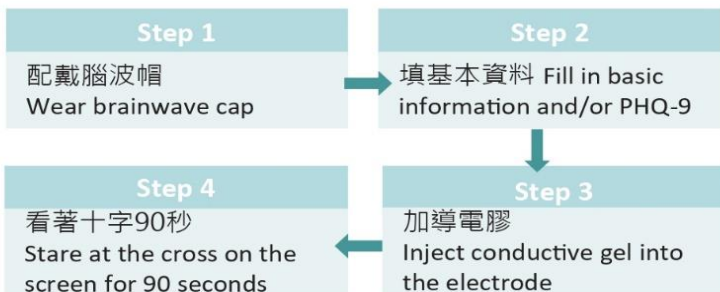
宏智生醫委託國內三大醫院收集腦波數據，開發出「憂可視腦波壓力評估系統」，包含負責訊號收集與處理的腦波儀、流程控制的使用者圖形介面、雲端分析的AI演算法，透過紀錄90秒腦波訊號並加以分析，提供客觀、量化的壓力評估指標 (SEA Index: 1~10)。只要15分鐘完成檢測立即看報告，是心理健康篩檢及臨床上的AI得力助手。已於2023年取得衛福部軟體醫材許可證。目前用於全台20家以上醫療院所，也提供於企業員工輔助方案(EAP)。

Stress EEG Assessment (SEA) System includes an EEG amplifier for data collection and signal processing, a GUI for test process control, and an AI algorithm for data analysis. Developed using depression EEG data collected through collaboration with three major medical centers in Taiwan, it achieves 84% accuracy, and the research result has been published in *Biosensors*. It records 90-second brainwave signals to analyze with AI algorithm and generates the SEA Index (1-10) indicating the probability of Depression, is an ideal choice for objective screening in mental health facilitation. SEA has obtained TFDA clearance as Software as Medical Device (2023). It's now used in over 20 hospitals and clinics in Taiwan, also used in enterprises as Employee Assistance Programs.



使用流程

How It Works



※ The whole process takes only 15-20 minutes, and reports are generated in real-time



PK2. PLENARY KEYNOTE SPEECH

TIME	13:35-14:25, Sat, Oct. 19, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Trustworthy Technology Toward Computing Human's States and Traits

Moderator: Kuan-Pin Su, MD, Ph.D.

Professor, College of Medicine, China Medical University, Taichung, Taiwan

Director, Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan

Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan

Founding President (2016-2022), Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Associate Editor, Journal of Brain, Behavior, and Immunity

Chi-Chun Lee, Ph.D.

Professor of Electrical Engineering, National Tsing Hua University (NTHU);

Founder, Hippocree Neurotech Corp. (HNC)

Summary

Imagine humans as complex dynamical systems: systems that are characterized by multiple interacting layers of hidden states (e.g., internal processes involving functions of cognition, perception, production, emotion, and social interaction) generating multimodal measurable signals (speech and language, physiology, gestures, facial expressions, etc.). This abstraction of humans has sparked research efforts in developing AI-based methods for deriving human-centered analytics. Moreover, abstraction has already positioned several cross-cutting interdisciplinary research fields, e.g., affective computing, social signal processing, and behavioral signal processing. The set of problems that human-centered computing faces is essentially that of identifying the hidden attributes, traits, and interaction patterns of the system which reflects in the various realizations of signal and data measured and collected, uncovering through novel signal processing and machine learning on large quantity of heterogeneous data. In the AI era, as many of these technologies start to mature, the trustworthy components become not only critical but also regulated. In this work, we will share our recent steps toward realizing trustworthy technologies in the current paradigm of learning-based algorithms for computing human internal states and traits.

S12. Recent Advances for Better Sleep & Mood

TIME	14:55-17:00, Sat, Oct. 19, 2024
VENUE	Stanford Lecture Hall, 2 nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Recent Advances in Electro-Digital Approaches for Better Sleep and Mood

Chair: Tae Kim, MD, Ph.D.

Associate Professor, Translational Neuroscience Laboratory, Gwangju Institute of Science and Technology, Korea

Summary

Sleep and mood are fundamentally interconnected, exerting reciprocal influences that profoundly affect mental health. This symposium addresses the urgent need for pioneering electroceutical medicine and digital therapeutic interventions in this area, acknowledging the vast potential these approaches offer for enhancing therapeutic outcomes. Electroceutical medicine, which involves using hardware devices to modulate the body's nervous system, has shown promise in treating a variety of conditions that affect mood and sleep. Similarly, digital therapeutics—software-driven evidence-based interventions—have emerged as vital tools in managing and improving patient health in a personalized manner.

By incorporating innovative photobiomodulation techniques, which use light as a therapeutic tool to improve cellular function and health, alongside advanced digital health tools and sophisticated mathematical models, this session is set to reveal novel avenues for tailored medical treatment and enhanced patient care. The convergence of electroceutical approaches and digital therapeutics in sleep and mood disorders offers new insights into their complex interactions and potential therapeutic strategies. These advancements are crucial for the development of effective, personalized treatment protocols that can adapt to the unique biological and psychological profiles of each patient.

TIME: 15:05-15:25

How Can Transcranial Near-Infrared Photobiomodulation Enhance Sleep?

Tae Kim, MD, Ph.D.

Associate Professor, Translational Neuroscience Laboratory, Gwangju Institute of Science and Technology, Korea

Introduction: Adenosine is a well-established sleep-promoting factor. Near-infrared (NIR) transcranial photobiomodulation (PBM) has been shown to facilitate ATP synthesis, and the increased ATP can be broken down to adenosine in the extracellular space. However, no study has yet investigated the effects of transcranial PBM on sleep and adenosine levels. This study hypothesizes that NIR transcranial PBM can increase sleep by elevating adenosine levels in the brain.

Methods: BL6/C57 mice were used as the animal model. A fiberoptic cannula was placed on the surface of the skull and fixed with dental cement. The mice underwent a 3-hour PBM session starting at Zeitgeber time 0, followed by a 3-hour post-PBM period, during which EEG recordings were taken. Microdialysis was employed to measure adenosine levels, and cytochrome c oxidase enzyme assays were performed to assess metabolic changes.

Results: NREM sleep duration increased significantly, although NREM bout length was shortened during the stimulation period, which was moved to 3 hours before the beginning of the light period. During the subsequent light period, NREM bout length normalized. Overall, adenosine levels increased by 4.4%, and cytochrome c oxidase activity was elevated by approximately 50%.

Discussion and Conclusion: The findings suggest that NREM sleep can be increased by tPBM. The timing of stimulation appears crucial, with the optimal period being just before sleep onset. Further investigation into gene expression changes is warranted to elucidate the molecular mechanisms beyond adenosine modulation.

TIME: 15:25-15:45

Photobiomodulation and Sleep: Wellness or Medical Applications?

Paolo Cassano, MD, Ph.D.

Associate Professor, Department of Psychiatry, Massachusetts General Hospital/Harvard Medical School

Background: Device-based treatments have existed in psychiatry for decades, but are usually operated by clinicians and require multiple office visits. Near-infrared transcranial photobiomodulation (tPBM) is a safe neurostimulation modality with potential antidepressant and hypnotic effects. We investigated the feasibility and efficacy of adjunctive tPBM treatment, self-administered by a wearable headband.

Methods: We randomized 48 outpatients with major depressive disorder (MDD) into tPBM or sham with 1:1 ratio. All participants were advised to receive the device-based intervention for at least 20 minutes daily at their preferred time and place for 8 weeks. The compliance and adverse events were monitored throughout the trial. The Hamilton Depression Rating Scale (HAM-D), Beck's Depression Inventory (BDI) and Pittsburgh Sleep Quality Index (PSQI) were used to evaluate the symptoms from baseline until week-12.

Results: Participants reported this self-administered intervention well-tolerated. Treatment compliance was equally good between various group-comparisons, and the adverse effects were minimal and transient. Post-treatment, the HAM-D and BDI scores of patients in both tPBM group and sham group significantly decreased compared to baseline, with no between-group difference. However, a significant PSQI score reduction was only found in tPBM group from week-2 onward compared with baseline, with significant between-group difference lasting until week-12 ($F_{1,46}=6.16$, $p=0.017$).

Limitations: This smaller sample size and short treatment and follow-up durations.

Conclusions: Self-administered wearable tPBM appears to be a feasible and well-tolerated in MDD patients. The low-level dosimetry appeared insufficient to produce an antidepressant effect but effective in improving sleep quality. Further studies should investigate different dosimetry and intervention time.

TIME: 15:45-16:05

Signal Processing and Optimization Algorithms in Circadian Rhythms and Sleep Research

Agung Julius, Ph.D.

Professor of Electrical, Computer, and Systems Engineering;

Associate Dean of Research and Graduate Studies, School of Engineering, Rensselaer Polytechnic Institute.

Circadian rhythms are 24-hour periodic natural cycles in biological processes that result from evolutionary adaptation to the terrestrial day/night cycle. These rhythms, observed in the sleep-wake cycle, core body temperature, and a host of hormonal production cycles, are regulated by the circadian clock in the suprachiasmatic nucleus (SCN) region in the brain. Disruptions in the circadian system have been found to have numerous short- and long-term effects, ranging from low productivity and digestive issues to increased risk of diabetes and cancers. The sleep process in humans is very tightly connected to the circadian rhythms. The sleep drive, for example, is known to be modulated by the circadian clock. Sleep is very important and also tied to neurocognitive performance; the lack of or mistiming of sleep has been empirically linked to the degeneration of neurocognitive performance.

The importance of the circadian rhythms has led to a large interest in regulating or maintaining them using external cues, such as lighting, and optimal scheduling of sleep. However, direct measurements of the circadian clock state are hard to obtain and impractical for engineering applications. Instead, researchers look to use indirect markers such as skin temperature, heart rates, and actigraphy signals, all of which can be practically collected using wearable devices, in circadian state estimation.

This presentation covers two broad topics: (1) the optimization and optimal control problems in circadian rhythms and sleep regulation, and (2) signal processing and machine learning algorithms that enable the use of biometric signals in (1).

TIME: 16:05-16:25

Revolutionizing Neurological Treatment Through Software as a Medical Device

Weronika Michaluk, DPH, MBA

Software as a Medical Device Practice Lead

The rapid advancement of Software as a Medical Device (SaMD) has the potential to transform the landscape of neurological treatment, offering innovative solutions that can lead to personalized and more effective care. This panel session, titled "Revolutionising Neurological Treatment Through Software as a Medical Device," will explore the integration of cutting-edge technologies within neurology, highlighting both the current applications and the promising future of SaMD.

Weronika Michaluk will discuss the role of artificial intelligence and machine learning algorithms in diagnosing, managing, and treating neurological disorders. She will delve into case studies where SaMD has been effectively utilised to enhance decision-making processes, optimise treatment protocols, and monitor patient outcomes in real-time. Additionally, the session will address the regulatory challenges and ethical considerations inherent in the deployment of software-based interventions in clinical settings.

Key topics include the impact of SaMD on the accessibility and quality of neurological care, the potential for these technologies to reduce healthcare disparities, and future innovations that could further revolutionise treatment modalities. The panel will also consider the implications of data security and patient privacy, emphasising the importance of designing secure systems that protect sensitive patient information.

TIME: 16:25-16:45

Immunometabolic Biological Features and Mobile-Based App Mapping Clinical Domains in Depression: Implications for Personalized Interventions

Annamaria Cattaneo, Ph.D.

Assistant Professor of Pharmacological and Biomolecular Sciences, University of Milan, Italy

Head of the Biological Psychiatry Laboratory, IRCCS Institute, Fatebenefratelli Centre, Brescia, Italy

It is well known that one-third of depressed patients do not respond to two or more antidepressant treatments and the majority have a chronic or intermittent disease course, experience recurrent relapses, or develop comorbidities, such as metabolic disorders. The biological underpinnings are multifaceted, complex, and not yet fully understood and we currently lack early biomarkers for a better and earlier diagnosis, and biomarkers that can predict and monitor the efficacy of interventions. I will discuss from both clinical and preclinical perspectives, the role of inflammation, hormones, and metabolism as biological systems that could be involved in different pathological domains and targeted differentially by personalized interventions. At preclinical level I will also show data coming from the Prenatal Stress Model, where we have shown that both adolescent and adult vulnerable (for sociability and anhedonia) but not resilient animals, have a pro-inflammatory status both in the brain (hippocampus and cortex) and in the periphery (liver) and how this is also associated with a specific taxa composition in the gut. A similar dysregulated immune-metabolic profile is also observed in adult PNS vulnerable animals, suggesting the persistence of these biological features in association with the vulnerable phenotype. I will also show immune metabolic data from clinical cohorts of controls characterized for childhood trauma, and depressed patients. For example, we have demonstrated the presence of altered levels of inflammatory and metabolic mediators in depressed patients as compared to controls (e.g. for inflammation: +22% for IL-6, +20% for IL-1b, and +18% of MIF, all $p < 0.05$; e.g. for metabolism +25% of insulin, +32% of leptin), with an effect that is more pronounced in those that do not respond to pharmacological interventions. Immune-metabolic dysfunctions are characterizing depressive symptoms also in the context of pregnancy. I will present data, within the PRESeNT Project, on dysregulations in immune metabolic parameters in pregnant women with depressive symptoms and in those at high risk to develop depression in pregnancy or postpartum. I will also discuss how different digital tools, including a smart phone-based App could be helpful for i) an early detection of symptoms associated with the development of depression in women already at high risk, ii) in a more vigilant monitoring of the depressive symptomatology during pregnancy and/or postpartum, and iii) in boosting resilience in pregnant women through the existence of specific App tools. Overall, this talk will present clinically relevant research to improve i) our knowledge in the biological mechanisms associated with depression, also considering different pathological domains, and also the clinical practice, with interventions prescribed in a personalized perspective and with the introduction of device that could be helpful for both patients and clinicians as they allow a continuous monitoring of individuals and therefore prompt interventions when needed.

WK1. 青年身心健康與心理治療 Youth Mental Health and Psychotherapy

TIME 15:30-17:10, Sat, Oct. 19, 2024

VENUE Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan

召集人：張倍禎醫師

中國醫藥大學附設醫院兒童青少年精神科主任

中國醫藥大學醫學系助理教授

臺灣營養精神醫學研究學會理事長

TIME: 15:40- 16:00

心靈滿足的快樂台灣：結合人工智能和科技創新的兒青精神健康

蘇冠賓

台南市立安南醫院(中國醫藥大學經營)副院長

中國醫藥大學生物醫學研究所教授

台灣營養精神醫學研究學會主席

身心介面研究中心主持人

摘要：全世界心理健康的危機，可以從各國日漸嚴重的青少年自殺和精神疾病問題中看出端倪，台灣常見身心疾患在二十年內增為兩倍，應全面性思考強調物質指標成長而犧牲精神健康的嚴肅議題。自殺是年輕人死亡之主因，青少年是憂鬱症的好發族群，病程長，影響學習、社交，導致自我厭惡，衍生成癮、衝動、嚴重精神疾病、犯罪、甚至走向自我毀滅。在疫情期間，兒少族群的自殺、憂鬱及焦慮更是倍數成長。二十一世紀人工智慧時代來臨，隨著大型語言模型進步和機器學習科技的創新，精神醫療服務的數位化是不可避免之趨勢，人工智能的診斷治療作為預防或治療輕度精神疾病應成為常規。青少年對線上互動及科技的接受度高，推動青少年數位化精神醫療與心理保健的線上諮詢，很符合青少年求助的需求，也可以減少精神科就醫的阻力。

TIME: 16:00-16:20

生成式 AI: 青少年身心健康的神救援？

洪敬倫

台灣正念醫學臨床學會 執行長，台南，台灣

台灣臨床 TMS 學會 創會會長，台北，台灣

Blossom Medical 創辦主任，台北，台灣

台北市立聯合醫院 精神醫學部 會診精神科醫師，台北，台灣

國立陽明交通大學 醫學院 助理教授，台北，台灣

COVID-19 疫情以來，兒童及青少年的身心健康挑戰日趨嚴峻。疫情對就學，人際關係與個人發展帶來重大衝擊，精神疾病在兒青族群的盛行率不斷攀升。在網路時代，年輕人面臨與過往截然不同的挑戰，如遊戲成癮、網路霸凌及與社交媒體形象相關的焦慮。傳統的心理健康資源，如學校輔導和精神科就診，往往無

法滿足他們的即時需求。然而，智慧型手機的普及，以及年輕人對網路使用的熟悉，為線上解決方案開展契機。以大型語言模型 (large-language model) 運作的聊天機器人，有潛力為許多處於心理危機的年輕人，提供即時的心理支持與資源轉介。在本次演講中，我們將介紹 MIBY，一款由精神科醫師與心理師開發的 LINE 聊天機器人。我們將彙整前 300 位使用者的回饋，檢驗生成式 AI 是否有機會成為青少年身心健康的神救援。

TIME: 16:20-16:40

創新青少年心理健康：AI 語音情緒辨識的早期介入

黃筑蓋

竹謙科技創辦人暨執行長

這次的工作坊旨在探討青年身心健康與精神醫療，包括心理健康促進、預防與創新治療等方面的議題。我們希望透過這次的分享，能夠啟發參與者思考如何在實務中應用 AI 技術，提升青少年的心理健康水平。在這次分享中，我們將介紹竹謙科技如何運用 AI 語音情緒辨識技術在校園中進行預防性的介入，我們的目標是促進心理健康，預防心理問題，並提供創新的 AI 系統，來建構一個更有支持力的校園環境。

TIME: 16:40-17:00

青少年的內在世界與網絡世界的交融

魏秀年

英國塔維斯托克兒童青少年心理治療師

曾經，童年記憶中奔跑的田野森林，如今成了網路上的廝殺馳騁，手中的樂高和玩具成了搖桿與螢幕。網路與人工智慧的發展，改變了新世代青少年的成長環境，也影響了他們的身心發展。網路和 AI 成為母親乳房的替代品，成為可以滿足孩子全能自大幻想，並給予完全掌控感的完美乳房。“造成了青少年心理發展中精神官能 (neurosis) 結構的消失，增加了精神病 (psychosis) 結構的傾向。” (Alessandra Lemma) 現在要將這些新的心理發展狀態定義為病態，已經是一個複雜的事了，因為這些新的現象儼然成為新的『正常』了。那麼心理治療又該如何幫助新世代的青少年？也許我們也該試著去理解網路與人工智慧的世界，和嘗試著用『新的語言』和他們連結。

October 20, 2024

S21. 5-min Poster Blitz & OTA session

TIME 9:00-10:10 Sun, Oct. 20, 2024
VENUE Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus),
Taichung, Taiwan

Chair: Cheng-Hao Tu, Ph.D.

Associate Professor, Graduate Institute of Acupuncture Science, China Medical University, Taiwan

TIME: 09:00-09:05

5PB-001. Increased Risk of Suicide Attempt in Patients with Atopic Dermatitis: A Nationwide Population-Based Cohort Study.

Mu-Chun Lin, Taiwan

TIME: 09:05-09:10

5PB-002. Unlocking Cognitive Clarity: A Pilot RCT on Integrative Electroacupuncture for Depressive Patients with Cognitive Complaints.

Yindee Boontra, Thailand

TIME: 09:10-09:15

5PB-003. Effectiveness of Mental Health Chatbots in Depression and Anxiety for Adolescents and Young Adults: A Meta-analysis of Randomized Controlled Trials.

Tzu-Han Chen, Taiwan

TIME: 09:15-09:20

5PB-005. Clinical Task-Based Dementia Detection Using Wearable EEG

Fumiya Nakai, Japan

TIME: 09:25-09:30

5PB-006. Psychosocial Well-Being of Adolescents During the Recovery Phase of the COVID-19 Pandemic in Taiwan.

Ayesha Zafar Iqbal, Pakistan

TIME: 09:25-09:30

5PB-007. Effect of Omega-3 Polyunsaturated Fatty Acids on Depressive Symptoms in Patients with Major Depressive Disorder with and without Overweight/Obesity: Preliminary Results of a Double-Blind, Placebo-Controlled, Randomized Clinical Trial.

Suet-Kei Wu, Malaysia

Overseas Travel Awardees (OTA)

TIME: 09:30-09:40

OTA-1. Bridging the Gap: Digital Advancements in Crisis Mental Health Support

Sofia Lahutina, *Germany*

TIME: 09:40-09:50

OTA-2. Development of a Machine Learning Model for Schizophrenia Diagnosis Using Brain Transcriptomics.

Wee Jian Chin, *Malaysia*

TIME: 09:50-10:00

OTA-3. The Effect of a Probiotic Formulation on Modulating Peripheral Inflammation and Bacterial-Derived Metabolite Levels in Alzheimer's Disease Patients

Elisa Mombelli, *Italy*

S22. AI Application in Psychiatry

TIME	09:00-10:30, Sun, Oct. 20, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Chair: Jane Pei-Chen Chang, MD, Ph.D.

Assistant Professor, College of Medicine, China Medical University, Taiwan

Chief, Child and Adolescent Psychiatry Division, Department of Psychiatry, China Medical University Hospital, Taiwan.

Deputy Director, Mind-Body Interface Research Centre, China Medical University Hospital, Taiwan

President, Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Summary

The global prevalence of psychiatric disorders is increasing at an alarming rate. Adding to it, there has been an increase in mental health problems during covid-19 pandemic with a rise in suicide, loneliness, and substance use. Artificial intelligence (AI) can act as a potential solution to help identify and even diagnose the disorders. The use of AI is increasingly being employed in various fields of mental health, especially with the benefits of low costs and a broader reach of individuals. In this session, we have 4 experts who will bring us innovative talks about the most updated studies in the field of AI and Psychiatry. Professor Albert Yang will talk about how to apply AI to electroencephalography (EEG) and brain magnetic resonance imaging (MRI) imaging big data to establish precision psychiatry. Then Professor Chih-Sung Liang will speak about the comparison between the differential diagnoses made by Chat GPT-4, Bard, Llama-2, and multi-center psychiatrists in Taiwan Psychiatric Licensing Examination. Professor Hsin-An Chang will discuss about how AI and machine learning can play a role in the diagnosis of depression. Lastly, Professor Taishiro Kishimoto will share with us his study on developing a software as a medical device (SaMD) for psychiatric disorders, with the involvement of AI, machine learning, and several physiological biomarkers in depression.

TIME: 9:10-9:30

Unlocking the Potential - Exploring the Role of AI in Mental Health

Albert Yang, MD, Ph.D.

*Professor & Chair of Institute of Brain Science, College of Medicine, National Yang-Ming Chiao Tung University, Taipei, Taiwan;
Director, Digital Medicine and Smart Healthcare Research Center, National Yang-Ming Chiao Tung University, Taipei, Taiwan*

Mental illnesses are often perceived merely as psychological issues, neglecting the significant impact of brain pathophysiological mechanisms. This has led to psychiatric diagnoses and assessments remaining largely based on subjective symptomatology, unlike internal medicine, which incorporates objective diagnostic tools. In recent years, increasing evidence has shown that mental illnesses are brain disorders. The analysis of structural and functional magnetic resonance imaging (MRI) provides psychiatry with the opportunity to enter a new phase of biomarker-based diagnostic assessment for mental illnesses. The rise of machine learning methods has brought significant breakthroughs and profound impacts on the analysis of brain structure and function data. Our team is dedicated to applying artificial intelligence to EEG and brain MRI imaging big data to establish precision psychiatry. Internationally, influential open databases of EEG and brain imaging data for mental illnesses are already available. We will also introduce the sharing and establishment of local EEG and brain MRI imaging data platforms, and our collaboration with the international neuroimaging consortium of ENIGMA. We hope that the application of artificial intelligence will help reduce the stigma associated with mental illnesses and generate a positive impact on society.

TIME: 9:30-9:50

Comparing the Performance of ChatGPT GPT-4, Bard, and Llama-2 in the Taiwan Psychiatric Licensing Examination and in Differential Diagnosis with Multi-Center Psychiatrists

Chih-Sung Liang, MD, Ph.D.

*Department of Psychiatry, Tri-Service General Hospital, National Defense Medical Center;
Department of Psychiatry, Beitou Branch, Tri-Service General Hospital, Taipei, Taiwan*

Aim: Large language models (LLMs) have been suggested to play a role in medical education and medical practice. However, the potential of their application in psychiatric domain has not been well-studied.

Method: In the first step, we compared the performance of ChatGPT GPT-4, Bard, and Llama-2 in the 2022 Taiwan Psychiatric Licensing Examination conducted in traditional Mandarin. In the second step, we compared the scores of these three LLMs with those of 24 experienced psychiatrists in ten advanced clinical scenario questions designed for psychiatric differential diagnosis.

Result: Only GPT-4 passed the 2022 Taiwan Psychiatric Licensing Examination (scoring 69 and ≥ 60 being considered a passing grade), while Bard scored 36 and Llama-2 scored 25. GPT-4 outperformed Bard and Llama-2, especially in the areas of "Pathophysiology & Epidemiology" ($\chi^2=22.4$, $p<0.001$) and "Psychopharmacology & Other therapies" ($\chi^2=15.8$, $p<0.001$). In the differential diagnosis, the mean score of the 24 experienced psychiatrists (mean 6.1, standard deviation 1.9) was higher than that of GPT-4 (5), Bard (3), and Llama-2 (1).

Conclusion: Compared to Bard and Llama-2, GPT-4 demonstrated superior abilities in identifying psychiatric symptoms and making clinical judgments. Besides, GPT-4's ability for differential diagnosis closely approached that of the experienced psychiatrists. GPT-4 revealed a promising potential as a valuable tool in psychiatric practice among the three LLMs.

TIME: 9:50-10:10

Diagnosing and Treating Depression with AI and Machine Learning

Hsin-An Chang, MD

Professor, School of Medicine, National Defense Medical Center, Taipei, Taiwan;

Chief, Division of Child and Adolescent Psychiatry, Department of Psychiatry, Tri-Service General Hospital, Taipei, Taiwan

Background: Depression is a leading mental disorder impacting about 16 million Americans. According to the World Health Organization, the annual global economic impact of depression is estimated at \$1 trillion and is projected to be the leading cause of disability by 2020. Researchers aim to better predict, diagnose, and treat depression by using artificial intelligence as a potential solution. The role of artificial intelligence in efforts to diagnose and treat depression is getting more and more important. AI applications currently in use to manage depression roughly fall into three major categories including supporting depression diagnosis, precision therapy, virtual counseling, and patient monitoring. Our study aims to explore the role of AI applications in supporting depression diagnosis and precision therapy.

Methods: In a retrospective cohort, we tested the performance of the different models of machine learning from the resting-state EEG data to differentiate depressed patients with and without suicidal ideations. In a real-world observational study, we tested the performance of the different models of machine learning from the resting-state EEG data at baseline to predict treatment response to 8-week antidepressant treatment in patients with major depressive disorder.

Results: Some machine learning classifiers can effectively differentiate depressed patients with and without suicidal ideations with acceptable accuracy. In addition, some machine learning classifiers can effectively predict treatment response to antidepressant treatment in patients with major depressive disorder.

Conclusion: AI shows substantial promise in the diagnosis and management of depression. However, AI applications require validation before they can be relied upon as diagnostic tools or a biomarker to predict treatment response.

TIME: 10:10-10:30

Developing a Software as a Medical Device (SaMD) for Psychiatric Disorders

Taishiro Kishimoto, MD, Ph.D.

Hills Joint Research Laboratory for Future Preventive Medicine and Wellness, Keio University School of Medicine, Tokyo Japan;

Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Background: Few biomarkers can be used clinically to diagnose and assess the severity of depression. However, a decrease in activity and sleep efficiency can be observed in depressed patients. In addition, physiological changes, such as heart rate variability, can be used to distinguish depressed patients from healthy people; these parameters can be used to improve diagnostic accuracy.

Method: Patients with depressive symptoms and healthy subjects are asked to wear a wristband-type wearable device for 7 days and data on triaxial acceleration, pulse rate, skin temperature, and ultraviolet light are collected. On the seventh day of wearing, the severity of depressive episodes are assessed using Structured Clinical Interview for DSM-5 (SCID-5), Hamilton Depression Rating Scale (HAMD), and other scales. Using wearable device data associated with clinical symptoms as supervisory data, a machine learning model capable of identifying the presence or absence of depressive episodes and predicting the HAMD scores is developed.

Results: As of June 2024, over 700 data sets were collected from about 220 subjects.

Conclusion: Data from the pilot study of this study (86 subjects) showed a screening accuracy of 76% for depression identification. While there is room for improvement, the results indicate that screening and severity assessment of depression can be performed at a certain level using wearable devices. In this presentation, the development of dementia screening technology is also introduced. Moreover, the latest research results will be presented and the difficulties in developing the technology will be discussed.

WK2. 身與心的滋養：大腦健康整合照護實務工作坊 *Nourishing the Mind & Body: An integrative Approach to the Practice of Mental Wellness*

TIME	10:30-12:10, Sun, Oct. 20, 2024
VENUE	Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan

召集人：張蕙芝博士

中國醫藥大學附設醫院身心介面研究中心 共同主持人

台灣營養精神醫學研究學會 秘書長

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國立彰化師範大學社區心理諮商及潛能發展中心主任

國立彰化師範大學社區心理諮商所所長

TIME: 10:30-10:55

從營養的角度談心理韌性

賀函懿

台灣營養精神醫學研究學會理事

中華功能醫學協會理事

身心健康的影響因素非常廣，從營養生化的角度，也有相當多不同的研究方向來探討造成情緒異常的原因，以及介入的方法。為什麼相似的族群，面對類似的精神壓力事件，呈現出來的短期反應和長期影響，有巨大的分歧，而除了現有的心理諮商、藥物治療外，有沒有什麼安全又有助益的營養介入。本節將探討人體的神經內分泌系統調節壓力的生化機轉，並且從個案的生理症狀、評估指標來篩選適合營養介入的個案，達到輔助心理諮商和藥物治療的整合醫療模式。

TIME: 10:55-11:20

由內而外的療愈之道：瑜伽在身心健康照護的應用

張蕙芝

中國醫藥大學附設醫院身心介面研究中心共同主持人

台灣營養精神醫學研究學會秘書長

世界衛生組織定義自我照護 (Self-care) 是指個人、家庭和社區不論有無醫療的提供下所進行對健康促進、疾病預防及與疾病造成的殘疾共存的能力。自我照護對於健康促進及疾病預防控制等具有正向的影響力，其範疇包括藥物使用、營養、個人衛生和健康的生活方式等方面。越來越多的實證研究顯示，運動、正念和營養等因素在改善大腦精神疾病方面扮演著重要角色。儘管創傷後壓力症候群 (PTSD) 一詞約在 1970 年代開始被使用，但複雜性創傷後壓力症候群 (C-PTSD) 則在 1992 年 Judith Herman 醫師的《創傷與復原》一書中首次被描述，直到 2022 年，複雜性創傷後壓力症候群才被 ICD-11 列為正式的診斷。在複雜創

傷的情境中，可能使得身體無法「聆聽」、「感受」或「理解」，臨床上以多元治療模式介入。引用 Judith Herman 醫師的名句「【復原，唯有在賦權給創傷倖存者才會發生】No intervention that takes power away from the survivor can possibly foster her recovery, no matter how much it appears to be in her immediate best interest.」，這也可能是實證研究顯示創傷友善瑜伽在「複雜性創傷」個案中是一項有效的輔助治療的原因之一。創傷友善瑜伽是一種結合身體運動的整合性心理治療，被證明對於創傷後壓力症 (PTSD) 和其他精神疾病的治療非常有效。創傷友善瑜伽能夠幫助病患傾聽身體的需求，專注於呼吸和當下的冥想、動作以建立身心的連結，讓病患培養正念和自我察覺的能力，進一步深化對自己身心狀態的了解，使其體認到擁有選擇權的同時，也重拾身體的主控權。演講將講述關於自我照顧 (self-care) 的發展趨勢與方法，透過賦權 (empower) 病友，甚至是家屬以助人工作者 (包括醫師、護理人員、心理師、警消社政、宗教、司法等人員) 管理自身健康，促進大腦身心全面的安適。

TIME: 11:20-11:45

創意與意象體現：身體取向榮格心理分析

陳雪均

國立彰化師範大學輔導與諮商學系專任助理教授

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國立彰化師範大學社區心理諮商及潛能發展中心主任

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「意象體現®」(Embodied Imagination®)是由國際資深榮格心理分析師 羅伯特·伯尼克(Robert Bosnak)在過去近 50 年來所研發，是一種將夢境、身體症狀、早期記憶和創造性想像，運用於心理治療、創傷經驗、醫療健康、藝術創作、AI 科技和夢境研究的原創方法。本工作坊帶領者 陳雪均博士，是臺灣首位獲得國際認證的身體取向榮格心理分析師(Certified Embodied Approach Jungian analyst by IAAP & ISEI)，也是目前唯一具有國際意象體現®學會認證之身體取向榮格心理分析師，自 2023 年起，與意象體現創始者首度在臺灣辦理三年專業訓練國際認證課程。

榮格分析師視意象為通往無意識的橋樑 (Abt, 2005)，而情緒是身體與心靈之間的橋樑 (Chodorow, 1991)。在本工作坊中，講者會講述榮格心理對創傷與身心關聯的觀點，並且以意象體現®為方法，講述如何運用夢境、身體症狀及早期記憶作為身心整合的素材，特別是意象體現®方法強調如何繞過夢中自我 (dream ego) 狀態的阻抗，對創傷經驗於慣性意識 (habitual consciousness) 更有覺察，並運用意象體現發展出多樣 (multiplicity) 的心靈狀態，即榮格心理學第三大取向原型心理學 (archetypal psychology) 所強調的靈魂陶塑 (soul-making) 新經驗。

TIME: 11:45-12:10

從體現經驗的觀點來看身體與心理健康的關係

許儷絹

中國醫藥大學醫學系暨生物醫學研究所副教授

身體與心理健康間的關係是密不可分的，人的心理狀態和身體狀態之間存在著密切的相互影響。N. Pira 教授提出體現經驗 (embodied experience) 的構念，將體現經驗描述為「我們如何透過身體來生活和體驗世界」。他們透過質性和量化研究，顯示體現經驗反應個體對內在狀態的調諧，包括廣泛的行為和心理現象，涵蓋正向和負向的身體生活經驗。正向的經驗包含能夠覺察自身身體的需求、愛護並照顧自己的身體；負向的經驗包含，飲食失調、自我傷害、物質濫用等。我們的研究結果顯示，參與者的體現經驗與心理健康、生活滿意度呈正相關而且與負向的飲食態度、述情障礙呈負相關。我們更進一步透過透過八週身心軸覺察 (Body-Mind Axial Awareness) 身體訓練，進行訓練前後體現經驗、特質焦慮量表、和心理韌性量表的評估。結果發現，訓練後正向體現經驗和心理韌性得分顯著提高，特質焦慮量表降低。這表明，身心中軸覺察的身體訓練能夠有效地促進參與者的正向體現經驗，並提升其面對生活壓力和挑戰的心理韌性。我們的研究為促進心理健康提供新的方向，強調身體覺察訓練的重要性，並建議將這類訓練納入心理健康推廣的課程中，以幫助個體更好地應對生活中各種挑戰。

S23. Nutritional Psychiatry

TIME	10:50-12:10, Sun, Oct. 20, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Chair: Chin-Kun Wang, Ph.D.

*Distinguished Professor, Chung Shan Medical University
Ambassador, UN*

Co-Chair: Wolfgang Marx, Ph.D.

*Senior Postdoctoral Research Fellow and Head of the Nutraceutical Research Stream at the Food & Mood Centre, Deakin University, Australia.
President of International Society for Nutritional Psychiatry Research (ISNPR)*

Summary

Nutritional psychiatry is an emerging field highlighting the significant role of diet and nutrients in mental health. This session explores three pivotal areas of research that collectively advance our understanding and implementation of nutritional interventions in mental health care.

The first presentation focuses on the NUTRIMUM trial, which investigates the efficacy of micronutrients in treating antenatal depression. The trial demonstrates that additional antenatal micronutrients not only improve maternal mental health but also enhance neonatal outcomes, suggesting a promising, safe, and effective treatment for antenatal depression. This research underscores the potential of dietary interventions to influence both maternal and infant health positively.

The second presentation addresses the broader role of nutrition professionals in mental health services. With high rates of physical comorbidity in individuals with mental illness, nutrition interventions become crucial for improving life expectancy and overall health. This project aims to standardize and enhance the quality of nutrition-related tasks in mental health settings globally. It provides key recommendations for integrating dietary interventions effectively into mental health services, emphasizing the need for an international standard and consistent professional roles.

The third presentation examines the complex interplay between cultural practices and nutritional psychiatry, using betel quid chewing in Taiwan as a case study. It highlights the neurophysiological effects of betel quid and the health risks associated with its use. This research calls for comprehensive management strategies and further studies to mitigate the adverse health effects while understanding its role in well-being and addiction. Together, these presentations illuminate the critical intersections of nutrition, mental health, and clinical practice, advocating for integrative approaches to enhance mental health outcomes through dietary interventions.

TIME: 11:00-11:20

From Womb to World: The Role of Micronutrients in Supporting Maternal and Infant Mental Health.

Julia Rucklidge, Ph.D.

*Professor, School of Psychology, Speech and Hearing, Faculty of Science, University of Canterbury, New Zealand;
Director of Te Puna Toiora, the Mental Health and Nutrition Research Lab, University of Canterbury, New Zealand*

Background: Antenatal depression is linked to neonatal complications and poor infant development. The NUTRIMUM trial aimed to 1) evaluate the efficacy and safety of micronutrients (vitamins and minerals) for treating antenatal depression, and 2) assess the impact of these micronutrients on delivery and early infant development compared to healthy controls and infants exposed to conventional treatment.

Methods: Eighty-eight medication-free women (12-24 weeks gestation, EPDS score ≥ 13) were randomly assigned to receive either micronutrients or an active control (iodine and riboflavin) for 12 weeks. After RCT, participants entered an open-label phase until birth, creating a subgroup of infants exposed to >2 months of antenatal micronutrients (MN; n=42). Healthy controls (HC; n=54) and infants exposed to antidepressants during pregnancy (AD; n=20) were included to contextualize micronutrient effects on delivery and infant behavior at 2-4 weeks post-birth.

Results: Linear mixed-modeling showed significant greater improvement over time on the CGI-I for those on micronutrients. There were no significant group differences on the EPDS or treatment-emergent adverse events. MN and HC infants had similar birth outcomes. Compared to AD, MN infants had higher gestational age and length, and lower rates of preterm birth and infant resuscitation. Significant differences were observed for orientation, motor, autonomic stability, and state regulation, with MN infants performing better overall compared to AD and HC infants.

Conclusion: Additional antenatal micronutrients improved maternal mental health and led to positive birth outcomes and neonatal competencies. If replicated, these results suggest a safe and effective treatment for antenatal depression with benefits for infant behaviour.

TIME: 11:20-11:40

Role of Nutrition Professionals Working in Mental Health Settings

Annabel Mueller-Stierlin, Ph.D.

Postdoctoral research fellow, Department of Psychiatry and Psychotherapy II, Ulm University, Germany

Nutrition intervention is a crucial element in preventing and managing the high rates of physical comorbidity that significantly reduce the life expectancy of individuals with mental illness. In this context, the expanding role of nutrition professionals in mental health services has gained international significance and is especially timely. However, the tasks and roles of these professionals vary widely across countries and service providers, and there is no international standard for this emerging occupational group. This presentation will outline an ongoing project aimed at exploring and enhancing the quality of nutrition-related tasks in mental health settings from various professional perspectives. Consequently, key recommendations for the successful implementation of dietary interventions into mental health services will be developed.

TIME: 11:40-12:00

The Effect of Betel Quid Chewing on Neuronal Response and Potential Contributing Natural Materials.

Chin-Kun Wang, Ph.D.

*Distinguished Professor, Chung Shan Medical University
Ambassador, UN*

Background: Betel quid chewing is popular in Taiwan owing to its specific responses after chewing, including well-being, staying awake and some physiologiccal functions.

Method: This study was focused on the neuronal response by using adrenal chromaffin cell model and also clinical trial, also confirmed the potential contributing natural materials.

Result: The alkaloids and phenolics in betel nut (the major ingredient of betel quid) were found contributed specific neuronal response, including saliva secretion, staying awake, warming boy and so on. The addition of slaked lime greatly influence the composition of alkaloids and phenolics, also lead to some carcinogenic problems.

Conclusion:

Results clearly showed that betel nut contains some natural substances to help chewers wake-up, warming the body and also some addiction response. However, the health issues associated with betel quid includes oral submucous fibrosis, leucoplakia and oral cancer. The management and many more studies are required in the future.

PK3. PLENARY KEYNOTE SPEECH

TIME	13:30-14:20, Sun, Oct. 20, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Depression and Inflammation: A New Perspective on A Classic Story

Moderator: Kuan-Pin Su, MD, Ph.D.

Professor, College of Medicine, China Medical University, Taichung, Taiwan

Director, Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan

Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan

Founding President (2016-2022), Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Associate Editor, Journal of Brain, Behavior, and Immunity

Carmine Pariante, Ph.D.

Professor of Biological Psychiatry, the Institute of Psychiatry, Psychology and Neuroscience, King's College London;

Consultant Perinatal Psychiatrist at the South London and Maudsley NHS Foundation Trust.

Summary

While there is clear evidence that people with depression have increased inflammation, the molecular mechanisms underlying these findings are still unclear. Data from our laboratory have recently shown that increased inflammatory proteins and cellular markers identify approximately 20-30% of depressed patients that respond less to standard antidepressants and are more likely to respond to anti-inflammatory medications; however, a much larger number of depressed patients have increased activation of mRNA immune pathways, indicating a broader molecular predisposition to inflammation that is not translated in protein and cellular activation in all patients. We will review this evidence and discuss its clinical implications.

S24. PNIRASia-Pacific Session: Emerging Tech in Mental Health

TIME	15:00-16:40, Sun, Oct. 20, 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Technological Approaches to Promote Mental Health and Wellbeing

Chair: Keith W. Kelley, Ph.D.

Professor Emeritus of Immuno-physiology, University of Illinois;

Editor-in-chief Emeritus of Brain, Behavior, and Immunity

Co-chair: Melissa A. Rosenkranz, Ph.D.

Assistant Professor of Psychiatry University of Wisconsin School of Medicine and Public Health

Summary

It has become abundantly clear, particularly in the wake of the COVID-19 pandemic, that the growing needs for mental healthcare cannot be met exclusively by increasing the number of providers. Modern basic and translational research aimed at alleviating this global mental health crisis has evolved significantly, empowered by emerging technological innovation. As a consequence, the size and complexity of data generated in the current research environment require new methods such as digital- and AI-based solutions.

In this PNIRASia-Pacific symposium, each speaker will discuss the creative use of digital technology to enhance health and wellbeing. Prof. Caroline Cao will describe the application of AI to train empathy in first responders. She will present a work-in-progress that uses a Human Factors approach with extended reality to simulate real-world environments and interactions to elicit meaningful and productive empathy. Dr. Margaret Thairu will discuss the use of digital technology in the form of mobile health (mHealth) apps to bolster health and wellbeing. She will describe the effects of an m-Health mindfulness intervention on symptoms of depression and composition of the gut microbiome and highlight how technology and remote acquisition of biological measures can improve accessibility to mental healthcare. Dr. Huong Ha Thi Thanh will build on this theme by providing evidence that supports the use of m-Health interventions for improving cognitive health. She will present preliminary data demonstrating the acceptability and efficacy of a digital intervention for patients with mild cognitive impairment. Finally, Dr. Cyrus Ho will discuss of the utility of AI in psychiatric research. He will present data that applies deep-learning methods to develop classification patterns for functional near-infrared spectroscopy data to distinguish patients with and without major depressive disorder with the aim of providing objective diagnostic biomarkers. Collectively, these four scientists will highlight ways in which mental health care can be optimized by development and implementation of new digital technologies.

TIME: 15:10-15:30

Empathy Training Using XR and AI Technologies: A Human Factors Perspective

Caroline GL Cao, Ph.D.

Industrial and Enterprise Systems Engineering Professor and Director of Applied Health Technology Initiatives, Grainger College of Engineering, University of Illinois Urbana-Champaign;

USA-Health Innovation Professor and Director of Engineering Innovation and Medical Simulation, Carle Illinois College of Medicine, University of Illinois Urbana-Champaign, USA

Introduction: In the post-COVID-19 era, burnout, mental health and overall wellbeing of healthcare workers have become more prevalent concerns. Empathy has been singled out as a key quality in successful crisis management. XR (Extended Reality, including virtual, augmented and mixed reality) systems are increasingly being used for training in many application domains. However, there exists an underutilization of advanced technologies such as Generative AI. This work-in-progress project explores the use of XR systems and AI tools to provide empathy training, beginning with first responders.

Methods: A human factors engineering approach is used to identify learner needs and system requirements. An ontology for empathy is used to guide the research on applications of AI in real-world first responder/patient interactions. Simulation in XR environments is used to investigate how we can elicit meaningful and productive empathy when AI is present, and how realism plays a role in this. In high-stakes scenarios, the experience of empathy by individuals can vary dramatically from moment to moment, and be influenced by small things, such as a brief flinch at a particular moment or posture. Data collected from participants are used to infer underlying states and intents. AI agents can then react in meaningful ways that promote the goals of empathy training.

Results: Work is still in progress. The systems we envisage will be multimodal, able to interact in the XR context both with body language and spoken language, and can be expanded to other domains for empathy training in critical situations and non-critical decision-making.

TIME: 15:30-15:50

Behavior, Biology, and Well-being: Investigating Changes in the Gut Microbiome in Response to App-Based Well-Being Training

Margaret Thairu, Ph.D.

Scientist at Jo Handelsman Lab University of Wisconsin- Madison, Department of Plant Pathology, and Wisconsin Institute of Discovery

Current treatments and interventions available to help manage mental health disorders, such as depression and anxiety, fail to provide benefit to a large proportion of the population indicating the need for novel, accessible interventions. Mindfulness-based interventions have been found to be as effective as pharmacological and/or psychological interventions in reducing symptoms of various physical and psychological disorders and can be highly accessible however, the biological mechanisms by which mindfulness helps increase overall well-being are not well understood. Neuropsychiatric disorders including depression are associated with changes in the gut microbiome, highlighting the need to disentangle mechanisms that mediate interactions between our gut and brain. To understand the interactions between gut microbiome and brain we ran a fully remote randomized trial, focused on testing the effects of a meditation-based smartphone app (Healthy Minds Program) on depression symptoms and the microbiome. Participants with elevated symptoms of depression received the app with or without meditation practice. Stool samples were collected at baseline and 3-month follow-up. Preliminary results have found that both versions of the app influences microbiome composition and results in an improvement in depression symptoms. These results suggest there is a dynamic interplay between changing mindset and behaviors, and the gut microbiome, that can lead to improved health phenotypes. Based on these preliminary results we plan to expand our study to interrogate the mechanistic microbial drivers of improved well-being that arise as a result of mindfulness practice so that we can find ways to develop synergistic treatments for psychiatric disorders.

TIME: 15:50-16:10

Assessing The Feasibility of Cognitive Intervention via Brain Train Cognitive Gaming Application for Mild Cognitive Impairment Patients

Huong Thi Thanh Ha, Ph.D.

Chair, Department of Tissue Engineering and Biomedical Engineering, School of Biomedical Engineering, International University, HCMC VNU;

Head, Brain Health Lab, School of Biomedical Engineering, International University, HCMC VNU

Background: Alzheimer's disease profoundly impacts the quality of life of both patients and caregivers, necessitating early-stage interventions, specifically during the phase of Mild Cognitive Impairment (MCI). This study explores the feasibility of implementing cognitive games intervention for MCI patients.

Methods: The BrainTrain application comprises 12 cognitive games designed to target cognitive functions impaired in MCI patients, including Memory, Attention, Language, and Mathematics, along with five functions to monitor progress, provide reminders, and enhance user motivation. The application was tested on eight neurologists and 20 MCI patients. All participants were instructed to engage with BrainTrain for 30 minutes daily for one month and complete short surveys for evaluation. Their cognitive improvement was assessed through the MMSE scores. Additionally, 10 MCI patients were recruited for in-depth interviews to collect subjective feedback.

Results: Neurologists rated the necessity, potential, and usefulness of delaying dementia progression with an average score of 8.3 to 9.4 out of 10. MCI patients gave the app an average score exceeding 8 out of 10 for all aspects of the app. The average MMSE score of patients increased from 25.48 to 27.12 (p -value = 0.0065) after one month of intervention with the BrainTrain app. In-depth interviews showed that 90% of patients found the app appropriate for MCI individuals and were satisfied with the \$2-4 monthly subscription.

Conclusion: The study findings suggest that the BrainTrain app represents a feasible cognitive gaming therapy option for the MCI demographic. Future studies should measure brain electrical activity for further insight into the app's efficacy.

TIME: 16:10-16:30

Interpretable Deep Learning Model for Major Depressive Disorder Assessment Using Functional Near-Infrared Spectroscopy

Cyrus Su Hui Ho, MBBS, Ph.D.

Senior Consultant Psychiatrist, Department of Psychological Medicine, National University Hospital;

Assistant Professor, Department of Psychological Medicine, National University of Singapore

Background: Major depressive disorder (MDD) affects a large proportion of people globally. New approaches are needed to enhance the diagnosis of MDD, which is mainly based on subjective accounts of depression-related symptoms. We attempted to develop an objective measure and evaluation of MDD.

Methods: Functional near-infrared spectroscopy (fNIRS) was utilized to study the brain activity of MDD patients and healthy control (HC) subjects. Using a sizeable fNIRS dataset of 263 HCs and 251 patients with MDD, encompassing mild to moderate MDD ($n=139$) and severe MDD ($n=77$), we established an interpretable deep learning model for screening MDD and staging its severity.

Results: Our deep learning model achieved an accuracy of 80.9% in diagnostic classification and 78.6% in MDD severity staging. Using Shapley additive explanations, we identified five channels with the greatest contribution to MDD detection, located in the right medial prefrontal cortex, right dorsolateral prefrontal cortex, right superior temporal gyrus, and left posterior superior frontal cortex. The findings were closely related to the characteristics of hemoglobin responses between HCs and individuals with MDD, as we obtained a good discriminative ability for MDD using cortical channels associated with the disorder, namely the frontal and temporal cortical channels, with areas under the curve of 0.78 and 0.81, respectively.

Conclusion: Our study demonstrated the potential of integrating the fNIRS system with artificial intelligence algorithms to classify and stage MDD in clinical settings using a large dataset. This approach can potentially enhance MDD assessment and provide insights for clinical diagnosis and intervention.

WK3. 科技賦能身心健康時代 The New Era of Digital Mental Wellness

TIME 15:00-16:40, Sun, Oct. 20, 2024
VENUE Classroom 203, 2nd floor, Excellence Building, China Medical University (Shuinan Campus),
Taichung, Taiwan

召集人：蘇冠賓教授

中國醫藥大學醫學院教授 · 臺中 · 臺灣

中國醫藥大學附設醫院身心介面研究中心主任 · 臺中 · 臺灣

中國醫藥大學安南醫院副院長 · 臺灣

台灣營養精神醫學研究學會創會會長 (2016-2022)

《腦、行為與免疫》期刊副主編

林煜軒醫師

國家衛生研究院 群體健康科學研究所 副研究員級主治醫師

臺大醫院精神醫學部 主治醫師

國立臺灣大學醫學院醫學系精神科 副教授

TIME: 15:00-15:20

從手機的數位足跡探索具有臨床價值的「數位生物指標

林煜軒

國家衛生研究院群體健康科學研究所副研究員級主治醫師

臺大醫院精神醫學部主治醫師

國立臺灣大學醫學院醫學系精神科副教授

慧型手機的普及使我們能透過日常人機互動的「數位足跡」，更準確、即時、持續地量化個人心理與行為。我們利用自行開發的全自動工時記錄 App「行醫記錄器」結合手機行為數據與 GPS 定位，區分工作與休息狀態，計算工作地點內的休息時間和離開工作地點的工作時間。透過數位足跡反映人與智慧型手機的互動模式計算心智狀態與工作效率，並利用機器學習演算法詮釋工作心智活動。比較數位足跡與睡眠紀錄，可以確認影響隔天工作效率的作息型態。手機數位足跡不僅能解讀心理行為與工作效率，還能即時、個人化介入與治療，展現在醫學和臨床應用的潛力。

TIME: 15:20-15:50

大型語言模型在學術寫作中的應用：以論文摘要生成為例

梁志頌

三軍總醫院北投分院主治醫師

論文摘要提供了研究的快速概覽，包含研究背景、目的、方法、結果和結論，使讀者能迅速判斷文章是否與其研究相關。其次，根據這些文獻的討論，摘要的質量和精確度影響讀者和審稿人對全文的興趣和接受度。一篇精心撰寫的摘要能提高文章的被引用次數，增加其在學術界的影響力。此外，摘要在學術會議和

期刊投稿中也是評審者初步篩選文章的關鍵依據，直接影響文章的出版和傳播。在這次的工作坊，我們會討論該如何有 ChatGPT 來協助已經完成的論文產出摘要。

TIME: 15:50-16:10

如何用 AI 導入臨床和研究工作

張俊鴻

台南市立安南醫院(中國醫藥大學經營)精神科主任

台南市立安南醫院(中國醫藥大學經營)教研部主任

中國醫藥大學附設醫院兼任主治醫師

中國醫藥大學醫學系專任助理教授

在 AI 時代，善用先進的 AI 技術能顯著提升研究論文的質量和效率。本演講將探討如何在臨床和研究工作中有效利用這些工具。首先，介紹機器演算法在失智症研究中的應用，具體展示如何將傳統的抽血實驗室分析與機器學習演算法結合，實現右旋胺基酸的深入分析，進一步推動研究的進展。接著，介紹常見的生物資料庫，如研究資料庫、健保資料庫和中研資料庫，並說明如何利用這些資料庫來支持研究。最後，探討 ChatGPT 在論文寫作中的四種基本應用模式，包括初步構思與架構、數據分析與解讀、文獻回顧與引用以及語言修飾與潤色，並通過實作範例展示如何使用 ChatGPT 進行互動、數據分析和寫作輔助。

TIME: 16:10-16:30

生物節律與智慧手機數據：人工智慧在工作心理活動與睡眠模式研究中的應用

陳泓勳

輔仁大學數學系助理教授

在當前的數位健康時代，心理活動的評估比以往任何時候都更加重要。本演講將介紹一項創新的研究，該研究基於人類與智慧手機的互動模式，使用人工智慧技術來評估心理活動，特別是一般心理活動 (GMA) 和工作心理活動 (WMA)。研究中，共有 24 名醫護專業人員參與，並佩戴腕式活動儀和使用「Staff Hours」應用程式，累計超過 457 個人日的數據。研究運用極端梯度提升和卷積神經網絡等機器學習技術，來分析智慧手機互動模式和 GPS 定義的工作時間，以建模 WMA。研究結果顯示，工作日與非工作日的活動水平存在顯著差異，其中 WMA 在工作日發生在身體活動 (PA) 前大約 1.08 小時，而 GMA 則在 PA 後大約 1.22 小時。此外，WMA 的活動水平與前一晚的睡眠中點呈顯著負相關，表明晚睡晚起與次日 WMA 的活動水平降低有關。然而，WMA 的活動水平與總睡眠時間之間沒有顯著相關。同樣，PA 和 GMA 的活動水平與前一晚的睡眠指標之間也沒有顯著相關。本研究通過開發並強調基於智慧手機互動模式的 GMA 和 WMA 作為關鍵指標，提供了心理活動與生理節律之間複雜聯繫的新見解。這些發現強調了智慧手機數據在理解和評估心理活動中的潛力，並展示了人工智慧技術在促進心理健康服務中的創新應用。

AWARD CEREMONY & CLOSING REMARKS

TIME	16:40-17:00, Sun, 20 Oct., 2024
VENUE	Stanford Lecture Hall, 2nd floor, Excellence Building, China Medical University (Shuinan Campus), Taichung, Taiwan.

Closing Remark by the Symposium Chairman

Kuan-Pin Su, MD, Ph.D.,

Professor, College of Medicine, China Medical University, Taichung, Taiwan

Director, Mind-Body Interface Research Center (MBI-Lab), China Medical University Hospital, Taichung, Taiwan

Deputy Superintendent, An-Nan Hospital, China Medical University, Taiwan

Founding President (2016-2022), Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

Associate Editor, Journal of Brain, Behavior, and Immunity

Award Ceremony by Scientific Committee Chairman

Jane Pei-Chen Chang MD, Ph.D.

Assistant Professor, College of Medicine, China Medical University, Taiwan

Chief, Child and Adolescent Psychiatry Division, Department of Psychiatry, China Medical University Hospital, Taiwan.

Deputy Director, Mind-Body Interface Research Centre, China Medical University Hospital, Taiwan

President, Taiwanese Society for Nutritional Psychiatry Research (TSNPR)

POSTER PRESENTATIONS



E-poster: <https://www.mbisymposium.org/2024/eposter.php>

PP001	Stress, Sleep, and Immunity: A Qualitative Examination of Academic Pressures and Mental Health Among University Students. K. Jayasankara Reddy, <i>India</i>
PP002	Reliable Machine Learning Models for Blood-Brain Barrier Permeability Assessment. Sergey Shityakov, <i>Germany</i>
PP004	Motoric Cognitive Risk Syndrome as a Predictive Factor of Cognitive Impairment and Dementia: A Systematic Review and Meta-analysis. Nicholas Lim E-kai, <i>Singapore</i>
PP005	Suicidal Behaviors and Associated Factors among Residents of Jimma Town, Southwest Ethiopia: A Community-Based Cross-Sectional Study. Selamawit Alemayehu Tessema, <i>Ethiopia</i>
PP006	Effectiveness of Traditional Chinese Medicine on Perinatal Anxiety: A Systematic Review and Meta-analysis. Man-Ting Mao, <i>Taiwan</i>
PP007	The Interplay Between Insula and Habenula in the Vulnerability or Resilience to Prenatal Stress. Valentina Zonca, <i>Italy</i>
PP008	Association of the Plasma Levels of Short-Chain Fatty Acids with Amyloidosis, Tau Pathology and Neurodegeneration in Patients with Alzheimer's Disease. `Moira Marizzoni, <i>Italy</i>
PP009	AI Music Therapy System for Customized Health Applications Chih-Fang Huang, <i>Taiwan</i>
PP010	Effects of High Whey Protein and Leucine Supplementation on Body Composition in Older Adults Engaged in Elastic Band Resistance Exercise: A Randomized Controlled Trial Yu-Ting Chang, <i>Taiwan</i>
PP012	Molecular Signatures Associated with Lithium Treatment in Bipolar Disorder Patients – A Transcriptomic Approach Samantha Saleri, <i>Italy</i>
PP013	Maternal Dietary Intake of Omega-3 Polyunsaturated Fatty Acids and Risk of Infant Maltreatment: Results from the Japan Environment and Children 'Study Kenta Matsumura, <i>Japan</i>
PP014	Association between Genetic Variations in the Arachidonic Acid Cascade and Major Depressive Disorder: A Case-control Study in Taiwan Halliru Zailani, <i>Taiwan</i>
PP015	Associations between Adverse Childhood Experiences and Depression, Overweight, Health-related Risky Behavior, and Social Behavioral Problems in Medical Students Jocelyn Chia-Yu Chen, <i>Taiwan</i>

PP016	Mapping Peripheral Biological Pathways Associated with Long-lasting Effect of Early Life Stress: A Transcriptomic Set-based Approach Chiara Bottanelli, <i>Italy</i>
PP017	Neuroinflammation and Hepatic Inflammatory Processes Heighten Vulnerability to Psychopathology in Adolescent Rats Exposed to Stress Early in Life. Giulia Petrillo, <i>Italy</i>
PP018	Maternal Dietary Intake of Fish and Child Neurodevelopment at 3 years: Results from the Japan Environment and Children 'Study Hidekuni Inadera, <i>Japan</i>
PP019	Investigating Genetic Variations of Neuroactive Steroid Pathway in Interferon- γ -Induced Depression in Patients with Hepatitis C Viral Infection Ray Ting-Jui Chen, <i>Taiwan</i>
PP020	Borderline Personality Disorder and Inflammation: Clinical and Biological Effects of Metacognitive Interpersonal Therapy Nadia Cattane, <i>Italy</i>
PP021	Alleviation of β -Amyloid-Induced Neuronal Toxicity by Different Berry Supplementation Yohanes Tandoro, <i>Indonesia</i>
PP022	Chronic Nasal Inflammation Induces Dysbiosis of the Nose and Gut microbiota Ryuichi Imai, <i>Japan</i>
PP023	Anti- Neurodegenerative of Gac Fruit Parts and Potential Contributors by Using HT-22 cell Model Asif Ali, <i>Pakistan</i>
PP024	HMGB1, S100 β , and NSE Biomarkers in Major Depressive Disorder: A Meta-Analysis of Observational Studies Ikbal Andrian Malau, <i>Taiwan</i>
PP025	A Meta-Analysis of Oxidative Stress in Children and Adolescents with Attention Deficit Hyperactivity Disorder Patricia Marest Suwindi, <i>Indonesia</i>
PP026	Restoring Balance: How Ketogenic Diet Mitigates the Long-lasting Effect of Prenatal Stress Floriana De Cillis, <i>Italy</i>
PP027	Longitudinal Differences in Brain-Age Gap across Cognitively Healthy Individuals, Mild Cognitive Impairment, and Alzheimer's Disease Rachel R. Jin, <i>Hong Kong</i>
PP028	The Microbiota-Gut-Brain Axis and Alzheimer's disease: A Bibliometric Analysis based on Web of Science Database from 2014 to 2023 Chen-Wei Chang, <i>Taiwan</i>
PP030	Emotional Abuse and Blunted Systemic Inflammation Increased Susceptibility of Non-Suicidal Self-Injury Behavior in Adolescence with Mental Disorders Weiyu Cai, <i>China</i>

PP031	Problematic Sexual Behavior and Reward Deficiency Syndrome: A Genetic Association Analysis of an SLC6A3 Variant Shui Jiang, <i>Canada</i>
PP032	Nasal Inflammation-Induced Lymphangiogenesis in the Nasal Mucosa Suzuho Komaki, <i>Japan</i>
PP033	Association between Fermented Tea Consumption and Anxiety among Chinese Older Men: Findings from the Taiwan Biobank Study Ruei-Ting Su, <i>Taiwan</i>
PP034	Life Event Trajectories and Suicidal Ideation Throughout Adolescence: A Prospective Cohort Study Pei-Jung Chen, <i>Taiwan</i>
PP035	Long-Term Transcriptomic Changes in the Ventral Hippocampus and Liver of Adult Rats Exposed to Prenatal Stress. Ilari D'Aprile, <i>Italy</i>

Welcome Dinner

TIME	18:30-20:30, Sat, 19 Oct, 2024
Location	No. 403, Shizheng North 2nd Rd, Xitun District, Taichung City, 407

MBI TECHNICAL TOUR

Immerse Yourself in the Heart of Formosa: An Atayal Cultural Experience

深入體驗寶島 Formosa：泰雅文化之旅

TIME	08:30-18:00, Mon, 21 Oct, 2024
Location	Mihu and Lolu Villages in Heping District, Taichung
08:20 ~ 08:30	Meet up at the lobby of Millennium Hotel Taichung 台中日月千禧酒店大廳集合
08:30 ~ 09:40	Departure for Mihu Village 出發前往雙崎部落
09:45 ~ 12:00	Indigenous architecture tours and traditional handicraft workshops 泰雅傳統家屋導覽與手環編織體驗
12:00 ~ 14:00	Traditional Atayal lunch at Lolu Village 前往達觀部落享用泰雅風味創意套餐
14:00 ~ 16:00	Tamun fermentation workshop 答母品醇與酒釀製作
16:30 ~ 18:00	Return to Millennium Hotel Taichung 返回台中日月千禧酒店

Q&A session (Slido)



<https://wall.sli.do/event/vxgbxz77Pr8ZVoHkeKdZxm>

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鬱症及廣泛性焦慮症

重拾生活樂趣



成分：煩多閃膜衣錠含 agomelatine 25 mg，賦形劑含乳糖。適應症：治療鬱症及廣泛性焦慮症之成人病人。用法用量：一般建議每天一顆 Valdoxan® 於睡前口服使用。若症狀沒有改善時，劑量可於 2 週 (MDD) 或 4 週 (GAD) 後增加至每天 50 mg。開始治療時，所有病人應先檢測肝功能，若肝轉胺酶指數超過 3 倍正常值上限，則不應開始治療 (請參考“禁忌”及“警語”)。治療期間應定期於 3、6 (急性期結束時)、12、及 24 週 (維持期結束時) 定期檢測肝轉胺酶指數，其後依臨床需要檢測 (請參考“警語”)。若肝轉胺酶指數超過 3 倍正常值上限時應停藥 (請參考“禁忌”及“警語”)。劑量增加時，應以開始治療時之相同頻率檢測肝功能。增加劑量的決策應考慮肝轉胺酶指數增加的風險。應依據個別病人風險/利益而決定是否增加劑量到每日 50 mg，並應定期檢測肝功能。病人應治療至少六個月。禁忌：對有效成分或賦形劑過敏、肝功能不全，特別是針對肝硬化或活動性肝病，或肝轉胺酶指數超過 3 倍正常值上限者 (請參考“用法用量”及“警語”)、併用 CYP1A2 強抑制劑者 (如 fluvoxamine、ciprofloxacin) (請參考“交互作用”)。警語：本藥治療的病人曾有肝損傷，包括肝衰竭 (具有肝傷害風險的病人，曾有幾例通報死亡或肝移植的個案)、肝臟酵素上升超過十倍正常值上限、肝炎與黃疸等案例報告。監測肝功能：對於具有肝損傷風險因子的病人，如肥胖/體重過重/非酒精性脂肪肝、糖尿病、酒精使用疾患及/或飲用大量酒精飲料以及併用有肝損傷風險之藥品者，應於審慎考慮對於病人的利益與風險後才開始治療。所有病人應先檢測肝功能基礎值，若 ALT 及/或 AST 基礎值超過 3 倍正常值上限，則不應開始治療。對於治療前肝轉胺酶已增加的病人 (> 正常值上限但 ≤ 3 倍正常值上限者)，應謹慎用藥。所有病人應定期檢測肝功能 (請參考“用法用量”)。任何病人有血清中肝轉胺酶增加的現象，應在 48 小時內再次檢測肝功能。於治療期間若病人出現可能為肝損傷的症狀/徵候或肝轉胺酶指數超過 3 倍正常值上限，應立即停藥。18 歲以下病人：不建議使用。老年人：75 歲以上憂鬱症病人及 65 歲以上泛焦慮症病人不建議使用。失智症老人：不建議使用。對於有躁鬱症、躁症或輕躁症病史的病人應謹慎使用，若病人開始有躁症的症狀時應停藥。自殺/自殺想法：應密切監測病人。與 CYP1A2 強抑制劑併用為禁忌。賦形劑含乳糖，基本上為不含鈉。交互作用：禁忌：CYP1A2 強抑制劑。不建議：酒精、CYP1A2 中度抑制劑。懷孕：不建議。授乳：謹慎使用。駕駛與操作機器：可能發生暈眩與困倦。不良反應：常見：焦慮、不正常的夢想、頭暈、困倦、失眠、噁心、腹瀉、便秘、腹痛、嘔吐、ALT/AST 增加、背痛、疲倦、體重增加。少見：自殺念頭或行為、激動、躁動、無法靜止、侵略行為、作惡夢、躁症/輕躁症、混亂狀態、偏頭痛、感覺異常、腳不寧症候群、視覺模糊、耳鳴、GGT 增加、多汗、濕疹、搔癢、蕁麻疹、肌痛、體重減少。罕見：幻覺、靜坐不能、肝炎、鹼性磷酸酶增加、肝衰竭、黃疸、紅斑疹、臉水腫與血管性水腫、尿滯留。特性：Agomelatine 是一種 melatonergic 促效劑 (MT1 與 MT2 接受器) 以及 5-HT2C 拮抗劑。Agomelatine 於動物的生理時鐘混亂模式中可以再調整其生理時鐘。Agomelatine 可增加正腎上腺素 (noradrenaline) 與多巴胺 (dopamine) 從大腦皮質前葉釋放，並且對於血清促進素 (serotonin) 的細胞外濃度沒有影響。(詳細請參閱仿單)

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適應症及用法用量

思覺失調症，起始劑量1mg/day，建議劑量2~4mg/day。

藥理作用

Brexpiprazole可能是藉由血清素5-HT_{1A}與多巴胺D₂受體之部分致效作用以及血清素5-HT_{2A}受體之拮抗作用的合併作用而產生療效。

使用禁忌

已知對brexpiprazole或其任一成分過敏的病人，禁用REXULTI。

不良反應

靜坐不能、體重增加、腹瀉、消化不良等。

疾病分類代碼

ICD10: F20

健保代碼

1mg: BC27365100, 2mg: BC27366100, 4mg: BC27368100



14th Mind-Body Interface International Symposium

PNIRASia-Pacific Symposium

主辦單位 (Organizer) :

China Medical University Hospital 中國醫藥大學附設醫院

Taiwanese Society for Nutritional Psychiatry Research 台灣營養精神醫學研究學會