

Minnesota Psychiatric Society 2023 Fall Program – September 30, 2023

HEALTH IMPACTS OF CLIMATE CHANGE

POSTER SESSION

Conference attendees are encouraged to actively participate in the poster session, interacting with presenters and other participants. Posters will be reviewed by a panel and awards will be presented at the end of the day.

Zero-Emission Electric School Buses: Health, Educational, Economic and Environmental Benefits – Presenters: ***Daniel Trajano, MD and Paula Thomsen MD***

Abstract: *Zero-emission electric school buses eliminate diesel emission exposure improving students' health, cognition, and academic performance. Electric school buses have significantly lower maintenance and fueling costs, and federal and state grants and rebates are available to pay for new electric school buses and charging infrastructure. Transitioning all US school buses to electric will reduce over \$5M tons of carbon emission per year. Minnesota lags behind all other mid-west states in the adoption of electric school buses. Health professionals are an essential voice in advocating for electric school buses and other climate health issues..*

Environmental Exposure and Measuring the Exposome in Bipolar Disorder – Presenters: ***Mete Ercis MD, Aysegul Ozerdem MD PhD, Mark A. Frye MD***

Abstract: *The dynamic relationship between environmental exposure and bipolar disorder holds profound implications for clinical practice and personalized care. Recent studies have identified novel ecological risk factors, including findings like air quality as a predictor for bipolar disorder. Exposome concept emerges as a valuable tool for measuring every non-genetic exposure an individual is subjected to from conception to death. Broadly, it comprises the cumulative impact of general external (education, financial status, urban-rural environment, climate, etc.), specific external (radiation, chemical contaminants, environmental pollutants, diet, lifestyle factors, etc.), and internal exposures (metabolism, hormones, gut microflora, inflammation, oxidative stress, etc.) as well as their interactions. This approach enables us to study gene-environment interactions and exposure-associated epigenetic modulation, offering new perspectives for assessing the environment's effect on illness manifestations and trajectories. By integrating external and internal exposures into research and clinical practice, we can tailor a more comprehensive and personalized management of bipolar disorder.*

Discussion on Ground-Breaking Environmental Research - "Effects of Urban Living Environments on Mental Health In Adults" – Presenters: ***Hugh Burke, Dean Wundrach***

Abstract: *Many studies have attempted to explore the mechanism through which isolated environmental factors related to urban living affect mental health. However, mere urbanicity or isolated urban living factors do not represent the complexity of urban living and mental health. This study combined genomic sequencing and brain volume imaging with physical environment and socioeconomic data in over 156,075 participants. This model was made to compare environmental impact on patients with symptoms that were grouped as affective, anxious or emotional instability. Environments with factors such as air pollution were positively correlated with patients with "affective" symptoms. While patients in environments with factors such as green space were negatively correlated with patients with "anxious" symptoms. Along with environmental factors, changes in brain volume and genomic mediators were correlated to each group. Overall, this model dynamically combines biologic and environmental data to identify risk factors for progression of illness and potential treatment interventions.*

Effects of Rumination on Cognitive Functioning in Treatment Responders and Non-Responders in a Comorbid Posttraumatic Stress Disorder and Major Depression –
Presenters: Dariush J. Kaveh, Clara Godoy-Henderson, John P. Cassady, C. Sophia Albott

Introduction: *This study aims to enhance our understanding of how rumination potentially influences distinct cognitive processes that differentiate responders from non-responders within a ketamine clinical trial of veterans with comorbid PTSD and MDD.*

Methods: *We analyzed Ruminative Response Scale (RRS) scores with self-reported depression (MADRS) and PTSD (PSSI) scores, and NIH examiner task battery. Participants (N=18) included veterans with comorbid PTSD and MDD recruited into an ongoing randomized placebo-controlled trial of repeated ketamine infusions.*

Results: *Significant differences in rumination, depression, and PTSD outcomes were observed in responders compared to non-responders from baseline to one week follow-up. Cognitive outcomes did not reveal any significant differences between groups.*

Conclusion: *Improvements in rumination, depression symptoms, and PTSD symptoms amongst responders demonstrates preliminary evidence of the potential efficacy of ketamine for managing the disabling symptoms associated with comorbid depression and PTSD. Additionally, improvements in clinical symptoms may be subserved by improvements in rumination.*

***Climate Change, Extreme Weather, and Intimate Partner Violence in East Africa:
Assessing the Urgency in Agrarian-based Economies –***

Presenters: Dr. Elizabeth Allen, Dr. Leso Munala and Andrew Fredrick, MPH

Abstract: *Severe weather events (SWEs) have been explored as a catalyst for intimate partner violence (IPV) in agricultural settings: the stress of loss of income can exacerbate violence in the home. We used IPUMS-DHS data from three East African countries across various years, Uganda 2006, Zimbabwe 2010, and Mozambique 2011, for IPV frequency. We utilized EM-DAT data to identify SWEs by region in the year of and year prior to IPUMS-DHS data collection. We performed a logistics regression, controlling for a partner working in agriculture, partner drinks, and the partner's level of education. The odds of IPV due to SWEs were significant in Uganda (OR=1.25, 95% CI: 1.11-1.41), Zimbabwe (OR=1.38, 95%CI: 1.13-1.70), and Mozambique (OR=1.91, 95%CI: 1.64-2.23). SWEs impact IPV in East Africa, shows that women are key stakeholders in the fight for climate justice. This analysis adds to the urgency of addressing action to promote climate justice and stop IPV.*