



**UNIVERSITY  
OF ALBERTA**

Faculty of Medicine & Dentistry

21<sup>st</sup> Annual  
Department of Psychiatry  
Research Day

**Abstract Book**

Department Speaker: Dr. Yifeng Wei  
Keynote Address: Dr. Daniel Moreno de  
Luca

*Genomic Psychiatry*

Wednesday, June 7<sup>th</sup>, 2023



June 7th, 2023

**21<sup>st</sup> Annual Research Day of the Department of Psychiatry.**

Welcome,

Psychiatry Research Day 2023 showcases the hard work and successful innovation of members of our department. It celebrates recent findings from our basic and translational research programs including developments in neurochemistry, genetics, imaging, neuropsychiatry, and psychotherapy. Many of these programs involve collaborative research with colleagues from other departments and institutions locally, nationally, and internationally. Over the years, the Department of Psychiatry has developed strong MSc and PhD programs to complement our residency program. Together, these trainees have been phenomenally successful: presenting research at scientific conferences around the world and being recognized at the university, provincial, and national levels for scholarships and awards.

To allow everyone to appreciate the depth and range of trainees' work, we will be having more than 25 summary talks, each lasting three minutes. These will be from our graduate students and residents, including Ahmed Abdel-Sayyed, An Bui, Anna Wilson, Belinda Agyapong, Derek Pierce, Domina Laurent, Emilie Desnoyers, Ernest Owusu, Ethan Hagen, Fernanda Talarico, Hossam Elgendy, Huda Al-Shamali, Jacquelyn Paquet, Jessica Li, Jia Lin Tian, John Wesley Paylor, Lei Qian, Lujie Xu, Oseahume Olusile, Robert Mcweeny, Setayesh Modanloo, Sidney Yap, Tarek Turk, Tyler Halverson, Wanying Mao, Yahya Ayoub, and Zitong Wang. The top presentations will be acknowledged with awards.

This year's Research Day program will highlight developments in precision medicine for autism and developmental disorders in Psychiatry. Our keynote speaker, Dr. Daniel Moreno De Luca, is the new CASA Research Chair and Associate Professor of Psychiatry at the University of Alberta. His work focuses on the impact of genetic variation on brain disorders and how to use such discoveries to enhance patient care, through genomically-informed interventions and precision medicine solutions. Dr. Moreno De Luca received his MD from Universidad Industrial de Santander in Colombia and an MSc from Université Pierre et Marie Curie, Sorbonne Universités in Paris. Following a postdoctoral fellowship in Neuropsychiatric Genetics & Human Disease Genetics at Emory University School of Medicine, he completed his Adult Psychiatry residency at Yale University and then his Fellowship in Child & Adolescent Psychiatry at Brown University. Following fellowship, he joined the faculty at Brown where he was clinical director of the Bradley Hospital's Genomic Psychiatry Consultation Service and practiced at the Verrecchia Clinic for Children with Autism and Developmental Disabilities.

We are grateful to all our research trainees and their supervisors for their contribution to the vital research in our department. Special thanks to our organizing committee: An Bui, Domina Laurent, Robert Mcweeny, Fernanda Talarico (our graduate student representatives); Sophia Ho (Graduate Program Administrator); Dr. Allen Chan (Graduate Program Director); and Stephanie Russell (Academic Department Manager) for their tireless efforts in organizing this year's Research Day.

Thank you for joining us in celebrating our research accomplishments from the past year.

Best Wishes,

David Ross, MD, PhD  
Professor and Chair, Department of Psychiatry  
Faculty of Medicine and Dentistry, University of Alberta

# ACKNOWLEDGEMENTS

The Department of Psychiatry is grateful to the following for their financial support:

DEPARTMENT OF PSYCHIATRY, UNIVERSITY OF



**Faculty of Medicine & Dentistry**

# 21<sup>st</sup> Annual Psychiatry Research Day

## Wednesday, June 7th, 2023

8:30 am – 9:00 am	<b>Registration, coffee, and poster set-up</b>
9:00 am – 9:10 am	<b>Opening Remarks</b> – <i>Dr. David Ross</i> Psychiatry Department Chair
9:10 am – 10:00 am	<b>Department Speaker</b> – <i>Dr. Yifeng Wei</i> <b>Title:</b> Applying Mental Health Literacy Approaches to Link Health and Education to Improve Child and Youth Mental Health
10:00 am – 10:50 am	<b>3-Minute Thesis Talks</b> – Session I <ul style="list-style-type: none"> <li>1. <i>Belinda Agyapong</i></li> <li>2. <i>Hossam Elgendy</i></li> <li>3. <i>John Wesley Paylor</i></li> <li>4. <i>Robert Mcweeny</i></li> <li>5. <i>Tarek Turk</i></li> <li>6. <i>Yutong (Jessica) Li</i></li> <li>7. <i>Ahmed Abdel-Sayed</i></li> <li>8. <i>Sidney Yap</i></li> <li>9. <i>Fernanda Talarico</i></li> <li>10. <i>Anna Wilson</i></li> </ul>
11:00 am – 11:20 am	<b>Coffee Break &amp; Poster Session</b>
11:30 am – 12:30 pm	<b>Lunch</b>
12:30 pm – 1:30 pm	<b>Keynote Speaker</b> – <i>Dr. Daniel Moreno De Luca</i> <b>Title:</b> Genomic Psychiatry: Implementing Precision Medicine for Autism and Developmental Disorders
1:30 pm – 2:20 pm	<b>3-Minute Thesis Talks</b> – Session II by Psychiatry Students <ul style="list-style-type: none"> <li>11. <i>Derek Pierce</i></li> <li>12. <i>Domina Laurent</i></li> <li>13. <i>Emilie Desnoyers</i></li> <li>14. <i>Ernest Owusu</i></li> <li>15. <i>Ethan Hagen</i></li> <li>16. <i>Huda Al-Shamali</i></li> <li>17. <i>Jacquelyn Paquet</i></li> <li>18. <i>Oseahume Olusile</i></li> <li>19. <i>Tyler Halverson</i></li> <li>20. <i>Jia Lin Tian</i></li> </ul>
2:30 pm – 2:50 pm	<b>Coffee Break &amp; Poster Session</b>
2:50 pm – 3:25 pm	<b>3-Minute Thesis Talks</b> – Session III <ul style="list-style-type: none"> <li>21. <i>Lei Qian</i></li> <li>22. <i>Lujie Xu</i></li> <li>23. <i>Setayesh Modanloo</i></li> <li>24. <i>An Bui</i></li> <li>25. <i>Wanying Mao</i></li> <li>26. <i>Yahya Ayoub</i></li> <li>27. <i>Zitong Wang</i></li> </ul>
3:35 pm – 3:50 pm	<b>Coffee Break &amp; Poster Session</b>

3:50 pm – 4:20 pm

**Student Awards Presentation & Closing Remarks – Dr. Allen Chan****3-Minute Thesis Talks**

<b>Presenter</b>	<b>Title</b>	<b>Page</b>
<b>1. Belinda Agyapong</b>	Interventions to Reduce Stress and Burnout Among Teachers: A Scoping Review	<b>9</b>
<b>2. Hossam Elgendy</b>	A Scoping Review on Adult Inpatient Satisfaction with Mental Health Services	<b>10</b>
<b>3. John Wesley Paylor</b>	Evaluating Changes in Cortical Activity After Perineuronal Pet Degradation in the Retrosplenial Cortex	<b>11</b>
<b>4. Robert Mcweeny</b>	Applying the Mental Health Literacy Approach for School-Based Preventive Psychiatry in Youth	<b>12</b>
<b>5. Tarek Turk</b>	Pharmacological Interventions for Primary Psychodermatologic Disorders: An Evidence Mapping and Appraisal of Randomized Controlled Trials	<b>13</b>
<b>6. Yutong (Jessica) Li</b>	Exploring Trends In Opioid and Stimulant use in the United States and Canada	<b>14</b>
<b>7. Zijia Yu</b>	Increased Cortical Activity and Connectivity and Associated Behavioural Abnormalities in Shank3B <sup>-/-</sup> Mouse model of Autism Spectrum Disorder	<b>15</b>
<b>8. Ahmed Abdel-Sayed</b>	The Stanford Gender-Related Variables for Health Research in a Canadian Population	<b>16</b>
<b>9. Sidney Yap</b>	Perspectives on Digitally Delivered Trauma Therapies	<b>17</b>
<b>10. Fernanda Talarico</b>	Implication of the COVID-19 Pandemic on the Mental Health of Developmentally Vulnerable Children	<b>19</b>
<b>11. Anna Wilson</b>	The Growth of a School-Based Mental Health Literacy (IYMHL) Co-Creation with Indigenous Youth	<b>20</b>
<b>12. Derek Pierce</b>	Administrative Health Records (ADRs) in Action: Privacy, Partnerships, and Predictive Models in Mental Health	<b>21</b>
<b>13. Domina Laurent</b>	Sex Differences in PTSD	<b>22</b>
<b>14. Emilie Desnoyers</b>	The Application of Functional Near-Infrared Spectroscopy in the Diagnosis of Schizophrenia and Other Psychotic Disorders: A Systematic Review	<b>23</b>

<b>15. Ernest Owusu</b>	Psychological and Pharmacological Interventions to Reduce Inpatient Alcohol Use Disorders (AUDs): A General Review	<b>24</b>
<b>16. Ethan Hagen</b>	Seeing Red: Colour as a Measure of Seeking Behaviour in Ethanol Addiction-like Behaviour within a Zebrafish Model	<b>25</b>
<b>17. Huda Al-Shamali</b>	"I'd Do Anything to Feel Better" - Understanding Barriers and Facilitators to Peripartum Depression Treatment	<b>26</b>
<b>18. Jacquelyn Paquet</b>	Towards Reconciliation Through a Postcolonial Approach to Psychiatric Education and Clinical Training in Canada	<b>27</b>
<b>19. Oseahume Olusile</b>	Quality Improvement Project to Improve Wait Times and Communications Systems For rTMS, ECT and Ketamine Clinics	<b>28</b>
<b>20. Tyler Halverson</b>	The Use of Gut Biotics in Psychiatric and Neurocognitive Disorders	<b>29</b>
<b>21. Jia Lin Tian</b>	Disruption of Seasonal Trends in Mental Health-Seeking Behaviours During the COVID-19 Pandemic	<b>30</b>
<b>22. Lei Qian</b>	A Literature Review of Self-Prioritization Effect and Implication for Clinical Research	<b>31</b>
<b>23. Lujie Xu</b>	Effect of Depressive Symptoms on Memory Functions in Persons with HIV: A Systematic Review	<b>32</b>
<b>24. Setayesh Modanloo</b>	Health Status Evaluations in Remote Camps Workers: Impacts of the Pandemic	<b>33</b>
<b>25. An Bui</b>	Sex- and Age-specific Transcriptional Responses Early After Ischemic Stroke and Recanalization	<b>34</b>
<b>26. Wanying Mao</b>	Status After Hospital Discharge: An Observational Study of the Progression of Patients' Mental Health Symptoms Six Weeks After Hospital Discharge	<b>35</b>
<b>27. Yahya Ayoub</b>	Investigating the Relationship Between Spontaneous and Sensory Evoked Activity	<b>36</b>
<b>28. Zitong Wang</b>	Endocannabinoids System (ECS) Dysfunction Contributes to the Distinguished Stress Responses Through the HPA-Axis Dysregulation in Wistar-Kyoto (WKY) Rats	<b>37</b>

## Department Speaker Biography



**Dr. Yifeng Wei, MA, PhD,** is an expert in school based mental health literacy. She is currently an assistant professor with the Department of Psychiatry at the University of Alberta. She is also the consultant to <http://mentalhealthliteracy.org>. Dr. Wei's research interests focus on promoting mental health literacy in schools and the community to help children and youth gain better understanding about mental health and mental disorders, reduce stigma against mental illness, obtain and maintain good mental health and enhance help-seeking behaviors. Her work further contributes to close the gap between education and health systems through promoting early identification of children and youth at risk of mental disorders and improving the quality of referral between systems. She has made a significant contribution to school/community mental health research, program development, and implementation

across Canada and around the world.

Dr. Wei has co-authored 59 peer-reviewed publications, 6 book chapters and one book on school mental health. She has led/co-led more than 40 school mental health projects, locally, nationally, and internationally. She has co-designed many mental health literacy interventions for schools, including Elementary Mental Health Literacy Resource, Mental Health & High School Curriculum Guide, Go-To Educator Training for early identification, and Transitions resource to support youth transitions from secondary to post-secondary life. In Canada, more than 30,000 educators have received the Go-To Educator training and more than 20 countries have adopted the Mental Health & High School Curriculum Guide. Dr. Wei is currently leading a national project to develop interventions for Indigenous children and youth through multi-sector collaborations with Indigenous community members across Canada.

## Keynote Speaker Biography



**Dr. Moreno De Luca** completed his medical degree in 2005 at the Universidad Industrial de Santander in Bucaramanga, Colombia, after which he completed a master's in neuroscience at the Université Pierre et Marie Curie at Sorbonne Universités in Paris, France. Dr. Moreno De Luca did a postdoctoral fellowship in neurogenetics at Emory University in Atlanta, Georgia, and then completed his clinical psychiatry residency at Yale University, followed by his child and adolescent psychiatry fellowship training at Brown, where he has been an assistant professor of psychiatry and human behaviour since 2018. Throughout that same period, he was also the clinical director of the Bradley Hospital's Genomic Psychiatry Consultation Service and an attending child, adolescent, and adult psychiatrist at the Verrecchia Clinic for Children with Autism and Developmental Disabilities. His research focuses on the impact of genetic variation on brain disorders and how to use his discoveries to

enhance patient care. He aims to contribute to genomically informed interventions and precision medicine solutions based on his research into the genetic underpinnings of autism and other neuropsychiatric conditions. To move this work forward, he collaborates closely with those who are on the autism spectrum or who live with developmental disorders.

As CASA Research Chair, Dr. Moreno De Luca will mentor and lead world-class research in the Department of Psychiatry, with opportunities for significant collaboration with the Women and Children's Health Research Institute, the Neuroscience and Mental Health Institute and the Department of Pediatrics, along with other provincial, national, and global partners. He will also work closely with community groups and the health system to advocate for evidence-based treatment for children and youth with psychiatric illnesses and ultimately aim to drive improvements in child and youth psychiatric care across the province.



## **Interventions to Reduce Stress and Burnout Among Teachers: A Scoping**

**Belinda Agyapong** (Department of Psychiatry, University of Alberta); Pamela Brett-MacLean (Department of Psychiatry, University of Alberta); Yifeng Wei (Department of Psychiatry, University of Alberta)

**Background.** Teaching is a highly challenging profession. Experience of chronic stress is a risk factor for burnout, poor mental and physical well-being. There is limited knowledge regarding optimal interventions to address stress and burnout among teachers.

**Objective.** To undertake a scoping review of the literature in the last five years to identify and synthesize various psychological interventions to address stress and burnout among teachers.

**Methods.** Relevant terms were used to search five bibliographic databases to identify different interventions adopted to reduce teachers' stress and burnout. Relevant articles were extracted, reviewed, collated, and thematically analyzed, and findings were summarized.

**Results.** Forty studies met the inclusion criteria. Sixteen burnout and stress-reduction interventions were identified. The most popularly studied interventions were Mindfulness-Based Interventions alone or in combination with yoga or Cognitive Behavioural Therapy, followed by Rational Emotive Behavioral Therapy (REBT). Mindfulness-Based Interventions led to decreased overall Teacher Stress Inventory and emotional exhaustion scores. REBT, primarily used with special education teachers, also showed positive results. Other interventions reporting positive outcomes include Inquiry-Based Stress Reduction, Stress Management and Resiliency Training Program, Cyclic Meditation, Group Sandplay, Progressive Muscle Relaxation, Autogenic Training, Sport-Based Physical Activity, Emotional Intelligence Ability Models and Christian Prayer and Prayer-Reflection.

**Conclusions.** Stress and burnout can have a negative impact on teachers and, very often, on the students they teach. Implementing effective school-based interventions is necessary to improve teachers' stress-coping ability and reduce the likelihood of burnout. Policymakers, governments, school boards and administrators should prioritize the implementation of school-based awareness and intervention programs.

## **A Scoping Review on Adult Inpatient Satisfaction with Mental Health Services**

**Hossam Elgendy** (Department of Psychiatry, University of Alberta); Reham Shalaby (Department of Psychiatry, University of Alberta); Nnamdi Nikire (Addiction and Mental Health, Alberta Health Services); Vincent I.O. Agyapong (Department of Psychiatry, University of Alberta; Department of Psychiatry, Dalhousie University); Yifeng Wei (Department of Psychiatry, University of Alberta)

**Introduction.** Patient satisfaction with hospital services has been increasingly discussed as an important indicator of healthcare quality. It was found that improving patient satisfaction is associated with better compliance to treatment plans and a decrease in patient complaints regarding doctors and nurses misconduct. This scoping review sought to identify potential determinants of satisfaction, and how to measure and utilize patient satisfaction as a guide for quality improvement initiatives.

**Methods.** This scoping review was designed in adherence with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA- ScR) statement. A systematic search was conducted in multiple databases (PubMed, MEDLINE, PsycINFO, CINAHL, and EMBASE), and included articles from January 2012 to June 2022. For the eligible studies, data extraction was conducted, and the findings were reported.

**Results.** A total of 31 studies were eligible to be included in this scoping review. The review has identified a variety of possible factors that affect patient satisfaction as well as tools for measuring it. The majority of the studies either utilized a pre-existing or newly created inpatient satisfaction questionnaire. The following factors appear to be strongly related to inpatient satisfaction with care: a clear discharge plan, less coercive treatment during the hospital stay, more individualized, higher quality information and specific treatment components that patients enjoy, such as physical exercise sessions and music therapy.

**Conclusion.** The scope of patient satisfaction with inpatient mental health services is a growing source of serious concern. Patient satisfaction is associated with better adherence to treatment regimens. Our scoping review has identified a number of satisfaction determinants and various tools to measure and utilize patient satisfaction as a guide for service quality improvement.

## Evaluating Changes in Cortical Activity After Perineuronal Net Degradation in the Retrosplenial Cortex

**John Wesley Paylor** (Department of Psychiatry, University of Alberta); Ryan Zahacy (Department of Psychiatry, University of Alberta); Allen Chan (Department of Psychiatry, University of Alberta); Ian Winship (Department of Psychiatry, University of Alberta)

Perineuronal net (PNNs) are organized extracellular matrices that surround mature neurons of the central nervous system (CNS) and help stabilize neuronal connectivity. The loss of PNNs because of injury or disease can result in aberrant synaptic connectivity and can disturb the contributions of host neurons, most often inhibitory interneurons, to local cortical networks. PNN loss can also result in cognitive impairment. These deficits are particularly relevant for CNS diseases like schizophrenia, where PNN loss and cognitive impairment are both observed. Here, we evaluated the impact of 30 days of PNN degradation in the retrosplenial cortex (RSC) on several tests of cognition and utilized mesoscale imaging to evaluate broader cortical changes. Degradation of PNNs in the retrosplenial cortex induced moderate impairment of object recognition memory in the crossmodal object recognition task. Interestingly, PNN degradation resulted in reduced parvalbumin+ interneurons density in the RSC. Wide-field optical imaging was used to evaluate broader changes in cortical connectivity after PNN degradation in the RSC. We found that cortical functional connectivity (spontaneous and sensory evoked) was largely unaltered but identified a significant decrease in power at low frequencies of activity in RSC. These data suggest that PNN degradation in RSC can impair performance in tests of working memory, potentially via the loss of parvalbumin+ interneurons and alterations in low frequency cortical activity. These findings encourage further investigation into the contributions that PNN loss makes to cognitive impairment and cortical interconnectivity, which are disturbed in CNS diseases like schizophrenia.

## **Applying the Mental Health Literacy Approach for School-Based Preventive Psychiatry in Youth**

**Robert Mcweeny** (Department of Psychiatry, University of Alberta); Andrew Baxter (University of Calgary); Kyla Vieweger (Alberta Health Services); Dr. Yifeng Wei (Department of Psychiatry, University of Alberta)

**Introduction.** Mental health literacy (MHL) protocols are promising tools to bridge gaps between mental health problems and insufficient mental health education. Building MHL at a population-level involves operationalizing domains of preventive psychiatry and health-literacy; increasing mental health knowledge, reducing stigma, early identification, and empowering help-seeking. This operationalization is the Mental Health Literacy approach.

**Objectives.** Curricular MHL interventions demonstrate greater educational outcome-efficacy compared to contact-education and non-interactive resources (ie., pamphlets) among youth. My Ph.D thesis will disseminate outcomes from the largest MHL curriculum study of its kind; the Elementary Mental Health Literacy Resource initiative (EMHLR). A primary aim of this project is to amplify conversation about the viability of school-based MHL approaches. Because children and adolescents are demographically prone to elevated mental health risks, and because school is compulsory, empowering teachers to utilize MHL approaches presents compelling opportunities for preventive psychiatry in youth populations.

**Methods.** This is a mixed-methods study consisting of cross sectional surveys (pre and post intervention) and follow-up focus group interviews examined with thematic- and content-analysis. Participants are grades 4-6 students from over 20 school districts in Alberta with a sample size of approximately 2000 students. The intervention comprises 6 modules taught by teachers who received specialized training. Descriptive and inferential statistics will be used for analysis.

**Results.** Data-collection of EMHLR is underway with completion expected early-summer 2023.

**Conclusion.** MHL is gaining noteworthy momentum in psychiatry with increasing interest toward development and validation of youth-specific mental health literacy curricula. This presents a compelling case for school-based MHL approaches as valid, evidence-based preventive psychiatry tools.

## **Pharmacological Interventions for Primary Psychodermatologic Disorders: An Evidence Mapping and Appraisal of Randomized Controlled Trials**

**Tarek Turk** (Department of Psychiatry, University of Alberta); Chaocheng Liu; Esther Fujiwara; Sebastian Straube; Reidar Hagtvedt; Liz Dennett; Adam Abba-Aji; Marlene Dytoc

**Introduction and Objectives.** The lack of clinical guidelines for the treatment of primary psychodermatologic disorders (PPDs) hinders the delivery of optimal care to patients. The review aimed to identify, appraise, and summarize the currently available evidence about the safety and effectiveness of pharmacological management of PPDs through randomized controlled trials (RCTs).

**Methods.** The Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) statement and the Global Evidence Mapping Initiative guidance were followed. Medline, Embase, PsycInfo, Cochrane and Scopus were searched, and two reviewers independently completed article review, data extraction, and quality assessment.

**Results.** Among 2618 unique studies, full texts of 83 were reviewed and 21 RCTs were included. Five PDDs were identified: trichotillomania (n=12), pathologic skin picking (n=5), nail biting (n=2), delusional parasitosis (n=1), and dermatitis from compulsive hand washing (n=1). Seven different classes of medications were investigated: SSRIs (i.e., fluoxetine, sertraline, and citalopram), tricyclic antidepressants (i.e., clomipramine and desipramine), antipsychotics (i.e., olanzapine and pimozide), anticonvulsant (i.e., lamotrigine), N-acetylcysteine, inositol, and milk thistle. RCT-derived evidence supports the use of antidepressants in trichotillomania (sertraline and clomipramine), pathologic skin picking (fluoxetine), pathologic nail biting and dermatitis from compulsive hand washing (clomipramine or desipramine), antipsychotics in trichotillomania (olanzapine) and delusional parasitosis (pimozide), and N-acetylcysteine in trichotillomania and skin picking.

**Conclusion.** Few pharmacotherapies for primary psychodermatologic disorders are assessed through controlled trials in the literature. This review serves as a roadmap for researchers and clinicians to reach informed decisions with current evidence, and to build on it to establish guidelines in the future.

## **Exploring Trends In Opioid and Stimulant use in the United States and Canada**

**Yutong (Jessica) Li** (Department of Psychiatry, University of Alberta); Bo Cao (Department of Psychiatry, University of Alberta)

**Introduction.** The opioid epidemic is comprised of three waves: i) from the 1990s, where opioids were used to manage pain; ii) from 2010, with heroin contributing to opioid related deaths; and iii) from 2013, where synthetic opioids contributed to opioid related deaths. Despite the attention on synthetic opioids in the most current wave, not enough attention has been shed on the important contribution of stimulants like amphetamines and cocaine. Over the time period of 2010 to 2019, amphetamines and cocaine have increased by 153%, and 126% respectively, compared to a 94% increase for opioids.

**Methods.** In our study, we will explore the trends of stimulants and the opioid epidemic in the United States and Canada. To accomplish this, we will use data from the Center for Disease Control National Institute on Drug Abuse (1999-2021), and the Public Health Agency (2016-2021) for the United States, and Canada respectively. Furthermore, to explore public awareness and engagement in the topic of stimulants and the opioid epidemic, we will use Google Trends, which can be used to track the search interest in stimulant and opioid related terms.

**Results.** We were able to identify that stimulants have a higher rate of increase in the United States despite opioids being the predominant substance of abuse. Additionally, Google Trends have shown how the public interest in stimulants have since dropped from their peak in 2004-2005.

**Conclusion.** There must be a renewed public interest in stimulants, as it contributes significantly to the opioid epidemic.

## **Increased Cortical Activity and Connectivity and Associated Behavioural Abnormalities in Shank3B<sup>-/-</sup> Mouse model of Autism Spectrum Disorder**

**Zijia Yu** (Department of Psychiatry, University of Alberta; Neurochemical Research Unit, University of Alberta); Ryan Zahacy (Neurochemical Research Unit, University of Alberta; Neuroscience and Mental Health Institute, University of Alberta); Yonglie Ma (Department of Psychiatry, University of Alberta; Neurochemical Research Unit, University of Alberta); Ian R. Winship (Department of Psychiatry, University of Alberta; Neurochemical Research Unit, University of Alberta; Neuroscience and Mental Health Institute, University of Alberta); Allen W. Chan (Department of Psychiatry, University of Alberta; Neurochemical Research Unit, University of Alberta; Neuroscience and Mental Health Institute, University of Alberta)

**Introduction and Objectives.** Autism spectrum disorder (ASD) is a neurodevelopmental disorder, which may manifest as difficulties in speech, nonverbal communication, and social interactions, along with restricted and repetitive patterns of behaviour, interests, or activities. Altered brain activity and connectivity were observed in children with ASD but how these alterations relate to diagnostic criteria is unclear. We used the Shank3B<sup>-/-</sup> mouse model of ASD to investigate cortical activity and connectivity through intrinsic signal optical imaging and calcium imaging of the dorsal neocortex.

**Methods.** We are doing home-cage recording to measure grooming time, and behavioural tests like the open field test and the Three Chamber test for the measurements of anxiety level and social behaviours. Furthermore, we employed intrinsic signal optical imaging and calcium imaging to capture the cortical activity and connectivity of mice.

**Results.** We identified hyper-grooming behavior and impaired social interest in Shank3B<sup>-/-</sup> mice. These mice also exhibited reduced movement in the open field test, which could indicate heightened anxiety. We employed intrinsic signal imaging to assess global cortical activity across the neocortex and discovered a state of hyperactivity and hyperconnectivity. This result is supported by the preliminary data from calcium imaging.

**Discussion.** By revealing hyperconnectivity and heightened cortical activity, in addition to observing corresponding impaired behaviours, we have established a foundation for delving deeper into the possible mechanistic pathophysiology of Shank3B<sup>-/-</sup> and potentially identifying new therapeutic targets.

**Conclusion.** Shank3B<sup>-/-</sup> mice exhibit autistic-like behaviours along with increased cortical activity and connectivity.

## The Stanford Gender-Related Variables for Health Research in a Canadian Population

**Ahmed Abdel-Sayed** (Department of Psychiatry, University of Alberta); Kim Ngan Hoang; Tarek Turk; Lujie Xu; Esther Fujiwara

The impact of gender on health outcomes is well-recognized, and as gender norms continue to evolve, contemporary assessment tools to measure gender become increasingly necessary. This study sought to validate the recent US-based Stanford Gender-Related Variables for Health Research (SGVHR) scale within a Canadian context. We also aimed to improve gender prediction by including simple socio-demographic factors on education, income, and occupations. We recruited 2,445 Canadian online participants (~50% female). Our cohort differed in multiple ways from the original cohort. In particular, our participants were on average 15 years older (mean age: 49.3 years). Multigroup confirmatory factor analyses largely confirmed the SGVHR factor structure, indicating its generalizability beyond the initial US-based sample. Minor variations emerged, particularly with items regarding work and caretaking, possibly due to our cohort's older age. Regression analyses indicated that the SGVHR subscales were moderately predictive of self-reported gender, with significant correlations observed for discrimination, emotional intelligence, caregiver strain, risk-taking, independence, and work strain. Moreover, incorporating socio-demographic factors, such as education, income, and occupational information, enhanced the predictive power of the SGVHR, raising the explained variance from 17-18% to 33-34%. This study underscores the SGVHR's applicability in diverse Western populations, its gender-predictive value in Canada, and encourages the inclusion of simple sociodemographic variables like income levels and educational attainment to approximate gender. Future studies should test the health-relevance of such indicators along with the SGVHR.



## Perspectives on Digitally Delivered Trauma Therapies

**Sidney Yap** (Department of Psychiatry, University of Alberta); Rashell Wozniak (Department of Psychiatry, University of Alberta); Katherine Bright (Department of Psychiatry, University of Alberta); Matthew R.G. Brown (Department of Psychiatry, University of Alberta); Lisa Burbach (Department of Psychiatry, University of Alberta); Andrew Greenshaw (Department of Psychiatry, University of Alberta); Suzette Bremault-Phillips (Department of Psychiatry, University of Alberta)

**Introduction and Objective.** The COVID-19 pandemic has significantly impacted the mental health of individuals globally. In response to increased mental health service demands and COVID-19 related restrictions, mental health clinicians rapidly shifted their services from in-person to digital delivery (e.g., teletherapy, telemedicine, eHealth, and mobile health). This shift has been instrumental in maintaining continuity of care for trauma-affected populations (TAPs; public safety personnel, military members, Veterans, and civilian frontline workers). Many TAPs are routinely exposed to potentially psychologically injurious high-risk situations. COVID-19 may compound these injuries, potentially negatively impacting their mental health, occupational engagement, and relationships. Little is understood regarding the impact of this shift. The aim of this study was to better understand the experiences of TAPs who received and clinicians who delivered digital trauma therapies and identify unique benefits and barriers of digital delivery.

**Methods.** Survey data was collected from 12 Canadian mental health clinicians who deliver digital trauma therapy to TAPs and 11 Canadian TAPs who have received digital trauma therapy. All data was collected online via a secure database.

**Results.** Clinicians and TAPs participants shared common perspectives that highlighted unique benefits and barriers of digital trauma therapy. Our results suggest that digital trauma therapies may be ready to be implemented on a wider scale and offer similar quality care to in-person delivery.

**Discussion and Conclusion.** The digital delivery of trauma therapy may provide unique advantages to in-person delivery. Further research with a larger, more diverse population is required to corroborate our results and identify other avenues where digital delivery can be improved.

**Acknowledgements.** Funding support for this project was provided by the following agencies:

- *Supporting Psychological Health in First Responders* (SPHIFR) grant program

- *Canadian Institute of Health Research (CIHR) through the Knowledge Synthesis: COVID-19 in Mental Health & Substance Use grant competition*

We at *HiMARC* would like to thank the *Edmonton Occupational Stress Injury Clinic* for their support and contributions to this project.

## **Implication of the COVID-19 Pandemic on the Mental Health of Developmentally Vulnerable Children**

**Fernanda Talarico** (Department of Psychiatry, University of Alberta); Dan Metes (Government of Alberta, Ministry of Health); Mengzhe Wang (Government of Alberta, Ministry of Health); Bo Cao (Department of Psychiatry, University of Alberta)

**Objective.** This study examines the association between developmental vulnerability and healthcare utilization among children in Alberta, Canada, using administrative health records from 2016 to 2022.

**Methods.** The analysis includes data from 2016 to 2022 and focuses on mental health-related events and conditions. All children who participated in the 2016 Early Development Instrument (EDI) assessment and were covered by public Alberta Health insurance were included (N=23 494).

**Results.** Findings indicate a significant decrease in overall healthcare utilization, with vulnerable children experiencing more events than non-vulnerable children. Mental health-related services utilization showed a consistent linear increase from 2016 to 2022, with higher rates observed in males, especially among vulnerable children. The COVID-19 pandemic did not disrupt utilization patterns, except for a temporary decrease. Anxiety-related services utilization consistently increased, with females having higher rates. ADHD-related services utilization differed between groups, with vulnerable males showing more utilization. There was a significant increase in eating disorder-related services utilization among vulnerable children in 2021-2022.

**Discussion and conclusion.** These results emphasize the need for comprehensive mental health support, early intervention, and targeted strategies for children. Policymakers should prioritize investments in mental health services, promote equity in access, and foster collaboration among healthcare systems, education institutions, and community organizations. Ensuring the well-being of children requires a proactive approach to address mental health challenges.

## **Exploring Indigenous Perspectives for the Development of a School-Based Mental Health Literacy (IYMHL) Intervention for Indigenous Youth**

**Anna Wilson** (Department of Psychiatry, University of Alberta)

**Objectives.** Health Canada indicates that Indigenous mental health should focus on the concept of mental wellness, encompassing culture, language, Elders, families, and creation. Mental Health Literacy is defined as: “Acquiring and sustaining positive mental health, understanding mental disorders, and their treatments [while] destigmatizing mental illness and accessing professional help.” I will facilitate an IYMHL Resource to enhance the mental health of Indigenous youth across Canada.

**Methods.** Indigenous Research Methodologies (IRM) honors the “cultural protocols, values and beliefs of the Indigenous group” local to the participating Indigenous community following “respect, reciprocity and relationality.” Researchers are participants who reciprocate through sharing their reasons for conducting the research. Data will be organized with content analysis and analyzed through grounded theory.

**Discussion.** My reasons are rooted in the loss of my former student Marie Janvier who was killed in the shooting at Dene High School in La Loche Saskatchewan. The student who shot her suffered from a mental illness and many students struggled with their mental health afterwards.

**Results.** In Marie’s honor, I will facilitate an IYMHL Resource to enhance the mental health of Indigenous youth. Our ethics approval is under review. However, we expect that through this resource, language and culture will be considered central to Indigenous mental health.

**Acknowledgements.** This research study is part of Dr. Yifeng Wei’s research to collaborate with Indigenous communities across Canada to co-create an IYMHL resource.

## **Administrative Health Records (ADRs) in Action: Privacy, Partnerships, and Predictive Models in Mental Health**

**Derek Pierce** (Department of Psychiatry, University of Alberta); Fernanda Talarico; Yutong Li; Yipeng Song; Yang S. Liu; Dan Metes; Andrew J. Greenshaw; Mengzhe Wang; Jake Hayward; Bo Cao; Jia Lin Tian; Yanbo Zhang; Huda F Al-Shamali

This thesis investigates how administrative health records (ADRs) can enhance our understanding of mental health care. It delves into the dynamics of privacy in healthcare research, the significance of successful partnerships among government, clinicians, and universities, and the application of ADRs in real-world scenarios. The research underscores the role of machine learning in predicting opioid overdoses, and discusses the rise in developmental and neurocognitive disorders post-COVID-19 in Alberta. These insights emphasize the value of ADRs in shaping policy and addressing long-term implications of heightened healthcare utilization.

## Sex Differences in PTSD

**Domina Laurent** (Department of Psychiatry, University of Alberta) Dr. Andrew Greenshaw, Dr. Suzette Bremault-Phillips

Post-traumatic stress disorder (PTSD) is a condition arising from traumatic experiences that lead to sustained neurobiological and physiological responses. In terms of biological sex at birth, women have an increased risk compared to men. The National Center for PTSD estimates that at least 10% of women will experience PTSD in their lifetime, and at least 4% of men (Christiansen & Berke, 2020; Merians et al., 2023). This presentation summarizes and discusses the implications of the evidence for sex differences in PTSD. Evidence indicates that women with PTSD have a higher likelihood of experiencing dissociative symptoms, re-experiencing, anxious arousal, and acute subjective response symptoms such as threat perception and peritraumatic dissociation compared to men (Abizaid et al., 2019; Merians et al., 2023; Olf, 2017). In terms of biological sex differences, risk factors for women developing PTSD include social and genetic factors such as gender roles, genetic predisposition, and hormonal influence factors (Christiansen & Berke, 2020). Since PTSD is a debilitating, hard to treat condition, it is important to explore areas of treatment that may have been neglected. Biological sex differences indicate that tailoring PTSD treatments or treatment delivery by individual cases in relation to biological sex may be important in optimizing health outcomes. This review focuses on biological sex, implications for gender identity in this context must also be considered although more systematic analysis of the importance of gender identity is needed.

## **The Application of Functional Near-Infrared Spectroscopy in the Diagnosis of Schizophrenia and Other Psychotic Disorders: A Systematic Review**

**Emilie Desnoyers** (Department of Psychiatry, University of Alberta)

**Background and Hypothesis.** Schizophrenia is a serious mental disorder characterized by primary symptoms such as delusions and hallucinations, also known as psychosis. The diagnosis of schizophrenia relies on doctors' previous experience and administration of subjective clinical interviews and scales. Diagnostic procedures for schizophrenia could be improved with input from portable brain imaging techniques of eligible patients. Functional near-infrared spectroscopy (fNIRS) is a form of functional neuroimaging that measures oxygenated and deoxygenated hemoglobin concentrations. Recent research has investigated the plausibility of fNIRS to assist the diagnosis of schizophrenia and other psychotic disorders. This systematic review examines the prospect of fNIRS being used as a potential diagnostic tool for schizophrenia and other psychotic disorders.

**Study Design.** A search was done in PubMed, Web of Science, Scopus, and Embase. Of 372 results, 25 papers met the inclusion criteria of participants with psychotic disorders and fNIRS was discussed as an objective tool that could potentially be used to diagnose schizophrenia.

**Study Results.** The present review explores research that demonstrates a potential positive impact of the use of fNIRS in the diagnosis of schizophrenia. The accuracy of the studies that performed classification techniques was 84.95%.

**Conclusions.** This systematic review provides preliminary evidence that fNIRS may assist future diagnosis of schizophrenia. For this field to advance, there needs to be more studies similar to the ones discussed in this review, and such studies should also include schizophrenia with other psychotic disorders.

## **Psychological and Pharmacological Interventions to Reduce Inpatient Alcohol Use Disorders (AUDs): A General Review**

**Ernest Owusu** (Department of Psychiatry, University of Alberta); Reham Shalaby (Department of Psychiatry, University of Alberta); Nnamdi Nkire (Department of Psychiatry, University of Alberta); Mobolaji A. Lawal (Department of Psychiatry, University of Alberta); Vincent I.O. Agyapong (Department of Psychiatry, University of Alberta; Department of Psychiatry, Dalhousie University)

**Background.** According to the World Health Organization around 2 billion people worldwide are estimated to drink alcohol. In high-income and middle-income nations, the expenses connected with alcohol account for more than 1% of the gross domestic product.

**Methods.** A comprehensive and narrative review of studies and research on psychological and pharmacological interventions for patients with alcohol use disorders in inpatient treatment units was performed. This review included both qualitative and quantitative studies. Seven studies out of the total 1245 studies were identified and extracted from electronic bibliographic databases including Medline.

**Results.** 7 articles were analyzed. This review showed that a combination of pharmacological intervention such as naltrexone, nalmefene, acamprosate and brief psychological interventions were very effective in the treatment of alcohol use disorder (AUD). **Discussion** This review has revealed that Nalmefene combined with acamprosate plus psychosocial support helps in minimizing excessive alcohol use. Cognitive-behavioral therapy (CBT) approaches were among the highest levels for the treatment of drug-disorders and AUDs.

**Conclusion.** AUD is prevalent and a worldwide problem with severe negative impacts. The findings of this review have shown that a combination of pharmacological intervention such as naltrexone, nalmefene, acamprosate and brief psychological interventions were very effective in the treatment of AUD. There is the need to adopt these two proven interventions to ensure effective treatment of AUD.



## **Seeing Red: Colour as a Measure of Seeking Behaviour in Ethanol Addiction-like Behaviour within a Zebrafish Model**

**Ethan Hagen** (Department of Psychiatry, University of Alberta); Yanbo Zhang (Department of Psychiatry, University of Alberta); Trevor Hamilton (Department of Psychology, MacEwan University)

Ethanol addiction is a prevalent and detrimental disorder worldwide, necessitating the development of effective treatment strategies. In recent years, there has been growing interest in exploring the potential therapeutic benefits of psychedelic compounds, such as lysergic acid diethylamide (LSD), for addiction treatment. Zebrafish (*Danio rerio*) has emerged as a valuable animal model for studying substance abuse and assessing the effects of potential treatments. By utilizing Zebrafish as a model, researchers can gain insights into the neurobiological mechanisms underlying ethanol addiction and the effects of LSD on addictive behaviours. However, before using zebrafish to model addiction, it is essential to understand important aspects of addiction. In this study, we focused on seeking behaviour as we construct a complete model of addiction-like behaviour in the zebrafish. In this study, Zebrafish were exposed to 0.8% ethanol or habitat water for one hour per day for 21 days, followed by a 4-day withdrawal period. Both control and ethanol exposed zebrafish were exposed to red during dosing, which surrounded the 1L dosing tanks. At the end of this withdrawal period, they were tested in a two-colour option maze consisting of a red and yellow zone for 10 minutes. Fish exposed to red, and 0.8% ethanol for 21 days spent significantly more time in the red zone. Both the control and the dosed groups spent a similar amount of time in the yellow zone. This data suggests that we were able to establish a conditioned colour preference with repeated ethanol administration in zebrafish.

## **“I’d Do Anything to Feel Better” - Understanding Barriers and Facilitators to Peripartum Depression Treatment**

**Huda Al-Shamali** (Department of Psychiatry, University of Alberta); Margot Jackson; Nataliia Zinchuk; Setayesh Modanloo; Gina Wong; Bo Cao; Lisa Burback; Xin-Min Li; Andrew Greenshaw; Yanbo Zhang

Peripartum depression (PPD) affects 15% of pregnant women and new moms and causes propounding impacts on a mother and her child’s wellbeing. PPD is the leading cause of maternal death due to suicide or overdose. This is magnified by the limited effective and safe treatment options available to this population. Repetitive transcranial magnetic stimulation (rTMS) emerged as a promising safe and effective non-invasive treatment for PPD, but few patients with PPD are aware of its existence. This study employs a mixed-method design to identify barriers and facilitators that impact a person with PPD’s ability to receive treatment in general, and rTMS treatment specifically. An equity, diversity, and inclusion (EDI) perspective on sex, gender, and ethnicity are followed. We created and shared two anonymous 5-minute online surveys that are offered in 5 languages. One survey is targeted to health professionals, and the second is for people who are currently, or have previously experienced depressive symptoms. Additionally, we are conducting interviews and focus groups. Recruitment is currently ongoing. Thus far we have received 563 completed survey responses, conducting 16 interviews, and 1 focus group. Three main themes thread through many of the responses: 1) a need for education on symptoms and treatments, 2) fear of stigma towards admitting to depressive symptoms and seeking treatment, and 3) an inability to mentally and/or physically access treatment. The findings of our study will inform future research on potential initiatives that can bridge the gap between patients’ need for treatment and their ability to receive it.

## **Towards Reconciliation Through a Postcolonial Approach to Psychiatric Education and Clinical Training in Canada**

**Jacquelyn Paquet** (Department of Psychiatry, University of Alberta)

**Background.** First Nations peoples in Canada have been affected by compounding detrimental inequities rooted in colonialism which has significantly impacted their health and wellbeing. Colonialism framed as a social determinant of health compels us to address long standing political, cultural, and economic inequities facing Indigenous peoples. The challenge of decolonizing current societal institutions founded on colonial norms/forms of knowledge is necessarily fraught with difficulties - but must be addressed.

**Objectives.** To identify approaches to decolonizing psychiatry residency education to mitigate ongoing harms and promote culturally-informed approaches to improve the mental well-being of Indigenous people.

**Results.** Recognizing that psychiatry is far from being culture-neutral, we created a framework for integrating postcolonialism within residency education based on the Truth and Reconciliation Commission of Canada's (2015) "calls to action". Topics and concepts to address throughout the curriculum were identified, and importance of experiential learning and longitudinal clinical experiences were highlighted. Departmental, institutional, and national recommendations for incorporating postcolonial understanding within psychiatry were also provided, including need for cultural humility and critical reflection to promote development of historically- and culturally-informed collaborative relationships with First Nations people and communities.

**Conclusion.** An intentional, thoughtful educational approach directed to social justice, developed in collaboration with Indigenous communities is needed to improve relationships between psychiatry and Indigenous peoples and ensure delivery of care from a more culturally informed, sensitive, and holistic lens. Recognizing an evolving, anticipatory postcolonial discourse, these beginning steps will undoubtedly transform over time, as understanding of deeply entrenched systems of power and privilege in mental health expands.

## Quality Improvement Project to Improve Wait Times and Communications Systems For rTMS, ECT and Ketamine Clinics

**Oseahume Olusile** (Department of Psychiatry, University of Alberta); Duong, Bryan (Department of Psychiatry, University of Alberta); Zhang, Yanbo (Department of Psychiatry, University of Alberta)

**Introduction.** Over time, observed bottlenecks to rTMS access have increased patient wait times. Procedural treatment options for Treatment Resistant Depression require communication systems coordination to determine a stepped care approach.

**Methods.** Using The Ottawa Hospital Innovation Framework to understand contributing factors, the problem was defined as an increase in time from patient assessment to treatment, and the need for coordination between these TRD services, as well as need for a well-defined patient referral pathway. This resulted in an increase in total wait time, significant symptom burden, with sub optimal allocation of available treatment resources.

**Results.** We used the Fishbone (Ishikawa) Diagram Guide to analyze and identify the root causes involved. Discussion We then selected several interventions that could be used to address modifiable root causes, with the hope of further evaluation and measurement of parameters, to determine significant impact:

- Information sharing, including open access to patient waiting lists, using the recommended guidelines, with proper triage to enable faster and more effective treatment,
- Streamlining current referral processes, including mapping out a referral pathway, and education of referring physicians,
- Individualizing patient pre-treatment evaluation, based on previous medical history and current medical information to become more efficient and significantly reduce wait times.
- Possible inclusion of a physical examination by a family physician prior to referral to improve patient access and flow through treatment clinics.

**Conclusion.** By making incremental changes per time, we hope to understand and measure improvement of our processes, while upholding and maintaining our standard of care.

## **The Use of Gut Biotics in Psychiatric and Neurocognitive Disorders**

**Tyler Halverson** (Department of Psychiatry, University of Alberta)

**Introduction.** Within the human gastrointestinal (GI) tract there is a large collection of microorganisms that make up the gut microbiome (GM). The GM can interact with the human host through the Microbiome-Gut-Brain axis. When there is a disruption of the normal population of microorganisms, this is known as dysbiosis. Emerging evidence suggests that dysbiosis can impact this axis and impact mood, anxiety, and cognition. Thus, restoring the balance of the GM may help in the treatment of psychiatric conditions.

**Methods.** A literature search was performed using the electronic databases MEDLINE (1966 - July 2021), EMBASE and SCOPUS (1965 - July 2021), PsycInfo (1966 - July 2021) and DARE (1966 - July 2021).

**Results.** Using both animal and human studies, gut biotics; such as probiotics, prebiotics, and synbiotics have been explored in treating multiple mental health conditions. Current evidence shows improvements in patients' mood, anxiety, and cognition when treated with various types of gut biotics. These products are overall safe for use and have been found to be beneficial in GI and metabolic diseases.

**Discussion & Conclusions.** There is emerging evidence that gut dysbiosis can play a role in mental health conditions. Based on this literature review, there is emerging evidence that targeting the GM can have a benefit on improving symptoms related to depression, anxiety, and even cognitive function. The use of gut biotics may serve as an adjunct therapy in these conditions. However, there is still limitation in the research and more longitudinal studies are needed.

## Disruption of Seasonal Trends in Mental Health-Seeking Behaviours During the COVID-19 Pandemic

Fernanda Talarico (Department of Psychiatry, University of Alberta; Government of Alberta, Ministry of Health); **Jia Lin Tian** (Department of Psychiatry, University of Alberta; Government of Alberta, Ministry of Health); Yipeng Song (Department of Psychiatry, University of Alberta; Government of Alberta, Ministry of Health); Derek Pierce (Department of Psychiatry, University of Alberta; Government of Alberta, Ministry of Health); Dan Metes (Government of Alberta, Ministry of Health); Rong-Cai Song (Government of Alberta, Ministry of Health); Guofeng Wu (Government of Alberta, Ministry of Health); Yanbo Zhang (Department of Psychiatry, University of Alberta); Jake Hayward (Department of Emergency Medicine, University of Alberta); Mengzhe Wang (Government of Alberta, Ministry of Health); Bo Cao (Department of Psychiatry, University of Alberta)

The COVID-19 pandemic has had profound effects on mental health globally. Research suggests that there is a pattern to the frequency of psychiatry admissions to hospitals and emergency departments (ED) throughout the year. The objective of this study is to explore seasonal and pandemic-related patterns in mental health service utilization and compare them across different ages and biological sex in Alberta.

We utilized administrative healthcare data from Alberta to analyze mental health utilization trends while controlling for confounding factors. We used diagnosis codes from the International Classification of Diseases to identify mental health disorders. Health services and subgroup analyses were performed to evaluate mental health utilization trends overall and among different biological sex and age groups.

Prior to the pandemic, mental health-related physician office visits and ED visits showed a seasonal pattern. However, mental health-related hospitalizations did not show a significant seasonal variation. After the pandemic onset, the seasonal pattern of mental health-related physician office visits and ED visits was altered but subsequently returned to a similar trend during the summer months. Additionally, there has been a notable increase in the overall number of mental health-related patients. Our findings also revealed a shift in healthcare utilization patterns in response to the pandemic, with females slightly exceeding males in utilization rates.

Our study provides insights into the seasonal and pandemic-related trends in mental health utilization in Alberta. These findings highlight the need for continued support and resources for mental health services, particularly during times of crisis such as the COVID-19 pandemic.

## **A Literature Review of Self-Prioritization Effect and Implication for Clinical Research**

**Lei Qian** (Department of Psychiatry, University of Alberta)

**Introduction.** The alteration of the self is an important aspect to understand the symptoms, pathology, and treatment of mental disorders. In the past decade, there has been a growing interest in investigating the self-prioritization effect (SPE) of perceptual matching, which may be a potential measure for the altered self in mental disorders. The objective of this research is to conduct a literature review to summarize the findings of the SPE in healthy and clinical populations.

**Methods.** A literature review was performed utilizing the online databases: Web of Science, Google Scholar, PsycINFO, and PubMed. Search terms “self-prioritization” and “self-prioritisation” were used. Papers were required to be published in a peer-reviewed journal and describe the SPE of perceptual matching.

**Results.** The concept of the SPE of perceptual matching was introduced in the year of 2012. Since then, the research themes of the SPE have been around cognitive processing, neurological and physiological bases, different manipulations of perceptual matching stimuli, the relationship between the SPE and other psychological processes (e.g., emotion and rewarding) in healthy populations. The clinical research of the SPE was limited in subclinical symptoms, such as depression, anxiety, and psychiatric traits. There was little research among clinical populations.

**Discussion.** Previous studies have provided an understanding of the concept and mechanism of the SPE in healthy populations. However, evidence of the potential alterations of the SPE in patients with mental disorders is sparse.

**Conclusion.** Future research directions may focus on how the SPE is altered in patients with mental disorders.

## **Effect of Depressive Symptoms on Memory Functions in Persons with HIV: A Systematic Review**

**Lujie Xu** (Department of Psychiatry, University of Alberta); Tarek Turk (Department of Psychiatry, University of Alberta); Sandra Campbell (Faculty of Medicine and Dentistry, University of Alberta); Esther Fujiwara (Department of Psychiatry, University of Alberta)

**Introduction and Objectives.** Memory impairment can persist in persons with HIV (PWH) despite antiretroviral treatment. Depression is also prevalent and has known effects on memory functions. Our objective was to conduct an up-to-date systematic review on memory functions and depressive symptoms (DS) in treated HIV.

**Methods.** The review was conducted following the PRISMA guidelines, with searches in eight databases. Outcomes were a) differences in memory performance in PWH vs. PWH and DS, b) relationships between DS severity/incidence and memory in PWH, c) longitudinal memory changes with ongoing or acute DS in PWH.

**Results.** We identified 1709 papers. After removal of duplicates, screening (1041) and full-text review (105), 29 studies were included. Of group designed studies, 6 of 16 studies showed lower memory in PWH & DS compared to PWH. Correlations between DS and memory were negative in 7 of 18 of the examined relationships. Of the longitudinal findings, 3 of 7 studies showed worse memory over time with concurrent DS in PWH.

**Discussion and Conclusion.** Most studies did not find worse memory in depressed vs. non-depressed PWH. However, when memory function is already compromised in PWH, comorbid depression may worsen it further, underscoring the importance of early monitoring. Negative relationships between DS and memory similarly emerged mainly from studies with memory-impaired PWH. When memory decline was associated with DS longitudinally, this applied to moderately-highly depressed PWH only. Thus, preventing worsening depression over time remains paramount. The large variability in study designs prevented meta-analysis, calling more longitudinal studies from additional cohorts.



## **Health Status Evaluations in Remote Camps Workers: Impacts of the Pandemic**

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**Introduction.** Fly-in fly-out (FIFO) work is prevalent in Canada's oil, gas, and construction sectors. Workers travel long distances to remote camps, following rotating schedules of one or more weeks. Despite its popularity, recent research reveals that extended separation from family, isolated camp living, and demanding work schedules negatively impact employee wellbeing. This includes anxiety, depression, burnout, and psychological distress (Parker et al., 2018). COVID-19 adds to these challenges by posing a significant problem for remote camp work settings where access to healthcare facilities and social support is already limited.

**Objectives.** Understanding the impacts of COVID-19 and workplace policies on FIFO workers' mental and physical health is crucial. The University of Alberta and Mood Disorders Society of Canada collaborate to investigate these effects and explore risk mitigation strategies. This study focuses on worker productivity, mental wellbeing, and physical health, recognizing the unique vulnerabilities faced by FIFO workers.

**Methods.** We will conduct a mixed-methods research study comprising two phases. Phase (I) is retrospective, using surveys and focus groups. Phase (II) is prospective, utilizing smartwatches, e-PROMS, health records, and interviews. This design enables comprehensive data collection and analysis, including self-reports, objective measurements, and qualitative insights.

**Expected results.** The expected results of this study anticipate a decline in the mental wellbeing, physical health, and productivity of FIFO workers due to the impacts of COVID-19 and related workplace health and safety policies. The collected data will provide valuable insights into the specific challenges faced by FIFO workers and contribute to the development of potential risk mitigation strategies for the future.

## **Sex- and Age-specific Transcriptional Responses Early After Ischemic Stroke and Recanalization**

**An Bui** (Department of Psychiatry, University of Alberta); Yonglie Ma (Department of Psychiatry, University of Alberta); Ian R Winship (Department of Psychiatry, University of Alberta)

Ischemic stroke (IS), in which blood clots block blood vessels in the brain, is among the leading causes of death worldwide. The current treatment of IS is recanalization, which opens the occluded vessels. However, many patients, despite having received a successful recanalization, do not have good functional outcomes, which is termed futile recanalization. Identifying early genomic markers and predictors of futile recanalization can help develop early diagnoses of IS by blood tests and targeted pharmacological treatment. We aim to explore early and novel genomic markers of IS and recanalization, and the biological pathways they significantly modulate in mice. IS was modelled with middle cerebral artery occlusion (MCAO) surgery. Three experimental groups (N=44): sham, MCAO, and recanalization, were included. Mice were euthanized immediately after 1-hour MCAO surgery, except in the recanalization group, where mice received recanalization after 1-hour MCAO and recovered for 3 hours before euthanasia. RNA was extracted and purified from blood samples and Affymetrix Clariom microarray was performed. All expression analysis was done in RStudio and Bioconductor. *Vcan*, a novel marker that was not linked to IS before, was significantly upregulated in the recanalization group, which suggests it being a new potential marker of IS. Functional enrichment analysis showed significantly high enrichment of inflammatory pathways. Signs of neutrophil activation, migration, and adhesion were observed as early as 3 hours after recanalization in peripheral blood, which could be linked to futile recanalization shown in the literature and clinical studies and serve as targets for IS treatment.

## **Status After Hospital Discharge: An Observational Study of the Progression of Patients' Mental Health Symptoms Six Weeks After Hospital Discharge**

**Wanying Mao** (Department of Psychiatry, University of Alberta); Reham Shalaby (Department of Psychiatry, University of Alberta); Vincent Israel Opoku Agyapong (Department of Psychiatry, University of Alberta; Department of Psychiatry, Dalhousie University)

**Introduction.** Transitioning from mental health inpatient to community care can be a vulnerable time in treatment. This study assessed the progression of mental health symptoms in patients six weeks after discharge. Factors that may contribute to anxiety, depression, and low quality of life following return to the community were investigated.

**Methods.** This was an observational study. Participants' data on a variety of socioeconomic and clinical factors were collected at discharge and six weeks after via REDCap. Anxiety and depression symptoms and quality of life were assessed using the Generalized Anxiety Disorder (GAD-7) questionnaire, the Patient Health Questionnaire-9 (PHQ-9), and the World Health Organisation-Five Well-Being Index (WHO-5). Descriptive, Chi-square, independent T-test, and multivariate regression analyses were conducted.

**Results.** There were 88 responders out of 144 (61.1% response rate). From baseline to six weeks, there were no statistically significant differences in depression, anxiety, and quality of life. Only baseline levels of anxiety, depression, and quality of life are significant predictors of anxiety, depression, and quality of life six weeks after discharge.

**Conclusion and Discussion.** In the short-term following hospital discharge, no significant changes were found in mental health conditions. Continuity of care after discharge from the hospital is crucial to high-quality patient care. An interdisciplinary team must be formed between health care providers across organizational boundaries to provide highly reliable care. It is also important to promote innovative supportive interventions, such as evidence-based supportive text messaging and peer support programs, thereby reducing acute care and inpatient hospitalizations and increasing access to quality community mental healthcare.

## Investigating the Relationship Between Spontaneous and Sensory Evoked Activity

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**Introduction.** The brain is in a state of constant activity even in the absence of overt behaviours or active sensations and persists during wakefulness, sleep, and anesthetic states. This activity is called spontaneous or resting-state activity and has revealed much about the functional organization of the brain. However, how spontaneous activity interacts with task- or sensory-evoked activity is unclear, despite this being essential to our understanding of how we process sensory information in our environments and how these systems may be altered in neuropsychiatric conditions.

**Objectives.** We previously identified within spontaneous activity the presence of stereotyped patterns of cortical activation that resemble active sensory processing, called cortical motifs. We seek to investigate how the cortex responds to different stimuli while in these time-varying cortical motif modes. We hypothesize that understanding the underlying cortical motif may provide explanatory information on the response amplitude and trial-to-trial variability observed in sensory-evoked cortical processing.

**Methods.** We employ fluorescent calcium imaging of the neocortex, in vivo, in GP4.3Dkim/J mice expressing the calcium sensor GCAMP6s in excitatory cortical neurons to measure ongoing spontaneous activity and sensory-evoked cortical responses. Sensory stimulation is elicited through peripheral stimulation of the limbs, whiskers, eyes, and auditory systems.

**Results.** Preliminary data suggests a positive correlation between baseline cortical activity and sensory-evoked response strength.

Discussion and Conclusion. By monitoring cortical responses to different stimuli under known spontaneous activity modes, we can better understand how it processes sensory information and how this process may be altered in neuropsychiatric disorder contexts.

### **Endocannabinoids System (ECS) Dysfunction Contributes to the Distinguished Stress Responses Through the HPA-Axis Dysregulation in Wistar-Kyoto (WKY) Rats**

**Zitong Wang** (Department of Psychiatry, University of Alberta); Rebekah van Bruggen (Department of Psychiatry, University of Alberta); Thaisa Sandini (Department of Psychiatry, University of Alberta); Ethan Hagen (Department of Psychiatry, University of Alberta); Xin-Min Li (Department of Psychiatry, University of Alberta); Yanbo Zhang (Department of Psychiatry, University of Alberta)

Interplay of social, psychological, and biological stresses can trigger mental health conditions such as major depressive disorder, adjustment disorder, and posttraumatic stress disorder. The endocannabinoid system (ECS), comprising endocannabinoids and cannabinoid receptors, is the critical pathway that mediates responses to stress stimuli.

Methods. This study aimed to investigate the ECS's impact on responding to chronic stress. Wistar rats and an endogenously depressed rat model, Wistar-Kyoto, were used to evaluate behavioral responses, hormone levels, and ECS function. The animals in the stress group were exposed to predator odor and daily roommate changes, while the control group rats were exposed to water and left undisturbed.

Results & Discussion. The results suggest that endogenous depression had a more significant impact on locomotor activity than exposure to chronic stress. In contrast, chronic stress and endogenous depression induced similar depression and anxiety-like behaviors and impaired learning memory. However, chronic stress did not exacerbate these behavioral changes in endogenously depressed animals. Biochemical tests indicated that stress-induced upregulation of ECS in endogenously depressed rats was impaired compared to rats with situational depression. Endogenous depression in rats contributed to a blunted HPA-axis modulation, distinguished by the hyperactivity of the HPA-axis modulation in rats with adjustment disorder. Overall, the study revealed that animal models of situational depression (adjustment disorder) and endogenous depression can generate similar behavioral changes in anxious behavior, behavioral despair, and cognitive impairment. Both endogenous depression and adjustment disorder can result in hyperactivity of the ACTH modulation and ECS activity, while the corticosterone modulation in endogenous depression is muted.

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