FIU
Robert Stempel College
of Public Health
& Social Work

STEMPEL COLLEGE RESEARCH DAY

Join us for a showcase of Stempel College students' efforts and engagement in research

9 A.M. - 11:45 A.M. ORAL PRESENTATIONS

Complimentary breakfast served

11:45 A.M. - 1:15 P.M. POSTER PRESENTATIONS

Complimentary lunch served

1:15 P.M. - 3:45 P.M. ORAL PRESENTATIONS

EVENT DETAILS:

Friday, February 9th, 2024
9:00 a.m. to 4:00 p.m.
MMC Campus, CBC RM 232

RSVP @ GO.FIU.EDU/STEMPELRESEARCHDAY

Stempel College Research Day Agenda

Date: Friday, February 9, 2024
Time: 8:30 a.m. to 4:00 p.m.
Location: MMC Campus, College of Business Complex (CBC), room 232

8:30 a.m.	Check-in/Registration and Breakfast, CBC 232
9:00 a.m.	Opening Remarks
9:15 a.m.	Oral Presentation Session I
10:30 a.m.	Oral Presentation Session II
11:45 a.m.	Poster Presentations Begin
Noon	Lunch
1:15 p.m.	Oral Presentation Session III
2:30 p.m.	Oral Presentation Session IV
3:45 p.m.	Closing Remarks
4:00 p.m.	End of Program

Oral Presentations Session I

Presenter: Ekpereka Nawfal, PhD student in Public Health –Epidemiology
Title: Modeling the mediating effects of multidimensional HIV-related stigma on antiretroviral therapy adherence and viral suppression among diverse racial/ethnic minority women with HIV in the Miami-Dade County Ryan-White Program, Florida
Additional Authors: Diana M. Sheehan, Gladys Ibañez, Mary Jo Trepka

Research Abstract: Objectives: This study examined the mediation effects of HIV-related stigma types on the relationship between race/ethnicity and antiretroviral therapy (ART) adherence and viral suppression among women with HIV (WHIV). Background. In recent years, the United States' HIV incidence rate has declined, especially among men, but the rate for women has plateaued from 2017 to 2021. Racial/ethnic and geographic disparities in HIV persist despite the availability of effective treatment and prevention tools. HIV-related stigma is one of the psychological factors that can affect individual risks of HIV and drive disparities in HIV health outcomes. Women with HIV (WHIV) report higher HIV-related stigma compared to all people with HIV (PWH). Methods: The study included a cohort of 542 racial/ethnic minority WHIV (non-Hispanic, non-Haitian Black; Haitian; and Hispanic [reference group]). Structural equation modeling (SEM) was conducted, with the latent constructs of HIV-related stigma dimensions (anticipated, internalized, and enacted) as mediators, using diagonally weighted least squares to test the direct and indirect effects of race/ethnicity on > 95% antiretroviral adherence and viral suppression (<200 copies/ml), adjusting for covariates. Bootstrapping with 5,000 replications were used to obtain the 95% bias-corrected confidence interval (CI). Results: Final model fit indices indicated excellent fit (Comparative Fit Index = 0.994, Tucker-Lewis Index = 0.996, Root Mean Square Error of Approximation = 0.032). Results showed no significant direct association between race/ethnicity and ART adherence. However, anticipated stigma mediated the relationship between race/ethnicity and ART adherence for Haitian WHIV compared with Hispanic WHIV ($\hat{I}^2$ = -0.18, SE = 0.09, 95%CI: -0.38, -0.01). Specifically, Haitians were more likely to experience anticipated stigma, which in turn led to suboptimal ART adherence. The direct effect of race/ethnicity on viral suppression was significant only for Haitian WHIV ($\hat{I}^2$ = -0.79, SE = 0.37, 95%CI: -1.49, -0.22). None of the HIV-related stigma types mediated the relationship between race/ethnicity and viral suppression. Conclusion: Anticipated stigma emerged as a strong mediator exclusively among Haitian WHIV. Concerted efforts to improve ART adherence and viral suppression should include understanding the cultural beliefs and perceptions about HIV within the Haitian communities to develop and/or strengthen existing HIV-stigma reduction intervention.

Presenter: Farah Mahmoud, PhD student in Social Welfare
Title: Lessons Learned When Recruiting BIPOC Individuals in Qualitative Research on Experiences of Sexual Violence
Additional Authors: Eric Wagner

Research Abstract: In sexual violence research, qualitative methods are useful when seeking to understand the influence of systemic racism, oppression, and other institutional barriers on the promotion of healing in survivors - both physically and emotionally. This three-paper dissertation highlights BIPOC survivors of sexual violence with the intention of recruiting 12-16 participants to engage in qualitative interviews. The development of the research instrument utilized a trauma informed approach to reduce the power differential between researcher and participant. Participants were offered a $25 Amazon gift card for their participation in the study. The language used for recruiting materials utilized layman terms. Lastly, recruitment materials utilized inclusive language when discussing Black, African American, and Caribbean participants. Despite the researcher's intentions, recruitment efforts were not well received. After speaking with six community

organizations and linkage to the Florida Department of Health, there has been no engagement with the flyers or reported interest in the research project. There is research supporting this is not a singular instance. Connor and colleagues (2022) discussed their difficulty in recruiting Black participants in genetic research. One notable limitation was trust in the researcher and the medical system. The participants evaluated their motivation to participate through the ease of participation, their racial/ ethnic identity, and previous history of medical racism. Renert and colleagues (2013) provided a lessons learned paper highlighting the barriers in recruiting BIPOC individuals in health disparity research. They highlighted the following as ways that may promote participation: engaging gatekeepers, using cultural insiders, developing culturally - sensitive recruitment materials, offering payment, and developing trust with participants and their communities. One solution is to utilized Community Based Participatory Research (CBPR). CBPR is a way of interacting with communities, especially BIPOC communities, long term to foster trust and facilitate an engaged research process. This method allows participants to have influence in the development of the research questions and materials and provides a communication channel to relay results. Future qualitative research should prioritize CBPR for more fruitful engagement and participation, especially when conducting research with BIPOC communities.

Presenter: Daniel A. Martinez-Perez, PhD student in Public Health-Environmental Health Sciences

Title: Translocator Protein 18 kDa (TSPO) expression in microglia is associated with Aβ pathology in the 5XFAD animal model of Alzheimer's disease

Additional Authors: Alexander N. Rodichkin, Jennifer L. McGlothan, Tomás R. Guilarte

Research Abstract: Alzheimer's disease (AD) is the most prevalent neurodegenerative disorder that affects cognition, memory, and social abilities with devastating effects on individuals. Neuroinflammation and microglia activation play an important role in the initiation and progression of AD. TSPO is a well-validated biomarker of neuroinflammation that is expressed in glial cells, and it is markedly increased in the brain of AD subjects and AD animal models. Here, we use a life course approach to examine the trajectory of brain TSPO levels, cellular sources, and its association with AD pathology using the 5XFAD transgenic rodent AD model. To assess cognitive performance, we used the Barnes Maze for spatial learning in male and female wild-type and 5XFAD mice at 3 months, 7 months, and 12 months. We observed cognitive impairment in 5XFAD mice in an age-and-sex dependent manner. To evaluate pathological endpoints, we measured Aβ plaque number, size, and % area-covered by Aβ-plaques using immunohistochemistry in different brain regions involved in AD progression. We found an increase in Aβ-plaques in number, size and percent area covered as a function of age and sex, with higher levels in females compared to males in 5XFAD mice. To assess TSPO expression in the brain we performed quantitative autoradiography with the TSPO-specific radioligand [3H]-DPA-713, analyzing AD relevant brain regions. We found a significant increase in TSPO levels by genotype, brain region and age, with a higher increase in TSPO levels in 5XFAD females than in 5XFAD males. Quadruple-label immunofluorescent confocal imaging to determine the cellular sources of the TSPO response and its association with Aβ-plaques showed that TSPO increased expression was highly colocalized with microglia in a sex and age dependent manner and not with astrocytes. Furthermore, TSPO was primarily increased in microglia associated with Aβ plaques. In summary, our findings indicate that brain TSPO is an early biomarker of neuroinflammation in AD and TSPO levels increase at the same time than Aβ aggregation, but much earlier than cognitive decline, in an age- and sex-dependent manner. The increase in TSPO levels was associated with microglia surrounding or infiltrating Aβ-plaques suggesting a role in plaque formation and AD progression.

Presenter: Nicole Vitale, PhD student in Dietetics and Nutrition
Title: Evaluation of The T.E.A.C.H. Study - A Cluster Randomized Waitlist Control Trial
Additional Authors: Catherine Coccia
Research Abstract: Objective: To assess the intervention effects of a culturally tailored virtual nutrition education program on Montessori teachers' nutrition knowledge, beliefs, and behaviors. Background: Teachers' ability to teach and role model health practices is key to supporting the development of healthy habits in children. Cultural competence is important to foster healthy and culturally responsive classroom environments and as ethnic diversity is increasing in US schools, teachers need to have a sufficient understanding of cultural differences. Current findings suggest US teachers demonstrate suboptimal nutrition practices and have varying levels of cultural competence. However, much of the existing school-based research targets traditional education sectors while the nutrition-related behaviors of Montessori teachers remain unclear. Methods: Teachers were recruited from Montessori schools across the US and randomized into groups at the school level. To account for the clustered nature of the data, multilevel linear modeling was used to assess intervention effects across 3 timepoints. Data was collected at baseline (week 0), post-intervention (week 6), and follow-up (week 12). The variables of interest included nutrition knowledge (NK), nutrition self-efficacy (NSE), nutrition teaching self-efficacy (NTSE), cultural competence (CC), classroom eating behaviors (CEB), classroom food practices (CFP), nutrition teaching practices (NTP), and teacher-parent communication (TPC). Results: Participating teachers (n=95) recruited from 45 schools (intervention=22 schools; control=23 schools) within 24 US states were primarily female (98%), non-Hispanic (60%), and between the ages of 34-65 years (80%). Significant intervention effects were observed following the 6-week program for NK (β =43.124, 95% CI 22.126-84.051, p=0.003), NSE (β =0.351, 95% CI 0.157-0.784, p=0.015), NTSE (β =0.482, 95% CI 0.267-0.870, p<0.001), CC (β =1.131, 95% CI 0.581-2.201, p=0.003), NTP (β =0.142, 95% CI 0.039-0.525, p=0.133), and TPC (β =3.980, 95% CI 2.561-6.183, p<0.001). All except one of these variables, NSE, remained significantly increased at the week 12 follow-up. Conclusion: This 6-week culturally tailored virtual intervention was effective in improving Montessori teachers' nutrition-related classroom behaviors. Findings from The T.E.A.C.H. Study can lend support to the inclusion of structured and culturally sensitive nutrition concepts into Montessori teacher training programs. Further research is warranted to assess the impact of teacher-focused nutrition programming on children's nutrition-related behaviors.

Presenter: Ning Sun, PhD student in Public Health-Biostatistics
Title: Assessing the Multi-dimensional Effects of Air Pollution on Maternal Complications and Birth Outcomes: A Structural Equation Modeling Approach
Additional Authors: Boubakari Ibrahimou, Sophie Dabo-Niang
Research Abstract: Objective: This cross-sectional study aims to investigate the direct and indirect relationships between exposure to a metal mixture in air and adverse pregnancy outcomes across different pregnancy time windows. Methods: With 46,829 births in 2021 in two Florida counties, structure equation modeling was used to unravel effects of a metal mixture (Aluminum, Calcium, Iron, Magnesium, Manganese, Potassium, Silicon, Vanadium) in PM2.5 on pregnancy complications (preeclampsia and gestational diabetes) and birth outcomes (low birth weight, congenital anomalies, and preterm birth risks). Results: Metal mixture exposure was positively associated with gestational diabetes during the first trimester (OR = 1.03, p = 0.002) but negatively during the second trimester (OR = 0.96, p < 0.001). In the second trimester, metal exposure had a direct positive association with preeclampsia risk (OR = 1.02, p = 0.025), Total effect analysis showed no significant association with PE in any time window. For adverse birth outcomes, metal mixture increased preterm birth risk by 2% directly in all windows. Total effect was seen in the first and second trimesters. The mixture had no direct effect on low birth weight but raised it indirectly, with a significant total effect in the

second trimester (Indirect: OR = 1.01, p = 0.006; Total: OR = 1.02, p = 0.005). Metal exposure negatively associated with congenital anomalies directly in the pregestational and first trimester periods. Conclusion: This study reveals time-dependent associations between metal mixture in PM2.5 exposure and adverse pregnancy outcomes, providing additional evidence for understanding the pathway of them.

Oral Presentations Session II

Presenter: Kazi Tanvir Hasan, PhD student in Public Health- Biostatistics
Title: The Sensitivity of Bayesian Kernel Machine Regression (BKMR) to Data Distribution: A Comprehensive Simulation Analysis
Additional Authors: Boubakari Ibrahimou, Gabriel Odom
Research Abstract: In recent years, there has been a growing focus on studying how exposure to multiple pollutants affects human health. From air pollution to toxic waste and even the interaction between environment and mental health, these mixtures present a challenge. Their relationships with health are complex, involving non-linear and non-additive effects that traditional analysis methods struggle to capture. The Bayesian Kernel Machine Regression (BKMR) model has emerged as a powerful tool for unraveling this complexity. The challenges in studying multi-pollutant mixtures are manifold. Non-linear and non-additive relationships between mixture components and health outcomes require a flexible modeling approach. Dealing with a large number of parameters in high-dimensional scenarios presents computational challenges, especially when the parameters outnumber observations. Intricate correlation structures between mixture components further complicate the analysis. Existing approaches have limitations, but BKMR offers a novel approach to address these complexities and provide more accurate insights into exposure-response relationships. Various studies have employed BKMR to understand exposure-response relationships in environmental health scenarios. For example, a population-based cohort study explored the impacts of air pollutant mixtures on all-cause mortality, revealing a robust correlation with PM2.5 and nuanced interactions between pollutants. Another study used BKMR to link a mixture of chemicals to general obesity, finding significant associations for specific chemicals. BKMR has also been applied to investigate the association between multiple metals and hearing loss, revealing noteworthy correlations. Additionally, BKMR has been used to find connections between various factors and neuronal injury biomarkers, emphasizing non-linear relationships and intriguing interactions. Despite its adaptability, BKMR has limitations. Our research conducted a comprehensive simulation analysis, indicating that BKMR results are highly sensitive to data distribution. Specifically, estimation becomes unstable with skewed gamma distributions, impacting result reliability. This underscores the importance of considering data distribution in BKMR analysis to ensure dependable and consistent results. Our findings emphasize the need for further investigation into the behavior of BKMR and other statistical models, particularly regarding non-Gaussian data distributions, to enhance the reliability and validity of environmental health findings.

Presenter: Cristina Andrade-Feraud, PhD in Public Health-Environmental Health Sciences
Title: Arsenic-Induced Giant Cell Formation is Mediated by an Inflammatory Pathway
Additional Authors: Arlet M. Acanda De La Rocha, Ebony R. Coats, Tomás R. Guilarte, Diana J. Azzam
Research Abstract: Arsenic is a toxic metal and a known human carcinogen that is widely distributed in the environment. Since human exposure to arsenic primarily occurs through the ingestion of contaminated groundwater or food, it is a global public health concern as the carcinogen is affecting more than 157 million people in more than 70 countries through arsenic-contaminated drinking water at levels greater than the legal limit of 10 parts per billion (ppb) (10 µg/L). In addition, chronic arsenic exposure has been associated with an increased incidence of various cancers, including the lung, prostate, breast, skin, and many others. Despite

decades of research, the carcinogenicity of chronic arsenic exposure remains of concern, and the underlying mechanism leading to arsenic carcinogenesis is not fully understood. Therefore, our study investigates the effects of environmentally relevant concentrations of arsenic exposure on ovarian tissues from healthy donors. These cultures have been well characterized and phenocopy their respective tissue of origin. Cultures were grown with or without sodium arsenite [1 µM], a form of inorganic arsenic, for 3 and 6 weeks, followed by an assessment of cellular and nuclear alterations and detection of multinucleated cells (MNCs) and giant nucleated cells (GNCs). Arsenic exposure increased the nuclear size and percentage of MNCs and GNCs in both cultures over time. RNA-sequencing analysis implicated an inflammatory response as a plausible mechanism underlying As-induced GNC and MNC formation. Using RT-qPCR, we confirmed the upregulation of inflammatory cytokines including IL-10, IL-1a, IL1b, IL-6 and TNFa Therefore, our work provides new insights into the mechanisms of arsenic-induced carcinogenesis that may provide novel strategies for prevention of cancers induced by arsenic and improve public health.

Presenter: Amber Cole, PhD student in Social Welfare
Title: Increasing Contraception Use among Black Women: A Systematic Review of Interventions
Additional Authors: Sofia Fernandez
Research Abstract: Background: Sociocultural, economic, and attitudinal barriers can influence women's contraception use. These may include inadequate knowledge about family planning methods, fear or the belief in stereotypes, perceived risk of pregnancy, low contraceptive self-efficacy, lack of access to contraception, and cultural beliefs and values. Black women also experience structural racism, discrimination, and bias when seeking reliable and affordable reproductive healthcare. Unintended pregnancies resulting from not using contraception have significant mental, physical, and economic consequences on the Black family unit. 63% of Black women's pregnancies are unintended. The purpose of this study was to review the available interventions designed to increase contraception use among Black women in the U.S. Methods: We conducted a systematic search using four electronic research databases - PsycINFO, Academic Search Complete, Social Work Abstracts, and Medline (ProQuest). We used "contraception," "treatment," "family planning," "HIV," and "Black women" as primary search terms and considered studies of women over 18 years old in the U.S. within the last decade. Out of 180 initial articles, 19 duplicates were removed. From the remaining 161 studies, 144 were excluded due to not fitting the aim of the study, leaving 17 articles to be reviewed in full text. 12 final articles met the criteria. Results: Across the 12 studies included, there were six intervention outcomes: attitudes towards condom use, intentions to use condoms, condom use efficacy, condom use, knowledge of Long-Acting Reversible Contraception (LARC) effectiveness, and oral contraception use. Of the 12 studies, 4 reported no significant difference; 8 reported significant changes, including increased positive attitudes toward condom use, greater intention to use condoms, improved condom use efficacy, lower reported numbers of unprotected sex, and increased condom use. Two studies focused on increasing contraception to promote family planning, while the other ten focused on reducing the risk of HIV. Most interventions were culturally adapted for Black women with culturally tailored facilitators. Conclusion: Studies have focused on using contraception to reduce HIV risk, but more interventions are needed to increase contraception use for family planning. Researchers can develop effective interventions by tailoring interventions to Black women's norms, utilizing peer support components, and incorporating role plays.

Presenter: Tarana Ferdous, PhD student in Public Health- Epidemiology
Title: Effect of partial nicotine reduction on young e-cigarette users in the US: a cross-over clinical trial
Additional Authors: Simanta Roy, Sreshtha Chowdhury, Rime Jebai, Katherine Pita, Wasim Maziak

Research Abstract: Objective: To evaluate the effect of partial nicotine reduction (NR) to guide the FDA about the potential of NR in curbing e-cigarette use and addiction. Background: The advent of salt-based nicotine formulation is a major contributor to the recent e-cigarette epidemic among young people in the United States. Salt-based e-cigarette can deliver high-dose nicotine efficiently, which increases nicotine addictiveness. To reduce nicotine addictiveness in tobacco products, the FDA is currently considering NR as an important regulatory pathway. Therefore, using an experimental clinical design, this study evaluates the effect of partial NR on e-cigarette users' puffing behaviors. Methods: In this repeated-measure within-subject clinical cross-over study, 50 current high nicotine concentration e-cigarette users aged 21-35 attended two e-cigarette use sessions with the same brand of 3% (28-35 mg/ml) and 5% (58-59 mg/ml) nicotine JUUL/NJOY pods in random order up to 60 minutes ad libitum, preceded by 12-hour nicotine abstinence. Puffing topography was recorded during each session to measure smoking time, puff time, average puff duration, average flow rate, average inter-puff interval, number of puffs, total inhaled volume, average puff volume, and maximum puff volume. Blood samples were collected before and after each session, and plasma nicotine levels were assessed retrospectively using gas chromatography-mass spectrometry. Results: The median topography parameters were significantly higher during the e-cigarette use sessions with 3% nicotine concentration compared to the sessions with 5% nicotine concentration (i.e., puffing time: 1.33 min vs. 1.21 min, $p = 0.021$; average puff duration: 2.57 sec vs. 2.44 sec, $p=0.017$; total inhaled volume: 1990 ml vs. 1490 ml, $p = 0.045$), indicating the presence of compensatory puffing behavior for partial NR. The median nicotine boost observed in the 5% nicotine condition (6.35 ng/ml) was significantly higher than in the 3% condition (4.10 ng/ml, $p = 0.012$). Conclusion: Using a sensitive within-subject design, this study provides clear evidence of compensatory puffing when partial NR is employed with the potential to add to toxicants' exposure.

Presenter: Sultana Mubarika Rahman Chowdhury, PhD student in Public Health-Biostatistics
Title: Association between continuity of primary care with chronic conditions among patients in Guangdong Province, China
Additional Authors: Mengping Zhou, Kuang Li, Nan Hu

Research Abstract: Background: The focus on primary care is intended to address the contributors to the burden on the healthcare system due to chronic diseases. However, despite having many benefits, ensuring primary care for people with chronic diseases living in developing countries with huge populations is subject to many obstacles. Objective: The goal of this study is to investigate the effect of chronic conditions on the continuity of primary care with the same primary care provider based on a survey conducted in Guangdong Province, China. Methods: Multiple logistic regression model was utilized to estimate the effect of chronic illness on continuity. Additionally, the modification by migrant status on the relationship between chronic illnesses was also examined. Results: Single or multiple chronic conditions of the patients had a significant effect on the continuity of care with the same PCP. However, the residency status of the participants did not have any significant effect on the association between chronic conditions and continuity of care. Furthermore, the existence of a contract with the PCP mediates the relationship between the continuity of primary care and chronic conditions. Conclusion: The connection between chronic illnesses and ongoing primary care from the same PCP may reinforce one another and be ultimately beneficial for the patients. The results of this study can be a useful reference point when formulating policies relating to facilities that offer primary care.

Oral Presentation Session III

Presenter: Meredith L. Wilcox, PhD student in Public Health- Biostatistics
Title: Exploring the use of Y-structures for causal discovery using simulated observational data
Additional Authors: Juan P. Liuzzi, Changwon Yoo
Research Abstract: Background: Causal discovery aims to learn causal knowledge from observational data. Directed acyclic graphs (DAGs), consisting of nodes and directed edges, are used in casual discovery to describe relationships among random variables. Structure classes found in DAGs include V-structures and Y-structures. V-structures are composed of 3 nodes connected via a converging pathway. Y-structures are composed of a V-structure with one additional directed edge from its vertex to a fourth node. Within a Y-structure, the said additional directed edge represents an unconfounded causal relationship. Thus, causal discovery based on Y-structures is promising for inferring causality from observational data that contain hidden variables (i.e., unmeasured confounders). Objectives: The objective of this study is to evaluate the effectiveness of using Y-structures as a guide for learning the genuine underlying causal relationships from observational data. Method: This study used two datasets containing 50 and 1,000 simulated observational cases from the ALARM Bayesian network. The dataset included 37 variables, of which 28 were intentionally hidden from the model. Two sets of four discrete, unhidden variables were selected from the datasets (VarSet1, VarSet2), of which only VarSet1 forms a Y-structure. All possible DAGs generated from each set were evaluated using normalized, Bayesian Dirichlet likelihood equivalence (nBDe) scores. The most likely structures were identified as those with the highest nBDe scores. Additional datasets generated from the ALARM Bayesian network will be utilized to systematically explore Y-structures and evaluate their effectiveness in discovering underlying true causal relationships. Furthermore, this method will be extended to real-world nutrition big data. Results: The true Y-structure and non-Y-structure formed by VarSet1 and VarSet2, respectively, were the highest scoring structures (or tied as highest) using 1,000 cases (nBDe = 1.2429 and 1.3600, respectively). However, using 50 cases, the true structures formed by VarSet1 and VarSet2 were the 81st (tied) and 18th highest scoring structures (nBDe = 1.3679 and 1.0178, respectively). The highest scoring structures identified for both variable sets using 50 cases were non-Y-structures. Conclusions: Y-structures align with the true underlying causal relationships in large cases, specifically with 1,000 cases. However, a more systematic analysis will be required to confirm with greater confidence.

Presenter: Freeman Lewis, PhD student in Public Health- Environmental Health Sciences
Title: Assessing the Effect of Disease and Exposure on the Metabolome in Mn-Induced Parkinsonism: A Case-Control Study
Additional Authors: Daniel Shoieb, Somaiyeh Azmoun, Yan Jin, Jingwei Gu, Donatella Placidi, Xuexia Wang, Haiwei Gu, Roberto Lucchini
Research Abstract: This research project focuses on investigating the relationship between manganese (Mn) exposure and the development of manganese-induced parkinsonism in a population of Brescia, Italy, which is known for its metallurgy industry and high environmental levels of Mn. As a result of the research project PHIME (Public Health Impact of Metal Exposure 2022), strong associations between metal pollutants and neurotoxicity have been found. Moreover, we have suggested a strong link between Mn levels and the prevalence of parkinsonism. In this study, we collect untargeted aqueous metabolomics data and hypothesize that differential relative abundance between metabolites is attributable to a main effect of disease exposure and a combined effect of their interaction. Additionally, we hypothesize that differential metabolite sets are

attributable to disease, exposure and their interaction. To address these hypotheses, we leverage Principal Component Analysis (PCA), Partial Least Squares-Discriminant Analysis (PLS-DA), and Analysis of Variance (ANOVA) to perform feature selection. Subsequently, we perform Overrepresentation Metabolite Set Enrichment (oMSEA) to associate a list of detected metabolites with information about their associated pathways and biological functions. We find a trend in class separation (Control Non-Exposed, Control Exposed, PD Non-Exposed, and PD Exposed) as demonstrated through PCA and PLS-DA, with 96 metabolites contributing significantly to the observed separation between classes, as evidenced by a Variable Importance in Projection (VIP) score of one or greater. Furthermore, we identify 233 metabolites as significantly differentially abundant, with 69 metabolites associated with a main effect of disease, 8 metabolites associated with a main effect of exposure, and 7 metabolites associated with a combined effect of their interaction, as evidenced by one-way ($p < 0.05$, FDR corrected) and two-way ANOVA ($p < 0.05$; FDR corrected), respectively. Lastly, oMSEA reveals Caffeine and theobromine metabolism ($p<0.001$), Defective ABCB11 causes PFIC2 and BRIC2 ($p<0.01$), and Defective SLC35A1 causes congenital disorder of glycosylation 2F (CDG2F) ($p<0.001$) as the top metabolite sets for a main effect of disease, exposure, and interaction, respectively. These results elucidate the significance of both individual and interactive effects of disease and exposure on the metabolomic landscape in Mn-Induced Parkinsonism.

Presenter: Simanta Roy, PhD student in Public Health- Epidemiology
Title: The Effect of ENDS Smoking Session on Pulmonary Parameters: A Pilot Study
Additional Authors: Tarana Ferdous, Rime Jebai, Sreshtha Chowdhury, Mehedi Hasan, Katherine Pita, Arpita Paul, Sheida Khosravaniardakani, Christina Cabrera-Elizondo, Wasim Maziak
Research Abstract: Background: Electronic nicotine delivery systems (ENDS) have become widespread among youth globally, particularly in the US. ENDS acute effects on the respiratory system are still understudied. Aim: This study looks at the effect of up to 60-minute ENDS use on the pulmonary function of users. Method: In a crossover, experimental lab study, 58 current ENDS users aged 21-35 attended an up to 60-min ad libitum ENDS use sessions, preceded by 12-hour nicotine abstinence. Respiratory function tests such as forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), peak expiratory flow (PEF), forced expiratory flow (FEF), alveolar ventilation single breath (VAsb), total lung capacity single breath (TLCsb), and inspiratory volume single breath (VIsb) were measured before and immediately after ENDS use sessions. Diffusing capacity for carbon monoxide (DLCO) was determined using a rapidly resolving gas analyzer (RGA) and the single-breath technique before and after sessions. Result: There was a significant decline in FVC (p<0.019), FEV1 (p<0.001), FEV1/FVC (p=0.004), PEF (p<0.001), % predicted FVC (p<0.041) and % predicted FEV1 (p=0.001), after the ENDS use session compared to before values. For other parameters, a reduction trend was found for FEF (mean reduction 0.24±0.06L), and % predicted FEF (mean reduction 4.79±0.78). Similarly, a reduction trend was also observed for DLCO (0.10±3.5ml/min/mmHg), VAsb (0.06 ± 0.49 ml/min), and TLCsb (0.06±0.49L) pre and post use. Conclusions: Using a powerful within-subject design, this study highlights the potential of ENDS use to negatively affect lung functions and diffusing capacity among young users. This acute effect needs to be further investigated in terms of their long-term effects on respiratory health of e-cigarette users.

Presenter: Srijana Acharya Gautam, PhD student in Public Health- Health Promotion and Disease Prevention
Title: Prevalence and factors associated with high self-esteem among border Mexican Americans
Additional Authors: Elena Bastida

Research Abstract: Background: Demographic and epidemiologic data for the U.S. suggest that the Mexican American population living along the US/Mexico border experience a higher life expectancy, but greater physical disabilities and economic disadvantage than Mexican Americans away from the border region. Psychosocial traits like higher self-esteem due to proximity to country of origin has been speculated as a contributing factor for such paradoxical outcome. Objective: We explore this intriguing demographic finding with a random sample of older Mexican Americans from the US Southwest border region. In this study, for the first time, we aimed to estimate the prevalence and factors associated with higher self-esteem among studied sample. Methods: A total of 550 participants from the first wave (1994/1995) of the Border Epidemiological Study of Aging (BESA, 1994 - 2007), a population-based longitudinal study, were used in the study. Mean self-esteem score (range 0-24) was estimated among participants adapting the Rosenberg scale. The score was dichotomized into high (≥18) and low (<18). A logistic regression model was used to assess socio-demographic factors associated with high self-esteem. Odds ratios (ORs) were reported with 95% confidence intervals (CI). The significance level was set up at $p<0.05$. All the analyses were conducted in SAS version 9.4. Results: The mean self-esteem score was 21.94. 86 % of participants reported high self-esteem and the remaining 14% reported low self-esteem. Age decreased the likelihood of high self-esteem (OR=0.96, CI=0.94-0.99) whereas marital status (OR=2.07, CI=1.17-3.68) and good health status (OR=9.02, CI= 4.33-18.76) increased the likelihood of high self-esteem among the MAs. Conclusions: Findings suggest that despite experiencing high adjusted daily living disabilities at an earlier age, their self- esteem remains high, possibly contributing to their extended life experience. Those who reported good health, were married and were in middle years, reported higher self-esteem suggesting design of future interventions focusing on preventive health, family support and healthy aging might help to boost self-esteem. Self-esteem may further be leveraged to minimize old age disability and health burden in the aging MAs living in the US border region.

Presenter: Sergio Perez Melo, PhD student in Public Health- Biostatistics
Title: Testing Coefficients in the Ridge Logistic Regression Model: A simulation study and applications
Additional Authors: Zoran Bursac, B.M. Golam Kibria
Research Abstract: Abstract: Ridge regression is a method that have been proposed to solve the multicollinearity problem for both linear and non-linear regression models. Our paper study different Ridge regression z-type tests of the individual coefficients for logistic regression model. A simulation study was conducted to evaluate and compare the performance of the tests with respect to their empirical sizes and powers under different simulation conditions. Our simulations allowed us to identify among the proposed tests, which ones maintain type I error rates close to the 5% nominal level, while at the at same time showing considerable gain in statistical power over the standard Wald z-test commonly used in logistic regression. Our paper is the first of its kind in comparing the z-type tests for these different shrinkage approaches to estimation in logistic regression. The results will be of value for applied statisticians and researchers in the area of regression models.

Oral Presentation Session IV

Presenter: Sreshtha Chowdhury, PhD student in Public Health- Epidemiology
Title: Effect of Menthol-Flavored Ends on Users' Puffing Behaviour and Nicotine Exposure: A Cross-Over Trial Among US Young Adults
Additional Authors: Simanta Roy, Tarana Ferdous, Wasim Maziak

Research Abstract: Background: Electronic nicotine delivery systems (ENDS) have emerged as the most prevalent tobacco products among the youth in the United States, with flavors being one of the major drivers for use. Limiting flavors to menthol and tobacco for prefilled cartridge ENDS "pod-mods" was one of the first major actions taken by the FDA to reduce the spread of ENDS among young people. However, menthol flavor can present a potential risk given its popularity among young people in the US and its puffing and nicotine-enhancing properties. This study examines the effect of menthol flavor on ENDS users' puffing behavior and nicotine exposure among young people. Methods In this 2X2 cross-over clinical lab study, 46 current e-cigarette users aged 21-35 attended up to 60-minute ad libitum ENDS use sessions using 4th-generation ENDS, preceded by 12-hour nicotine abstinence. Puff topography parameters (e.g., puff number, puff volume duration, inter-puff interval) were assessed during the sessions using a validated topography instrument. Plasma nicotine concentration was measured before and after each session using gas chromatography-mass spectrometry. Baseline nicotine dependence was also measured using the Penn State Nicotine Dependence Index. Results: The result shows that the medians of the topography parameters were higher during the menthol-flavored ENDS sessions compared to the tobacco flavor (i.e., puffing time: 1.25 mins vs. 1.03mins; average puff duration: 2.33 sec vs. 1.56 sec, total inhaled volume: 1618.23 ml vs. 1387.35 ml, average puff volume: 51.745 ml vs.35.08 ml, total puffs: 33.5 vs. 31). Also, the median for plasma nicotine boost was higher in the menthol flavor condition than the tobacco (6.05 ng/ml vs. 5.55 ng/ml). After adjusting for age, sex, BMI, and smoking time, the moderate to high dependence group was associated with significantly higher average puff duration ($\beta=0.84$, $p<0.05$) during menthol-flavored ENDS session (vs. tobacco session) compared to participants with no or low nicotine dependence level. Conclusions: Results of this study suggest that menthol flavor enhances ENDS users' puffing and plasma nicotine. It highlights that limiting menthol flavor could play a potential role in curbing ENDS use and addiction among young people.

Presenter: Ruth Marquez, PhD student in Public Health- Environmental Health Sciences
Title: Unveiling Health Disparities: A Comprehensive Study of 9/11 First Responders in Florida
Additional Authors: Nikita Borisenko
Research Abstract: Introduction: In the aftermath of the tragic events of 9/11, the resilience and sacrifice of first responders have been undeniably commendable. However, a pressing concern emerges as we delve into the long-term consequences they face, particularly regarding neurological health. This study aims to unravel the intricacies of health disparities among 9/11 first responders in Florida, focusing on neurological diseases. By examining the prevalence, risk factors, and access to neurological healthcare, we seek to shed light on the challenges this resilient group encounters, paving the way for targeted interventions and comprehensive support mechanisms. Through this exploration, we hope to contribute valuable insights that foster targeted support and advocacy for improved neurological health outcomes within this community. Methods: Data were gathered through a survey, disseminated with assistance from the NYC data center, which provided the contact information of first responders who had consented to participate. The survey, designed by our research team, collected information on demographics, medical history, and psychological needs. Statistical analysis primarily involved exploratory data assessment, focusing on proportions and average scores derived from survey responses. Results: Our descriptive analysis included 277 responders, predominantly male (88%) with an average age of 61.1. A significant proportion (78.1) identified as Latino/Hispanic. In terms of health status, 39% reported less than good, while 68.5% indicated recent emergency room visits and 51% pain affecting daily activities. The data also revealed a keen interest among responders in topics such as sleep management, PTSD, diet, and other areas, with a preference for individual and in-person support. Notably, qualitative feedback highlighted a perceived neglect and a heightened need for support among those who relocated to Florida. Discussion: As we navigate the implications of our findings, it becomes evident that collaborative efforts

involving healthcare providers, policymakers, and advocacy groups are essential to ensure that 9/11 first responders receive the necessary resources and support for managing and preventing health disparities. The discussion lays the groundwork for future initiatives aimed at fostering a healthier and more resilient community among these dedicated individuals.

Presenter: María Eugenia Contreras Pérez, PhD student in Social Welfare
Title: Outcomes of a Brief Motivational Intervention for Heavy Alcohol Use in Racial or Ethnic Minority Compared to White Emerging Adults
Additional Authors: Eric Wagner, Michelle Hospital, Staci Morris, Suzanne Colby, Molly Magill
Research Abstract: Objective: This study used secondary data from a randomized controlled trial of a Brief Motivational Intervention (BMI) to examine whether Non-White participants had different treatment results compared to White participants. Background: Emerging adults have the highest rates of heavy alcohol use and binge drinking compared to other age cohorts. Emerging adults from underrepresented racial and ethnic backgrounds face specific systemic stressors that can contribute to vulnerability to substance use. BMI is an effective treatment strategy to reduce alcohol use; however, little is known regarding the effectiveness of BMI with underrepresented populations. Methods: The outcome variables of this study were divided into primary outcomes (heavy drinking and consequences associated with alcohol use) and secondary outcomes (cognitive variables such as motivation to change alcohol use and behavioral variables, including protective behavioral strategies). Linear regression analyses were conducted with the PROCESS macro for SPSS to test if race or ethnicity moderated the relationship between BMI and each treatment outcome. Data was collected at two time points, six weeks, and three months after treatment. Results: This study showed that race or ethnicity did not moderate treatment results for the four outcome variables. Additional within-group effect sizes were calculated for all racial and ethnic categories, showing that Hispanic/Latine and Black participants had larger effect sizes in all the outcome variables. Conclusion: The discussion examines the potential strength of Motivational Interviewing due to its client-centered spirit, which naturally allows for incorporating values and identity-based factors, such as culture, into the session. Conclusion: The results suggest similar BMI outcomes among White and Non-White emerging adults who engage in heavy drinking, potentially due to its client-centered approach. This is a preliminary study, and the results are therefore tentative.

Presenter: Francisco Diaz, PhD student in Public Health- Biostatistics
Title: Causal Discovery Leveraging Independence Relations of 4-Variable Bayesian Network Subgraphs
Additional Authors: Samantha Gonzales
Research Abstract: Learning Causal Bayesian Networks from data is widely known for its computational expense. For every variable introduced to a data set, the number of possible structures increases factorially. As comparing the scores of all possible networks for a given number of nodes quickly becomes infeasible, it is often necessary to rely on a measure to narrow one's search. It has been shown that mutual information and other measures based on mutual information perform well in this task. In this presentation we will be evaluating the performance of a heuristic for fitting Causal Bayesian Networks to data. This heuristic will utilize the knowledge from the enumerated subnetworks of Causal Bayesian Networks of up to four variables and their independence properties to improve upon the "Sparse Candidate Algorithm" to enhance its performance for identifying causal relationships. This algorithm first narrows the search space of possible causes parents. We will compare the performance of these measures for selecting candidates: chi-squared test, mutual information, correlation, exhaustive search, and random choice, for the base line performance. Of these measures, the authors have shown mutual information performs the best. These measures will be used in conjunction with our

heuristic to learn from synthetic data sampled from subsets of the alarm Bayesian Network. This will allow us to compare our results with the actual structure.

Presenter: Natasha Shaukat, PhD student in Public Health-Epidemiology
Title: The Effects of Pictorial Health Warning Labels on the Waterpipe Device on Smokers' Puffing Behavior: A Crossover Study
Additional Authors: Sharika Ferdous, Sreshtha Chowdhury, Simanta Roy, Tarana Ferdous, Wasim Maziak, Taghrid Asfar

Research Abstract: Background: Waterpipe (WP) smoking has become one of the leading tobacco use methods among youth in Florida. Pictorial Health Warning Labels (PHWLs) represent one of the most successful tobacco control strategies for communicating smoking-related risks. This study aims to test the performance of the 4 evidence based PHWLs on the WP device compared to no-PHWL (control) on smokers' puffing behavior. Methods: Eighteen WP smokers completed two 45-minute ad libitum WP smoking sessions in a crossover study (WP with PHWL vs. WP without PHWL control). We compared the mean differences in puff topography and exhaled carbon monoxide (CO) measures between the PHWL conditions. Results: The participant's mean age was twenty-five years, and the majority were female (67%). Results show a general decrease in puffing parameters in the PHWL condition compared to control. For example, the mean smoking time decreased from 47.50 (3.53) to 44.22 (6.11) minutes. The mean number of puffs declined from 153.84 (107.97) to 140.11 (85.03). In addition, the mean exhaled CO decreased from 59.22(46.85) to 46.44 (26.24) ppm. Conclusions: Our findings suggest that implementing Pictorial Health Warning Labels on the waterpipe device is a promising strategy for reducing puffing behavior and exposure to toxicants among waterpipe smokers in the USA.

Poster Session

Presenter: Shelly Sinclair, MPH student in Biostatistics

Title: The association between participant characteristics and awareness of reproductive policy among young adult Black women in the United States

Additional Authors: Aaliyah Gray, Mary Jo Trepka, Kimberly M. Nelson

Research Abstract: Recent legislative changes to create restrictive reproductive policies across the United States have resulted in significant disparities in women's reproductive health care. Young adult Black women (YABW) are anticipated to be disproportionately impacted by restrictive state-level reproductive policies. However, it is unclear what YABW know about the reproductive policies of their state. This study explored associations between participant characteristics and awareness of state-level reproductive policy among YABW. A total of 483 YABW ages 18 to 22 years participated in an online sexual health behavior survey. Participants self-reported their age, state of residence, current and perceived childhood socioeconomic status (SES), health insurance status, current education level, whether they previously attended a private or public school, community type (urban, suburban, or rural), relationship status, sexuality, ethnicity, and past pregnancy. Participants also rated the reproductive policies in their current state of residence from restrictive to protective. Standard categories of state-level reproductive policy were sourced from Guttmacher Institute. Participant ratings were compared to the standard categories and coded as agreed or disagreed to create the binary concordance outcome variable. Point-biserial correlations assessed associations between age, SES, and concordance, and chi-squares with adjusted standardized residuals assessed associations between concordance and all other participant characteristics. Half of the participants (238, 49.3%) had rankings that were not consistent with the standard category for their state's reproductive policy, suggesting there is a lack of awareness of state-level reproductive policy among YABW. Lack of consistency was significantly associated with higher current ($p = .04$) and perceived childhood SES ($p = .01$), previously attending a private school ($p = .02$), and currently living in the Northeast ($p = .04$). Agreement was associated with bisexual sexuality ($p = .02$). All other associations were insignificant. Our results suggest that multiply-marginalized YABW such as bisexual or economically-disadvantaged YABW may be more aware of state-level reproductive policy because they are more likely to be affected by restrictions to reproductive care. However, research is needed to further examine the relationship between SES, awareness of policies, and access to reproductive health services among YABW.

Presenter: Rabeya Illyas Noon, PhD student in Public Health- Biostatistics

Title: The Impact of Ensemble-Based Music Education on Emotional Dysregulation

Additional Authors: Michelle M. Hospital

Research Abstract: Background: In recent years, rates of emotional dysregulation, such as social anxiety and impulsive behavior, have significantly risen among youth. This dysregulation can lead to adverse consequences, affecting both personal and academic domains. Despite the documented benefits of musical training programs, empirical research on how ensemble-based music education can affect social anxiety and impulsivity remains limited. Objective: The objective of the study was to analyze the data from an after-school orchestral music education program (Miami Music Project: MMP) to explore changes in social anxiety and impulsive behavior among youth from under-resourced and immigrant communities, predominantly Haitian American, African American, and Hispanic. We compared the 'MMP group' to an 'assessment-only Comparison group' and observed the changes in cognitive benefits over the course of one school year. Methods: This study involved a secondary analysis of self-report survey data (N= 300; MMP= 206, Comparison= 94) with a mean age of 10. 26

(SD: 2.36). The data was collected at two-time points: Time 1 = beginning of the school year (baseline) and Time 2 = end of the school year (endpoint). To assess the impact of the music program over time on Social Anxiety and Impulsive Behavior, we compared between-group differences with time as repeated measures. We used Linear Mixed Effect Models to assess changes over time that varied significantly (with confidence interval). Results: Both Social Anxiety (From 41.233 to 36.087) and Impulsive Behavior (from 1.835 to 1.832) showed lower group means for the MMP group at the end of the year compared to the baseline. Additionally, the estimated unstandardized coefficient of Impulsive Behavior measures for the MMP group was approximately 0.31 units lower than the comparison group with a significant Confidence Interval [-0.55, -0.08] over time. Conclusion: The findings of this study suggest that ensemble-based music education may be associated with reduced social anxiety and impulsivity, leading to long-term cognitive benefits. Participation in orchestral music ensembles may provide opportunities for reducing emotional dysregulation by implementing a disciplined, collaborative environment for learning.

Presenter: Somaiyeh Azmoun, PhD student in Public Health- Environmental Health Sciences
Title: Investigation of Alzheimer's disease (AD)-related blood biomarkers among Manganese Exposed Ferroalloy Workers in Brescia, Italy
Additional Authors: Daniel Shoieb, Freeman Lewis, Yan Jin, Elena Colicino, Nicolo Foppapedretti, Haiwei Gu, Donatella Placidi and Roberto Lucchini
Research Abstract: Occupational settings are one of the primary sources of Manganese (Mn) intoxication, leading to multiple disorders, including neural system dysfunction affecting motor control and cognition. Alzheimer's disease and Alzheimer's disease-related dementias (AD/ADRD) are the most common forms of dementia with a still unclear etiology. Chronic manganese exposure may increase the risk of cognitive decline and induce amyloidogenesis by altering the level of proinflammatory markers (i.e., cytokines IL-1b and TNF-a) and Amyloid Precursor Protein (APP) production. Therefore, the current research objective is to determine how chronic Mn exposure affects AD-related biomarkers, including b-amyloid brain deposition, as a predictor of clinical neurodegenerative outcomes in Italian Mn-exposed ferroalloy workers. This study includes a nested pilot study of six Mn-exposed ferroalloy workers and five age- and sex-matched control workers. The PET-CT imaging showed a more diffuse β-amyloid deposition in the ferroalloy workers than in controls (p,0.05). We examined blood prognostic characteristics of Alzheimer's disease, including metabolites and protein biomarkers in these groups. The blood metabolic profiling was conducted using LC-MS/MS, and it showed significantly different expression metabolites, such as AMPA, and Protoverine in the exposed group compared to the control. The protein profiling using ICP_MS and single molecule arrays (Simoa) in Quanterix SR-X platform techniques showed significant differential blood proteins, including Amyloid beta and GFAP levels in workers compared to the control. This data supports the hypothesis of the association of lifetime exposure to Mn with neurodegenerative pathology contributing to amyloidosis.

Presenter: Nicole Blum, PhD student in Public Health- Environmental Health Sciences
Title: Enhanced NLRP3 Mediated Inflammasome Activation in Primary Microglia Isolated from Humanized APOE-3 and -4 Mice
Additional Authors: Isha Mhatre-Winters, Chunki Kim, and Jason R. Richardson
Research Abstract: Alzheimer's Disease (AD) is a neurodegenerative condition of unknown etiology, with >95% of cases occurring sporadically. Various genes have been identified to contribute to sporadic AD, of which the apolipoprotein ε (APOE4) is the strongest genetic risk factor. Clinically, AD is characterized by amyloid plaques, tau pathology, and chronic neuroinflammation, which contribute to cell death. Individuals with the APOE4 genotype pose the greatest risk for disease onset and experience increased levels of IL-1b,

microglial activation, and cell death. In AD, the NLRP3 inflammasome is a key mechanism that mediates IL-1b production and pyroptosis, a necrotic-like cell death characterized by vast inflammation, in microglial cells. The current study sought to investigate the genotypic differences in NLRP3 inflammasome activation between humanized-APOE3, -APOE4, and C57BL/6J mouse-APOE (C57-m-APOE) in primary microglia (PMG). PMG were isolated from whole brains from post-natal day 0-1 old pups, cultured for 16 days, and magnetically separated using a CD11b+ selection kit. PMG were treated with LPS (10ng/ml), ATP (2mM), or primed with LPS for 3h followed by ATP for 30min to induce inflammasome activation. Immunoblotting revealed increased NLRP3 protein levels after LPS priming (118%, 153%) and LPS+ATP activation (60%, 102%) in APOE3 and APOE4 PMG, respectively compared to APOE3 control. ASC adaptor protein levels increased in APOE4 PMG (22%) compared to APOE3 PMG following LPS+ATP treatment. To assess pyroptosis, cell death was measured by live-dead assay. APOE4 PMG displayed a 127% increase in cell death compared to APOE3 PMG treated with LPS+ATP. Immunocytochemistry was conducted to determine active caspase-1 expression in LPS+ATP treated PMG. APOE4 PMG expressed 1.3-fold higher levels of active caspase-1 compared to APOE3 PMG. Lastly, pro-inflammatory IL-1b cytokine secretion was measured by ELISA. APOE4 PMG secreted 58% more IL-1b following LPS+ATP treatment compared to APOE3 PMG. Together, these data indicate that APOE4 PMG express greater levels of NLRP3 inflammasome mediated neuroinflammation and pyroptosis compared to APOE3 PMG, consistent with clinical data demonstrating a greater inflammatory response to LPS in APOE4 carriers and identifying the NLRP3 inflammasome as a key pathway affected by APOE genotype.

Presenter: Harry Brown, PhD student in Biochemistry- Environmental Health Sciences lab
Title: Small molecule library screening identifies a novel Drp1 inhibitor as a potential therapeutic for Parkinson's Disease
Additional Authors: Rebecca Fan, Yanhao Lai, Kim Tieu
Research Abstract: Parkinson's disease (PD) is the second most common neurodegenerative disorder, after Alzheimer's disease. Currently, there is no cure for PD, and disease-modifying therapies for this devastating disease are urgently needed. Levodopa is currently the best-in-practice medication for PD. However, after a long-term Levodopa prescription, patients typically reexperience parkinsonism symptoms. Levodopa is intended to manage PD motor symptoms; It does not prevent the death of dopaminergic neurons rather it acts as an alleviating suppressant. Therefore, developing more therapies that target disease progression mechanisms is imperative. Imbalanced mitochondrial dynamics (fission, fusion, and movement) and impaired autophagic flux are two pathogenic mechanisms involved in PD ultimately leading to increased inflammation and increased levels of protein aggregation. It is well established that Dynamin-related protein 1 (Drp1) is a regulator of mitochondrial fission. It has been shown that partial inhibition of Drp1 through genetic approaches improves mitochondrial function and autophagic flux while decreasing neurotoxicity and a-synuclein transmission between cells. We hypothesize that partial inhibition of Drp1 using small molecule compounds to inhibit its GTPase activity will reduce mitochondrial toxicity and autophagic impairment caused by a-synuclein but also the inflammation associated with perturbed mitochondrial dynamics. To identify novel compounds that inhibit the GTPase activity of Drp1, our lab has developed a drug screening assay using human Drp1. Through drug screening methods of small molecule compound libraries by Scripps Institute we identified compound KM as a promising partial inhibitor of Drp1 and a potential candidate for further drug development. Our preliminary data demonstrate that this compound is effective at reducing inflammation and a-synuclein aggregation in in vitro PD models. More work is needed but our data so far identifies this compound as a potential novel therapeutic for PD.

Presenter: Jennifer Chavez, PhD student in Public Health- Environmental Health Sciences

Title: Inside Out: Inflammation in Acute HIV Predicts Persistent Depressive Symptoms Despite Antiretroviral Therapy

Additional Authors: Kyu Cho, MS, Jacob Bolzenius, PhD, Julie Mannarino, MS, Carlo Sacdalan, MD, Phillip Chan, MBChB, PhD, Shelli Farhadian, MD, PhD, Lydie Trautmann, PhD, Lishomwa C. Ndhlovu, MD, PhD, Somporn Tipsuk, RN, Trevor A. Crowell, MD, PhD, Duanghathai Suttichom, RN, Donn J. Colby, MD, MPH, Nittaya Phanuphak, MD, PhD, Eugene Kroon, MD, Sandhya Vasan, MD, Somachai Sriplienchan, MD, MPH, Serena Spudich, MD, Robert Paul, PhD, & Adam W. Carrico, PhD for the RV254/SEARCH 010 Study Team

Research Abstract: Background: Depression is two- to three-times more prevalent among people with HIV (PWH) and is associated with increased mortality risk despite ART. Although pathophysiologic alterations during acute HIV infection (AHI) could have long-term neuropsychiatric consequences, scant research has examined depressive symptom trajectories from AHI through 96 weeks of suppressive ART. Methods: RV254/SEARCH010 is an AHI cohort in Bangkok, Thailand. Participants undergo clinical phenotyping, including self-reported depressive symptom severity, during AHI and following ART initiation. Hierarchal density based spatial clustering with uniform manifold approximation and projection was used to examine depressive symptom trajectories over 96 weeks. ANOVA and chi-square tests examined the associations of demographic, clinical, behavioral, and inflammatory correlates of persistent depressive symptom trajectories. Logistic regressions were conducted to estimate odds ratios. Results: A total of 443 participants were included in the analysis. The median age of participants was 27, and more than half reported having a bachelor's degree or higher. Ninety-eight percent of the sample identified as sexual minority men. Nearly one-in-five participants (19%) reported methamphetamine use, 15% reported amyl nitrite (e.g., popper) use, and 8% reported using erectile dysfunction (ED) medications during the AHI visit. Two clusters emerged through ML analyses. Cluster 1 (n=258, 58%) included participants that started with depressive symptoms that exceeded the threshold for screening positive for a depressive disorder over 96 weeks. Cluster 2 (n=185, 42%) included participants that started with low levels of depressive symptoms that continued to decline post-ART initiation. The odds of persistent depressive symptoms are higher among participants that reported ED med use (OR = 2.855, 95% CI=1.048, 7.778) and popper use (OR = 2.388; 95% CI=1.169, 4.877). Additionally, the odds of persistent depressive symptoms increase for every 1 unit increase in log plasma viral load (OR = 1.272; 95% CI= 0.988, 3.353) and sTNFaR2 (OR=1.229, 95% CI=1.039, 1.453). Conclusions: Half of participants reported persistent depressive symptoms over 96 weeks, despite early ART intervention. Greater inflammation, higher plasma viral load, and chemsex drug use at the AHI visit were associated with persistent depressive symptom trajectories over 96 weeks of suppressive ART. AHI may represent a critical setpoint where biobehavioral factors have mental health consequences.

Presenter: Sarah Hardin, PhD student in Public Health- Environmental Health Sciences

Title: Effects of early life lead exposure on the cardiovascular system in a transgenic mouse model of Alzheimer's disease

Additional Authors: v. Dargam, J. Hutcheson, T.R. Guilarte

Research Abstract: Lead (Pb2+) is a well-documented developmental neurotoxicant exerting adverse effects on various organ systems. Infants and children in critical periods of development are particularly susceptible to Pb2+ neurotoxicity with long-lasting effects on cognitive function promoting cognitive decline. Additionally, substantial evidence indicates significant detrimental effects of Pb2+ exposure on the cardiovascular system. Impaired cardiovascular health is also an associated risk factor for the development of Alzheimer's Disease (AD), a devastating neurodegenerative disorder affecting cognitive function, resulting in social-behavioral problems, and eventually death. The negative health consequences induced by chronic early Pb2+ exposure

(CELLE) is also observed in AD subjects. This study addresses a critical knowledge gap by investigating the effects on neurological/cardiovascular health influenced by CELLE in a familial AD animal model. For these studies, we used the 5XFAD transgenic mouse model of AD and wildtype controls. 5XFAD mice express five human mutations in AD-associated risk genes, exhibiting an aggressive AD-phenotype. We employed ultra-high frequency ultrasound techniques to study the effect of CELLE on the cardiovascular system as a risk factor for late-life AD. Our preliminary findings in female mice indicate that exposure from birth to 3 months of age to a Pb2+-containing diet results in environmentally relevant levels of blood Pb2+ at 3 months (14.45 ± 1.107 µg/dL) relative to non-exposed controls (<1.9 µg/dL). At 3 months of age, we observed that in female mice, CELLE results in significant increases in body weight ($p=0.043$, n=11-12), skull thickness ($p=0.041$, n=11-12) and posterior cerebral artery (PCA) peak velocity ($p=0.005$, n=10-12) as well as hypertrophy of left ventricular mass ($p=0.017$, n=5-6) and a decrease in mitral valve A-wave velocity ($p=0.005$, n=5-6) independent of genotype. Our research on CELLE seeks to characterize the relationship between Pb2+-induced cardiovascular deficits and its ramifications on the central nervous system, shedding light on the potential risk of AD onset later in life.

Presenter: Sharika Marjan, PhD student in Public Health- Environmental Health Sciences
Title: Pyrethroid Exposure Enhances Hippocampal ER Stress, Impairs Neurogenesis, and Worsens Cognitive Function in APOE4 Mice
Additional Authors: Maria Molina, Laura Gamba, Abigail Toltin, Muhammad Hossain
Research Abstract: Alzheimer's disease (AD) is a debilitating neurodegenerative disease that affects memory, thinking, and behavior. Currently, more than 6 million Americans are living with AD. Although age is the most important risk factor for AD, there are many other factors, including environmental exposure and genetics which are thought to play a profound role in disease development and progression. It has been found that having a genetic variant of the apolipoprotein E4 (APOE4) provides an increased risk in developing AD, but the exact mechanism in which it causes AD remains unclear. Pyrethroids are one of the most widely used agricultural and household insecticides. Thus, exposure to pyrethroids could interact with APOE genotype to increase AD risk and worsen cognitive function. To test this hypothesis, 5-month-old male APOE4 mice were exposed to 3 mg/kg of deltamethrin every 3 days for 30 days and the levels of CHOP and GRP78 were measured using western blot analysis. We found that deltamethrin significantly increased both CHOP and GRP78 proteins in the hippocampus of APOE4 mice when compared to age-matched C57BL6/J wild type (WT) male mice, indicating that deltamethrin exposure interacts with APOE4 genotype to induce enhanced ER stress. Repeated deltamethrin exposure also significantly decreased BrdU+ cells (40%), Ki67+ cells (33%) and DCX+ cells (30%) in the dentate gyrus (DG) of the hippocampus, indicating potential impairment of hippocampal neurogenesis. To determine whether these effects resulted in cognitive deficits, hippocampal dependent learning and memory was assessed using a contextual fear conditioning test. Deltamethrin treated APOE4 mice exhibited profound impairment in hippocampal-dependent contextual learning and memory when compared to age-matched WT male mice. Together, these data demonstrate that pyrethroid exposure and APOE4 gene interaction causes enhanced hippocampal ER stress and decreases neurogenesis, which may lead to the progression of AD. Supported in part by R01ES027481, 3R01ES027481-6S1, and FIU SEED grants.

Presenter: Said Salehe, PhD student in Public Health- Environmental Health Sciences
Title: Bioactive Lipid Lysophosphatidylethanolamine Attenuates Toxin-Induced Inflammation and Autophagic Impairment
Additional Authors: Rebecca Z. Fan, Yanhao Lai, Haiwei Gu, and Kim Tieu

Research Abstract: Aging is a major risk factor for diseases and underlies nearly all chronic diseases, including neurodegenerative disorders. Indeed, the burden and the cost associated with neurodegenerative diseases increase exponentially with age. Therefore, understanding age-related changes and their biological relevance may provide potential therapeutic targets. Recently, different laboratories have comprehensively characterized aging metabolome and lipidome in rodent models. These studies identified several alterations in lipids and metabolite profiles associated with aging. Our preliminary metabolomic investigation identified similar age-related alterations. Although such changes are significant to identify, their biological relevance is unknown. Given the prominent role of inflammation and autophagy in neurodegenerative diseases, we investigated the role of the bioactive lipid Lysophosphatidylethanolamine (LPE). Using immortalized mouse primary microglia (MMC) cells, LPE attenuated LPS-induced inflammation after 6 hours of induction. The LPS-induced elevation of mRNA for TNFa, LCN2, IL-6, IL-1b, NLRP3, and NF-kB was abated in LPE-treated MMC cells. Currently, cytokine release (protein) is being investigated to complement the qPCR data. Given the significant role of autophagy in neurodegenerative diseases, we investigated the impact of LPE on autophagic flux using mRFP-GFP-LC3 HeLa reporter cells. We show that LPE abates Manganese (Mn)-induced autophagic blockage in HeLa reporter cells. Immunoblotting of p62 confirms the protective role of LPE on Mn-induced autophagy blockade. These results have significant implications for neuroprotection induced by toxic insults. Further studies are ongoing to identify the mechanisms of LPE protection and develop therapeutic strategies for neurodegenerative disorders. In summary, bioactive lipids are increasingly recognized as a potential culprit or therapeutic target in age-related disorders. We demonstrate the potential protective benefit of LPE in toxin-induced inflammation and autophagic impairment. These findings highlight the potentially important role of LPE in aging and neurodegenerative diseases.

Presenter: Dr. Rebecca Fan, Postdoctoral Fellow in Environmental Health Sciences
Title: A partial Drp1 knockout improves autophagy flux independent of mitochondrial function
Additional Authors: Carolina Sportelli, Yanhao Lai, Said S. Salehe, Jennifer R. Pinnell, Jason R. Richardson, Shouqing Luo, Kim Tieu
Research Abstract: Dynamin-related protein 1 (Drp1) is a member of the dynamin GTPase superfamily typically known for its role in mitochondrial fission. A partial inhibition of this protein has been reported to be protective in experimental models of neurodegenerative diseases. The protective mechanism has been attributed primarily to improved mitochondrial function. Drp1 inhibition has also been demonstrated to reduce protein aggregation in experimental models of Parkinson's disease, Alzheimer's disease, and Hungtington's disease, indicating the potential involvement of protein removal pathways such as autophagy. However, it is not feasible to untangle with certainty whether Drp1 inhibition reduces protein aggregation via mitochondria, autophagy, or a combination of both in those models since these two pathways bidirectionally regulate each other Herein, we provide evidence showing that a partial Drp1-knockout improves autophagy flux independent of mitochondria using low doses of manganese (Mn) as a model. Mn causes parkinsonian-like symptoms in humans and it has been proposed as a risk factor for PD.. In this study, first, we characterized in cell models that at low non-toxic concentrations (up to 125μM in both N27 rat dopaminergic neuronal cells and Hela autophagy reporter cells), Mn impaired autophagy flux but not mitochondrial function or morphology. Furthermore, chronic low dose of Mn treatment in mice through drinking water impaired autophagy pathways but not OXPHOS in the ventral mid brain based on RNAseq and KEGG pathway analysis. Imaging using autophagy reporter mice as well as Laser-capture microdissection-assisted cell-type specific immunoblotting revealed nigral dopaminergic neurons were more sensitive than their neighbouring GABAergic counterparts. Second, in cells with a partial Drp1-knockdown and Drp1+/- mice, autophagy impairment induced by Mn was significantly attenuated. This study demonstrates that autophagy is a more vulnerable target than mitochondria to Mn toxicity. Furthermore,

improving autophagy flux is a separate mechanism conferred by Drp1 inhibition independent of mitochondrial fission. In summary, the present study provides two major novel mechanisms relevant to neurological disorders. The combined protective mechanisms of improving autophagy flux and mitochondrial function conferred by Drp1 inhibition make this protein an even more attractive therapeutic target.

Presenter: Dr. Alexander Rodichkin, Postdoctoral Fellow in Environmental Health Sciences
Title: Pathophysiological changes in the cerebellum of Slc39a14-knockout mouse model of childhood-onset manganese-induced dystonia-parkinsonism
Additional Authors: Jennifer L. McGlothan, Ritishka Kapoor, Tomás R. Guilarte

Research Abstract: Childhood-onset manganese (Mn)-induced dystonia-parkinsonism (COMnDP) is a rare and debilitating motor disorder. Over the last decade, numerous clinical reports describe loss-of-function mutations in the Mn-transporter gene SLC39A14 resulting in COMnDP. In the context of severe dystonia (DY) and cerebellar (Cb) atrophy, SLC39A14 mutation carriers present with up to 20-fold increase in blood Mn levels and high brain Mn deposition as evidenced by T-1 weighted MRI. The affected individuals develop motor deficits as early as 6-months of age and are refractory to L-DOPA which is the primary pharmacological approach in idiopathic Parkinson's disease. Although parkinsonism is typically associated with the disease, DY is central to its clinical manifestation. Yet, the underlying pathophysiology and mechanisms of DY remain largely unexplored. We have previously characterized a novel Slc39a14-knock-out (KO) murine model of the human disease from the perspective of the dopaminergic (DAergic) system of the basal ganglia (Rodichkin et al. 2021, 2022). We reported that the Slc39a14-KO mice expressed locomotor, balance, and gait deficits and DY-like features. We also showed that DAergic neurons of the substantia nigra pars compacta do not degenerate. However, we discovered 70-90% inhibition of striatal DA release. Human cases of the disease and the murine model have a very complex behavioral phenotype that is unlikely to be explained by the inhibition of DA release alone. To our knowledge this is the first report that delineates potential neurodegenerative changes in the Cb of Slc39a14-KO mice as a preclinical animal model of COMnDP.

Presenter: Seyedeh Yasaman Alemohammad, MPH student in Epidemiology
Title: Factors related to COVID-19 vaccine hesitancy among people living with HIV: A systematic review
Additional Authors: Aaliyah Gray, Daisy Ramirez Ortiz, Mary Jo Trepka

Research Abstract: Background: COVID-19 vaccines were produced as part of a worldwide effort to combat the pandemic. Some people living with HIV (PWH) have reported reluctance to be vaccinated. We conducted a systematic review of the factors associated with COVID-19 vaccine hesitancy among PWH. Method: During October 2023, we systematically searched the Scopus, Web of Science, Medline (ProQuest, Ovid), Embase, and PsycINFO databases to identify studies of factors associated with COVID-19 vaccine hesitancy among PWH that were published from January 2021 to October 2023. Result: Concerns about vaccination safety, side effects, and efficacy were identified as common risk factors for reduced vaccine uptake and higher hesitancy in one or more of the 58 cross-sectional and cohort studies. Factors associated with higher vaccine uptake and intention included higher education level, ever having received an influenza vaccine, receiving a doctor's recommendation to get vaccinated, trust in the government, knowing someone who was infected or had died from COVID-19, knowing more people who have received the COVID-19 vaccine, higher socioeconomic status (SES), high antiretroviral therapy (ART) adherence, greater perceived risk of COVID-19 infection, exposure to opinions supporting COVID-19 vaccination on the Internet or social media, and uncertainty about latest HIV viral load. Higher vaccine hesitancy and lower uptake was associated with Living in a rural area, inaccessibility of COVID-19 vaccines and vaccination sites, using marijuana in the past 6 months, not having

health insurance, being MSM with injection drug use, having severe self-reported anxiety and depression, lower SES, unknown HIV serostatus, low CD4 count (less than 200), past refusal of other vaccines , and having access to a smartphone or computer were factors associated. Factors such as age, race, gender, marital status, comorbidities, employment status, and income level were inconsistently linked with vaccine uptake, intention, and hesitancy. Conclusion: To improve vaccine acceptability and promote PWH acceptance of the COVID-19 vaccine, the modifiable factors such as concerns about safety and efficacy must be addressed. These findings can also be used to determine particular populations in highest need of vaccine promotion interventions.

Presenter: Patrice Lewis, MPH student in Epidemiology
Title: Among the older adult population (65+ years and older) in the United States, is inadequate sleep (<7 hours) associated with increased odds of anxiety?
Additional Authors: Beatriz Milian, Pura Rodriguez, MPH, Noël C Barengo, MD, PhD, MPH
Research Abstract: Introduction and Objective: Adequate sleep hours have been associated with healthier physical and mental well-being. Studies have found the need for different sleep duration requirements as changes in age occur. Given the proliferation of mental health issues during the pandemic, studies investigating the effects of lifestyle patterns like sleep on health, play an important role in public health efforts. This study examined the association between inadequate sleep (<7 hours) and anxiety in older adults (65+ years). Methods: This analytical cross-sectional study used data from the 2020 National Health Interview Survey. Participants aged 65 years and older were included in the study (N=10,025). Participants with missing data on the key variables were excluded (N=9,657). Anxiety disorder was assessed as the main outcome variable and sleep hours (<7 hours, 7-8 hours, and >8 hours) as the exposure, while controlling for sociodemographic characteristics, health behaviors, chronic conditions, and sleep quality. Logistic regression analysis was used to calculate unadjusted and adjusted odds ratios (OR) and the corresponding 95% confidence intervals. Results: The sample included 9,657 older adults. The highest incidence of anxiety disorders occurred in older adults who slept for ≥ 9 hours in a 24-hour period. After adjusting for potential confounders, the odds of anxiety were 32% higher (OR=1.32; 95% CI 1.03-1.69) in older adults who slept for ≥ 9 hours compared with those who met the recommended amount of sleep (7-8 hours). Participants who were 75 years and older, female, Hispanics, income level <$50K and being unmarried were independently associated with increased likelihood of anxiety disorders. Those with lifestyles of former smoking, former alcohol use, users of sleep medication and extremely poor sleep quality were also more likely to be associated with the outcome. Increased odds were also reported for participants with comorbidities like chronic obstructive pulmonary disease, coronary heart disease, diabetes mellitus and hypertension. Conclusion: According to our data, clinicians are recommended to provide guidance on healthy sleep practices to promote the recommended 7-8 nightly hours. Further research should establish the relationship and mechanisms between sleep disturbances and anxiety in this aging population.

Presenter: Giselle Alexandra Barreto, PhD student in Public Health- Epidemiology
Title: Evaluating three different ways of defining rurality at the zip code level in Florida and interpretation of the CDC/ASTDR Social Vulnerability Index
Additional Authors: Joseph Muller, MPH; Diana Sheehan Delgado, PhD, MPH; Mary Jo Trepka, MD.
Research Abstract: Varying methodologies have been developed to define rurality across geographies impacting interpretation of effect measures in epidemiologic research. This study aims to evaluate the congruency of three rurality definitions for Florida's 991 zip codes and compare the association between each of the four Social Vulnerability Index (SVI) themes and federal rural definitions. Rural/urban classification by zip code tabulation area (ZCTA) data was obtained from the US. Census Bureaus' 2010 Decennial Survey (Urbanized Area [UA]/Urban Cluster [UC]), US. Department of Agricultures' 2010 Rural-Urban Commuting

Area (RUCA), and Human Resources and Service Administrations' (HRSA) funding eligible zip codes. Congruency amongst definitions was measured using percent agreement. US. Census Bureaus' 2020 American Community Survey 5-year estimates were used to calculate SVI for ZCTAs according to methodologies developed by CDC/ASTDR. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) were calculated using multivariable logistic regression for effect of SVI theme on rurality. Stepwise logistic regression was used for model selection. Congruency of definitions was 81.5% between RUCA and UA/UC; 86.4% between HRSA and UA/UC; and 93.6% between RUCA and HRSA. Rural status was significantly associated with a higher SVI Theme 3 score across definitions [RUCA aOR=1.026, CI=(1.012-1.040); UA/UC aOR=1.058, CI=(1.045-1.072); HRSA aOR=1.037, CI=(1.025-1.049)], but was only associated with a higher SVI Theme 2 score for HRSA definition [aOR=1.019, CI=(1.001,1.038)] and only associated with a higher SVI Theme 4 score for UA/UC definition [aOR=1.061, CI=(1.032,1.090)]. Choice of rurality definition affects the significance of associations between rural/urban communities and SVI themes. Thus, definitions chosen should best encompass those aspects of rurality relevant to study question.

Presenter: Tendai Gwanzura, PhD student in Public Health- Epidemiology
Title: Changes in COVID-19 mortality disparities among people with HIV in Florida after introduction of COVID-19 vaccine
Additional Authors: Mary Jo Trepka, Tan Li, Levente Juhasz, Diana M. Sheehan, Giselle Barreto and Shelbie Burchfield
Research Abstract: Previous studies have identified sociodemographic variations in COVID-19 mortality rates, including factors such as age, race/ethnicity, and geographic location, both before and after the availability of the COVID-19 vaccine. However, there is limited research on this relationship among people with HIV (PWH). This study therefore aimed to compare sociodemographic disparities in COVID-19 mortality among PWH before (January 1, 2020 - April 30, 2021) and after (May 1, 2021 - December 31, 2021) the introduction of COVID-19 vaccines. Using 2020-2021 Florida HIV surveillance data and ZIP Code-level Social Vulnerability Index (SVI), a multilevel competing risks model estimated risk of COVID-19 death among PWH, before and after vaccine availability. The adjusted hazard ratio (aHR) decreased post-vaccine for individuals aged 50 to 65 (after vaccine: aHR 4.23, 95% confidence interval [CI] 2.23–7.98; before vaccine: aHR 5.39, 95% CI 2.66–10.93) and those over 65 (after vaccine: aHR 9.19, 95% CI 4.83–17.47; before vaccine: aHR 17.15, 95% CI 8.45–37.49) compared to those aged 18 to 34. Post vaccine, disparities in the hazard of death from COVID-19 were eliminated for Hispanics (after vaccine: aHR 0.99, 95% CI 0.66–1.49; before vaccine: aHR 2.23, 95% CI, 1.57–3.16), but not for Non-Hispanic Blacks (after vaccine: aHR 1.43, 95% CI, 1.02–2.0; before vaccine: aHR 1.81, 95% CI, 1.30–2.52) compared to Non-Hispanic Whites (NHW). PWH who resided in areas of high social vulnerability had a higher risk of death post-vaccine (aHR 1.70, 95% CI 1.03–2.80), but not pre-vaccine availability (aHR 1.36, 95% CI 0.89–2.07). Potential reductions in age and race/ethnic disparities in COVID-19 mortality were observed following the availability of the COVID-19 vaccine. However, PWH in the most socially vulnerable areas did not show improvements, suggesting a need for targeted interventions to boost vaccine uptake and eliminate disparities in these communities.

Presenter: Michaela E. Larson, PhD student in Public Health- Epidemiology
Title: Elevated High Sensitivity Cardiac Troponin T Among Sexual Minority Men with HIV who use Stimulants
Additional Authors: Yue Pan, PhD, Emily M. Cherenack, PhD, Sabina Hirshfield, PhD, Keith J. Horvath, PhD, Elise D. Riley, PhD, Savita Pahwa, MD, Suresh Pallikkuth, PhD, Claudia Martinez, MD, Adam W. Carrico, PhD

Research Abstract: Background: There is a need for greater clarity regarding the biobehavioral mechanisms driving increased risk for cardiovascular diseases among people with HIV who use stimulants. Because co-occurring HIV and stimulant use may have deleterious implications for cardiovascular health, we examined their combined associations with cardiovascular biomarkers, including serum high-sensitivity cardiac troponin T (hs-cTnT) to index cardiac muscle injury. Methods: Seventy-two sexual minority men (i.e., gay, bisexual, and other men who have sex with men) with and without HIV completed self-report measures, provided urine samples for on-site toxicology testing, completed a physiological assessment, and provided peripheral venous blood samples. This cross-sectional study examined the associations of HIV by stimulant use groups (i.e., HIV+Stim+, HIV+Stim-, HIV-Stim+, and HIV-Stim-) and serum amphetamine metabolites (including methamphetamine) with cardiovascular biomarkers. Results: After adjusting for age and recent tobacco use, HIV+Stim+ participants had nearly a 7-fold greater odds of detectable hs-cTnT and higher estimated mean concentration of hs-cTnT (b = 0.51, p = 0.031, mean = 12) than the HIV-Stim- group. Among men with reactive urine screens for amphetamines, there was a large dose-response association of greater serum amphetamine metabolite levels with higher hs-cTnT (r(11) = 0.86, p < 0.0001). Conclusion: Sexual minority men with HIV who use stimulants display elevations in a biomarker of subclinical cardiac injury compared to men without HIV and that do not use stimulants. Results suggest that it may be useful to include stimulant use in CVD risk assessment, and potentially add it to risk assessment tools tailored for higher-risk populations.

Presenter: Ximeng Zhao, PhD student in Public Health- Epidemiology
Title: Nicotine Dependence and Its Impact on Poly Tobacco Use
Additional Authors: Olatokunbo Osibogun

Research Abstract: Background: Poly tobacco use (PTU), the consumption of multiple tobacco products, is linked to high mortality rates. While has demonstrated a relationship between poly tobacco use and nicotine dependence (ND), they are predominantly based on cross-sectional study design. This study aims to explore whether a higher level of ND is a risk factor for transitioning to PTU. Method: We utilized data from waves 1-6 (2013-2021) of the Population Assessment of Tobacco and Health (PATH) study. Participants that are single product users and age over 18 at wave 1 were included. A standardized score of 16 items related to ND at baseline is averaged to get the ND for each participant. ND is treated as a continuous variable ranging from 1 (least dependent) to 5 (most dependent). We tracked their usage through wave 6; a change to PTU at any time point will be ascertained as a case. Population characteristics between single/poly users are compared using the chi-square test for categorical variables and t-test for continuous variables. Cox proportional hazard regression is performed to assess the risk of transitioning to PTU, and the final model is adjusted for age, sex, race, education, household smoking, and alcohol use. Result: A unit increase in ND is correlated with a 25.4% increase in the risk of PTU (HR =1.292, 95%CI: [1.215, 1.373]). Age showed a significant inverse relationship with the risk of PTU. Individuals aged 25-34 (HR = 0.692, 95% CI: [0.563, 0.850]) and 35+ (HR = 0.426, 95% CI: [0.355, 0.510]) had lower hazards compared to 18-24-year-olds. Households with smokers (HR = 1.213, 95% CI: [1.056, 1.394]) also exhibited a higher transition risk. Sensitivity analysis shows the ND-PTU association is only significant among exclusively cigarette users. The statistical analysis is weighted using W6 longitudinal (all-waves) full-sample and replicate weights. Conclusion: Nicotine dependence is a risk factor for PTU. Younger individuals are also more vulnerable to PTU. These findings suggest interventions should emphasize the negative impact of poly tobacco use, especially toward high ND smokers and younger smokers. Future studies should further explore the mechanism linking ND to tobacco use behaviors.

Presenter: Gemma Galvez, PhD student in Public Health- Health Promotion and Disease Prevention

Title: Sex Differences In Sociocultural Factors Associated With Health Literacy Among Latino/a Immigrants

Additional Authors: P. Rojas, M. De La Rosa, M. Sanchez

Research Abstract: BACKGROUND: Health literacy (HL) refers to how well an individual can find, understand, and apply the health information that they need. Inadequate HL is associated with poor health outcomes, and Latino immigrant populations in the U.S. face several barriers to health and wellbeing, including language proficiency, poverty, lack of health insurance, and access to care. Due to the unique characteristics that recent Latino immigrants (RLI) encounter, the present study focuses on sociocultural and behavioral factors (SCBF) associated with HL among this population. METHODS: Cross-sectional data originated from an NIAAA-funded longitudinal study examining pre-to post-immigration alcohol trajectories of adult Latino/a immigrants during their first 12 years in the U.S. Data for the present study was collected between 2019 and 2020 from 493 adult Latinos who immigrated to Miami-Dade County, Florida approximately 12 years prior (54% Male, 46% Female). A series of binary logistic regressions stratified by sex examined SCBF associated with HL. HL was assessed using the Single Item Literacy Screener (SILS): How confident are you with filling out medical forms by yourself? Responses range from 1=not at all to 5=extremely and were subsequently dichotomized as 0=low and 1=high. All models controlled for country of birth, age, education, documentation status, and income. RESULTS: Findings revealed distinct associations between SCBF and HL in the study sample. Males with greater bicultural self-efficacy (aOR: 1.04, 95% CI 1.00-1.08), social capital (aOR: 1.83, 95% CI 1.03-3.22), and family conflict (aOR: 2.86, 95% CI 1.28-6.38), and females with higher levels of acculturation (aOR: 1.86, 95% CI 1.16-2.97) were more likely to report high levels of HL. Younger age (Males: aOR: .93, 95% CI 1.03-3.22; Females: aOR: .88, 95% CI .81-.94), higher levels of ethnic identity (Males: aOR: 2.52, 95% CI 1.29-4.91; Females: aOR: 2.10, 95% CI 1.09-4.05), and increased physical activity (Males: aOR: 1.38, 95% CI 1.14-1.68; Females: aOR: 1.22, 95% CI 1.01-1.48) were associated with higher HL among both males and females. Additional associations between SCBF and HL will be explored. CONCLUSION: Study findings highlight several SCBF were associated with greater HL among RLI. These findings may serve to inform culturally appropriate interventions aimed at enhancing health promotion and disease prevention strategies among this population.

Presenter: Ian Lee, PhD student in Public Health- Health Promotion and Disease Prevention
Title: The impact of sociocultural factors and job insecurity on depressive symptoms among Latino/a immigrants to South Florida

Additional Authors: Dr. Mariana Sanchez

Research Abstract: Objectives: The study examined the cumulative effect of multilevel sociocultural factors and job insecurity on depressive symptoms among young adult recent Latino/a immigrants (RLIs). Additionally, the moderating effects of various sociocultural risk/protective factors on the association between job insecurity and depressive symptoms were explored. Background: Over the last 10 years, there has been an influx of authorized and unauthorized Latino/a immigrants from Central and South America. These immigrants often arrive in the U.S. seeking economic opportunities. Yet, the stress of the migration process, adapting to a new receiving community, and experiencing job insecurity can negatively impact the mental health of RLIs. The study examines how job insecurity coupled with sociocultural risk/protective factors impacts depressive symptoms among adult RLIs during their initial 3 years in the U.S. Methods: This study utilizes cross-sectional data collected between 2021-2022 from an NIH-funded study examining pre-to post-immigration factors among adult RLIs who immigrated to the U.S. less than three years prior to assessment. Hierarchical multiple regression and a series of moderation analyses using SPSS v.29 and PROCESS v.4.1 were conducted on a sample of 400 RLIs (50.2% female; 27.6% Venezuelan, 34.6% Other South American,27.8% Central

American/Mexican, 10% Caribbean; Mage=30.1). Results/Observations: Cumulatively, sociocultural factors and job insecurity explained 35.9% of the variance in depressive symptoms. In the final model higher levels of family conflict (β=.35, p<.001), language stress (β=.14, p<.01), job insecurity β=.21, p<.001), and lower social support β= - .20, p<.001), were associated with greater depressive symptoms. Moderation analyses revealed that immigration stress moderated the association between job insecurity and depressive symptoms. Specifically, significant associations between job insecurity and depressive symptoms were found among those with low and average levels of immigration stress. RLIs with high levels of immigration stress reported higher levels of depressive symptoms regardless of job insecurity. Conclusions: These findings support the integration of factors such as immigration stress, interpersonal relationships, and job insecurity in programs targeting adverse mental health outcomes among RLIs.

Presenter: Osmari Novoa, PhD student in Public Health- Health Promotion and Disease Prevention
Title: Association Between Immigration Stress and Anxiety Symptoms Among Recent Latino/a Immigrants: The Moderating Effects of Adverse Childhood Experiences
Additional Authors: Wang, Weize; De La Rosa, M.; Rojas, P.; M. Sanchez
Research Abstract: Background: Shifts in immigration patterns over the past decade have indicated steep increases in South American and Central American immigrants arriving in the U.S., largely within the context of forced migration. They arrive seeking asylum from political upheaval and devastatingly high rates of crime and poverty in their countries of origin. Previous research has focused on immigrant's experiences after arrival. Little is known about how pre-immigration adverse experiences interact with post-immigration stress to impact mental health outcomes among newly arrived Latino/a immigrants. The current study aims to identify the cumulative and interactive effects of adverse childhood experiences (ACEs) and post-immigration stress on anxiety symptoms among adult recent Latino/a immigrants (RLIs). Method: This study utilizes cross-sectional data from an NIAAA funded study examining pre- to post-immigration drinking and driving behaviors among adult RLIs during their initial years in the U.S. Hierarchical multiple regression (HMR) and moderation analyses were conducted on a sample of 522 RLIs (N=258 men, N=264 women; 29% Venezuelan, 33% Other South American,27% Central American/Mexican, 11% Caribbean; Mage=30.32). Predictor variables were entered into the HMR model as follows: Block 1: demographic variables, Block 2: pre-migration ACEs, Block 3: post-immigration stress (immigration stress, language stress, negative context of reception). A series of 3 interaction models examined interaction effects of ACEs and post-immigration stress on anxiety. Results: Findings indicated main effects for post-immigration stressors whereby higher levels of [negative context of reception (B=.70, p = .03; immigration stress (B = .22, p = <.001); language stress (B = .36, p = <.001) were associated with greater anxiety. No significant direct effects of ACEs on anxiety were evident. Results showed that 15.5 % of the variance of anxiety was explained by all of the predictor variables in the model. Significant interaction effects were found between ACEs and immigration stress whereby the association between immigration stress and anxiety was stronger among RLIs who experienced a greater number of ACEs (B = .12, p = .03). Conclusion: These findings support the development of culturally tailored mental health interventions early in the immigration process that address both pre- and post-immigration experiences of RLIs.

Presenter: Nikita Borisenko, MS student in Dietetics and Nutrition
Title: Assessing the Health and Welfare of 9/11 First Responders: A Focus on the Florida Cohort
Additional Authors: Roberto G Lucchini, Catalina Canizares Escobar, Mark Macgowan, Rabeya I Noon, Nan Hu, Paulo Chaves, Rafael E. de la Hoz, Shakara R. Brown, Andrew C. Todd

Research Abstract: Introduction: The events of 9/11 left indelible marks on numerous individuals, particularly the first responders who played a vital role in search and rescue operations at the World Trade Center site. These first responders have been the focus of extensive research, underscoring significant long-term physical and psychological impacts. To address these health concerns, a program was initiated in 2010, offering specialized medical and psychological care to 9/11 first responders. However, the benefits of this program diminish significantly for those who relocate outside NYC. With a substantial number of these responders moving to Florida, this study aims to assess the health and welfare of these relocated first responders in Florida, focusing on their medical and psychological requirements. Methods: Data were gathered through a survey, disseminated with assistance from the NYC data center, which provided the contact information of first responders who had consented to participate. The survey, designed by our research team, collected information on demographics, medical history, and psychological needs. Statistical analysis primarily involved exploratory data assessment, focusing on proportions and average scores derived from survey responses. Results: Our descriptive analysis included 277 responders, predominantly male (88%) with an average age of 61.1 (SD 7.6). A significant proportion (78.1) identified as Latino/Hispanic. In terms of health status, 39% reported less than good, while 68.5% indicated recent emergency room visits and 51% pain affecting daily activities. The data also revealed a keen interest among responders in topics such as sleep management, PTSD, diet, and other areas, with a preference for individual and in-person support. Notably, qualitative feedback highlighted a perceived neglect and a heightened need for support among those who relocated to Florida. Discussion: The findings suggest that the first responder cohort in Florida is experiencing a critical gap in receiving necessary medical and psychological care, feeling somewhat forsaken post-relocation. Comparative studies on first responders provide a context for understanding these needs. However, our study's limitations include the self-reported nature of the survey and the constrained scope of data, as this initial study aimed to minimize participant burden without compensatory measures.

Presenter: Elvira Alvarez Stehle, PhD student in Dietetics and Nutrition
Title: Infants feeding practices and its impact on early life weight status: baseline findings from the Baby-Act Trial

Additional Authors: Maria Gabriela Kallis, Center for Community Outreach for Health Across the Lifespan, Endocrinology Section School of Medicine, University of Puerto Rico. mgkallis@gmail.com Maribel Campos, MD, Professor, Dental and Craniofacial Genomics Core, Endocrinology Section School of Medicine, University of Puerto Rico. PO Box 365067, San Juan, PR 00936-5067, 787-758-2525 Ext 1136, maribel.campos@upr.edu. Jeremy Pomeroy, PhD, Clinical Research Center, Marshfield Clinic Research Institute, Marshfield Clinic Health System, Marshfield, WI; pomeroyj@marshfieldclinic.org Cristina Palacios, PhD, Professor, Dietetics and Nutrition Department, Robert Stempel College of Public Health & Social Work, Florida International University. cristina.palacios@fiu.edu.

Research Abstract: Background: Puerto Rico's population has the highest national prevalence levels for obesity and other chronic diseases. Rapid weight gain in infancy is a factor that increases the risk of obesity, and it is more significant among Hispanics/Latinos. Understanding the variables influencing rapid infant weight gain could help improve this population's health outcomes. Objective: This is a secondary cross-sectional analysis of participants' baseline data from the Baby-Act Trial, a cluster-randomized clinical trial of WIC clinics in Puerto Rico, to assess the association between the type of feeding (breastfeeding, formula, and added solids), macronutrient and energy intake, and weight status in infants. Methods: Anthropometrics and a validated infant food frequency questionnaire (FFQ) for diet assessment were completed at baseline. Analysis of the variance was performed to compare energy and macronutrient intake or weight-for-length (WFL) z-score by feeding type

or WFL categories (healthy weight or overweight/obesity). Logistic regression was used to associate the type of feeding and WFL categories. The models were adjusted for confounding factors (age, race, and education of the mother, number of previous children, gestational length, and pre-pregnancy BMI). Results: The present analysis included 368 caregivers. Mean age of mothers was 26.7 years, and of infants was 0.7 months. A total of 38.8% of infants were fed breastmilk exclusively, 45.9% were fed breastmilk and infant formula, and 12.5% were exclusively formula fed. Infants fed breastmilk (exclusively or in combination with formula) had significantly lower intakes of energy, protein, and carbohydrates compared to infants fed exclusively formula but no differences in these weight status indicators ($p<0.05$). Infants categorized as overweight/obesity had a significantly higher intake of energy, protein, fat, and carbohydrate, after adjusting for potential confounders ($p<0.05$). Conclusion: the type of feeding impacted energy and macronutrients intake but not WFL. However, those categorized as overweight/obesity had a significantly higher intake of energy and macronutrients. There could be a lag before the protective effect of breastfeeding on weight is noticeable. Following infants through the 1st year of life is needed to confirm these results.

Presenter: Jose Bastida, PhD student in Dietetics and Nutrition
Title: High HDL is Associated with Increased Toll-Like Receptor 4 gene expression in a Sample of People Living with HIV from The Miami Adult Studies on HIV (MASH) Cohort

Additional Authors: Jose A. Bastida Rodriguez, Yongjun Huang, Jacqueline Hernandez, Jupshy Jasmin, Leslie Seminario, Javier Tamargo, Haley Martin, Angelique Johnson, Sabrina Sales Martinez, Kenneth Sherman, Marianna Baum

Research Abstract: Investigate the cross-sectional association between inflammation markers (interleukins 1b 6, and TNF-a), immune activation (calprotectin and toll-like receptor 4 (TLR4)) gene expression and serum high-density lipoproteins (HDL) in 137 people living with HIV (PLWH). HIV may dysregulate lipids and promote inflammation via innate immune activation. Also, during systemic inflammation and infectious diseases, high-density lipoprotein (HDL) may become acutely proinflammatory. Yet, it is unknown how the RNA expression of immune activating genes are associated with HDL. Minoritized PLWH were selected from the ongoing Miami Adult Studies on HIV Cohort. Trained personnel collect sociodemographic, and anthropometric data. ART adherence and CD4 count was abstracted from medical records. Relative normalized gene expression was analyzed from peripheral-blood mononuclear cells with participants' consent; reference gene UBE2D2. Serum lipids (total cholesterol, low-density lipoproteins (LDL), HDL, triglycerides) were analyzed by LabCorp (Burlington, NC). Interleukins were determined with bead based Luminex immunoassays (EMD Millipore, Burlington, MA). Spearman rho correlations and linear regression included inflammation, immune activation, and lipid markers. Linear models examined the association of HDL with immune activation; the first adjusted model included age, sex, body mass index (BMI; $kg/m2$), and CD4 count. Model two adjusted for the same covariates, plus LDL and triglycerides. Participants were mostly ART adherent (99.3%), majority non-Hispanic Black (59.9%), median age of 54 years, and male (54.7%). Median HDL was 51mg/dL. TLR4 was correlated with HDL ($r=0.186$, $P=0.030$), and IL1b($r=-0.216$, $P=0.023$). No linear associations between calprotectin and TLR4 expression with interleukins, TNF-a, or HDL. Adjusted model one showed no association between HDL and calprotectin or TLR4 expression. The second model showed a significant association between HDL and TLR4 ($B=0.009$, $SE=0.005$, $P=0.048$). While interleukin levels were not associated with changes in the expression of immune activation markers, HDL seems to be a driver of inflammation via TLR4 expression. This is the first time that immune activating genes like calprotectin and TLR4 have been used to examine their relationship with HDL as proinflammatory, but the findings are similar to previous reports related to inflammation and elevated HDL. However, the directionality of the association between HDL and immune activation/inflammation requires further investigation.

Presenter: Ariana Onelia Bolivar, PhD student in Dietetics and Nutrition

Title: Formative Evaluation of The Family Meal Project: A website designed to provide families with nutrition education and healthy eating behavior strategies.

Additional Authors: Dr. Coccia Ph.D. RDN

Research Abstract: Healthy feeding practices is often associated with improved child health outcomes. Online nutrition programs can be an ideal means for parents to access valuable nutrition insights, however, the few parent-focused online sources of nutrition information are hard to navigate and fail to include a wide range of nutrition barriers parents may face. This paper aims to determine parent barriers to healthy feeding practices based on child age and conduct a formative evaluation on the feasibility of usage and appeal of The Family Meal Project website. Parents (n=12) of children ages 1-17 years old completed demographic questionnaires and participated in semi-structured interviews within 3 focus groups, via Zoom online platform. Parents were able to join the focus groups based on the age of their child/ren (1-4 y/o, 5-10 y/o, and 11-17 y/o). Questions asked were adapted from WebQualTM, a questionnaire with three parameters: usability, information quality, and overall view of the site. Qualitative data was collected by using a priori coding to measure for common themes using transcribed audio of the focus groups. Common themes were compared among all three focus groups and categorized. Parents of different age groups revealed that they experience differing nutrition barriers. Parents of 1-4 y/o reported having trouble with their child's food aversions, while parents of 5-10 y/o struggle with meal planning due to a busy livelihood. Parents of 11-17 y/o expressed a need for cooking and goal-setting guidance. However, all parents found areas of the site that were relevant to their family. Overall, parents felt that The Family Meal Project website was reliable, providing appropriate tools and motivating them to incorporate into their family routine. This formative evaluation of a nutrition website for families provided insight into parents' needs and concerns regarding nutrition behavior, education, and beliefs. More research is needed to evaluate the long-term outcomes a comprehensive nutrition website may have on families.

Presenter: Stephanie Gieseken, PhD student in Dietetics and Nutrition

Title: Association between Glutathione Levels and Psychotropic Medication Use in ART-Treated Individuals: Insights from the MASH Cohort Study

Additional Authors: Gladys E. Ibañez, Haley R. Martin, Jose A. Bastida Rodrigue, Qingyun Liu, Jupshy Jasmin, Leslie Seminario, Marianna K. Baum

Research Abstract: People Living with HIV (PLWH) are more likely to experience mental health disorders, often leading to the prescription of numerous psychotropic medications. Combining psychotropic and antiretroviral therapy (ART) can alter antioxidant enzyme activity by decreasing levels of reduced glutathione concentration, affecting its therapeutic effect and occurrence of comorbidities. This study aimed to determine the association between psychotropic medications and levels of total, oxidized, and reduced glutathione among people living with HIV (PLWH) with mental health disorders on ART. Participants with mental health disorder from the Miami Adult Studies on HIV (MASH) cohort with HIV infection and on stable ART, with or without prescribed psychotropic medications were included. A self-reported questionnaire verified with information from the medical charts was used to collect medication details; glutathione levels were measured from blood samples. Data was analyzed with independent t-test, Mann-Whitney, and multiple linear regression on total glutathione, oxidized, percentage, reduced and GSH/GSSG ratio. The study was comprised of 166 participants; 81 were only on ART, and 85 on any psychotropic medication and ART. Average age was 53 years, BMI 35 kg/m, CD4 cell count was 447.7 cells/μL, 53% were male. total, oxidized (39 μmol/ml vs 30.18 μmol/ml, p=0.01), percentage, and GSH/GSSG ratio values were lower on psychotropic and ART, but not for reduced glutathione. The Mann-Whitney Wilcoxon test showed significantly lower GSH/GSSG ratio ($X2=3.55$, p=0.05)

and lower oxidized glutathione levels (X2=5.21, p=0.02) among PLWH using ART and psychotropic medication. Multiple regressions analyses, which included values for total, oxidized, reduced and ratio of reduced and oxidized glutathione, age, and BMI showed oxidized glutathione remained significantly lower among PLWH who were on ART and psychotropic medication. The combination of psychotropic medication and ART impacts glutathione levels and decreases oxidative stress in PLWH. PLWH who have mental health issues would benefit from the combination of ART and psychotropic medications to help to improve disease outcomes.

Presenter: Margaret Gutierrez, PhD student in Dietetics and Nutrition
Title: Associations between dietary quality and depressive symptoms in emerging Hispanic adults
Additional Authors: Narayanan V, Palacios C, George F, Martinez SS
Research Abstract: Objectives: Depressive symptoms are particularly common in Hispanic emerging adults who have greater risk of mental health disorders and multimorbidity because of adverse childhood experiences, the stress of acculturation, and other factors. Depression is a complex disorder known to impact health behaviors and limit adherence to a healthy diet, perpetuating a negative feedback loop of deteriorating health. The objective of this study was to examine the relationship between depressive symptoms and modifiable risk factors such as diet and stress in Hispanic adults (ages 18-25 years). Methods: After obtaining informed consent, a cross-sectional survey gathered demographic information, medical history, depressive symptoms using the Center for Epidemiological Studies Depression Survey (CES-D), and other modifiable lifestyle behaviors. Diet quality was assessed using three 24-hour recalls to calculate a Healthy Eating Index 2015 score (HEI15) and body composition was measured with an InBody bioimpedance machine. Descriptive statistics were used along with T-test, chi-square, Pearson correlation, and linear regression to determine the relationship between modifiable risk factors and depressive symptoms. Results: Out of 137 participants, the majority (59.1%) demonstrated a CES-D score greater than 16, indicating risk for clinical depression. The majority of participants were White (77.4%) and female (77.4%). While not significant, CES-D score was negatively correlated with HEI15 scores (r= -0.155, p=0.070). CES-D score was positively correlated with stress (r=0.422, p<0.001) and body fat percentage (r=0.276, p<0.001). Body fat percentage was negatively correlated with HEI15 Score (r=-0.223, p=0.009) and positively correlated with stress (r=0.315, p<0.001). Analysis of HEI15 component scores revealed CES-D score was negatively correlated with HEI Total Protein Intake (r=-0.200, p=0.019) and HEI Added Sugar (r=-0.172, p=0.044). Stress was the only variable that significantly predicted depressive symptoms (β=0.349, SE=0.903, p<0.001) after adjusting for sex, age, race, education level, income, body fat percentage, and being a psychology major. Conclusions: Increased stress may play a role in the unhealthy dietary behaviors associated with early adulthood. Due to their disproportionately higher risk of stress, type 2 diabetes, and metabolic syndrome, assessing how behaviors affect multimorbidity risk in emerging Hispanic adults may help to determine dietary targets for future interventions.

Presenter: Niliarys Sifre, PhD student in Dietetics and Nutrition
Title: Disordered eating attitudes are associated with stress, BMI, and diet quality in college students
Additional Authors: Rianna Deringer, Lukkamol Prapkree, and Cristina Palacios
Research Abstract: Objective: College students are at risk for disordered eating, particularly students with overweight/obesity and with higher stress, but little is known about how disordered eating may be related to diet. This study evaluated the associations between disordered eating attitudes scale (DEAS) with age, BMI, stress, and diet. Methods: This is a secondary analysis of the baseline data in participants from the Snackability

Trial. Participants completed a questionnaire on socio-demographics, DEAS, and snacking, self-reported their weight, and height (to calculate BMI), and completed two 24-h non-consecutive dietary recalls (to calculate diet quality using HEI-2015 and snack quality score using an algorithm developed by our group). Associations between variables were assessed with Spearman correlations. Results: A total of 140 participants completed all assessments. Median age was 21.0 and median BMI was 28.5 kg/m2. A total of 86.4% were females, 41.4% were whites, 51.4% were low-income, and 30.7% were Hispanic/Latino. Total DEAS and the subscale 'Relationship with food' were positively correlated with stress and BMI (p<0.05) but inversely correlated with HEI-2015 (p<0.05). The subscales 'Restrictive and compensatory behaviors' and 'Concern about food and weight gain' were also positively correlated with stress (p<0.001). Conclusion: DEAS was significantly correlated with stress, BMI, and diet quality in this sample. These results can be used to develop interventions for college students to manage stress, weight, and diet.

Presenter: Rebecca Vidal, PhD student in Dietetics and Nutrition
Title: Dysregulation of Zinc Metabolism in Alpha-1 antitrypsin deficiency
Additional Authors: Juan P. Liuzzi, Ph.D. and Changwon Yoo, Ph.D.
Research Abstract: Background: Alpha-1 Antitrypsin Deficiency (AATD) is a genetic disorder caused by mutations in the SERPINA1 gene, which provides instructions for making a protein called alpha-1 antitrypsin. In people with AATD, the mutations in the SERPINA1 gene lead to a decreased production or abnormal function of alpha-1 antitrypsin, which can result in liver disease or lung disease, or both. AATD is the most common genetic cause of liver disease in children and can also cause liver disease in adults. Previous research has suggested a relationship between AATD and metal ion dyshomeostasis, including zinc. Objective: We carried out in silico analysis of the mRNA expression of genes involved in zinc metabolism in liver samples from mice overexpressing mutant human SERPINA1 (PiZ mice). In addition, the expression of these genes in lung samples from patients with AATD and controls was analyzed. Methods: Data was extracted from the following series from Gene Expression Omnibus (GEO): GSE141593, GSE93115, GSE179416, GSE36478, and GSE 1122. The mRNA expression of the zinc transporter gene families of SLC30A and SLC39A, MTF1 gene (Metal Regulatory Transcription Factor 1), and metallothioneins (MTs) was examined. Student t-test was used to analyze the data (P<0.05). Results: Overall, the expression of zinc transporters and MTs was found to be dysregulated in liver samples and lung samples. Conclusion: AATD could lead to dysregulation of zinc metabolism. Further studies on the role of zinc in lung and liver diseases associated with AATD are warranted. Zinc nutrition intervention may potentially help to resolve metal ion dyshomeostasis.

Presenter: Catalina Canizares, PhD student in Social Welfare
Title: Predicting PTSD Symptoms in First Responders to the 9/11 Attacks: A Supervised Machine Learning Study
Additional Authors: Roberto Lucchini and Mark Macgowan
Research Abstract: Introduction: This study investigates key risk factors for PTSD in 9/11 first responders who relocated to Florida, aiming to develop an interactive risk map to assist mental health professionals in providing targeted support. Methods: The study involved secondary data analysis of first responders present at the 9/11 World Trade Center attacks, now living in Florida. Interviews from the World Trade Center Health Program provided mental health data, including past trauma and 9/11 experiences. PTSD symptoms were the focus. A classification decision tree modeled the data, trained with 75% of the sample and tested with the remaining 25%. To enhance accuracy, 5-fold cross-validation and the simplest tree determined by cost complexity hyperparameter were used. Findings: The sample consisted of 1,107 first responders, predominantly male (87%) with an average age of 39.7 years during 9/11. Key findings indicate that physical illness intensity

post-9/11 is the primary PTSD factor, compounded by emotional distress during rescue, witnessing personal effects, past trauma, and being over 45 years old. Responders aged 34 and above with high emotional distress and past trauma have an elevated PTSD risk, while younger responders with lower distress and exposure have a reduced risk. Discussion: The study highlights the importance of exposure intensity and 9/11-related injuries as major PTSD risk factors. Age and initial emotional responses also play significant roles. These findings align with previous research, emphasizing the need for focused interventions for high-risk groups. The study's limitations include potential overfitting and the uniqueness of the Florida cohort. Future research could benefit from methods like Random Forest or Boosted Trees for broader applicability and enhanced accuracy.

Presenter: Kayla Jolly, PhD student in Social Welfare
Title: The Role of Ethnic Identity in the Association between Emotional Abuse and Behavioral Health Outcomes by Race: A Longitudinal Moderated Moderation Study
Additional Authors: Nicole M. Fava, PhD, MSW
Research Abstract: Background: Emotional abuse (EA) is an under-researched form of child abuse. There is evidence connecting EA to negative outcomes, including externalizing and internalizing behaviors. Ethnic identity, how connected one feels to their culture, may be a protective factor against stressors like EA. To date, researchers have not considered the role of ethnic identity in the association between EA and behavioral health outcomes. Objective: We examined the effect of EA on behavioral health problems (i.e., total, internalizing, and externalizing) as moderated by ethnic identity and race, controlling for age, biological sex, and previous behavioral problems. We hypothesized that ethnic identity would protect against negative behavioral health outcomes, especially for racially minoritized youth with EA histories. Method: Using data from three waves of the Longitudinal Studies of Child Abuse and Neglect dataset, we employed moderated moderation analysis via SPSS PROCESS macro. On average, participants (n = 965) were 4, 12, and 18 years-old, respectively. Half of the sample was female (51%) and Black (53%), and more than half experienced EA by age 12 (61%). Main and interaction effects of EA, ethnic identity, and race were tested to assess whether ethnic identity was a protective factor for behavioral health outcomes among White, Black, and Hispanic youth. Results: In opposition to the proposed hypothesis, stronger ethnic identity was not a protective factor against behavioral health problems. The effect of EA on total and internalizing behavioral health problems was positive, with significant differences noted for White participants reporting strong ethnic identity. Similar trends approached significance for Hispanic participants. There were no statistically significant interaction findings for externalizing behavioral health outcomes. Conclusions: Ethnic identity operated as a risk factor for total and internalizing behavior problems among White youth who had experienced EA, not racially minoritized youth. It is possible that ethnic-related differences were not captured due to measurement constraints of the construct of race in the current study. Moving forward, participants should be able to self-report the ethnicity they identify with to understand if one's connection to their culture impacts the effect that EA has on behavioral health.

Presenter: Isis Panellas, PhD student in Social Welfare
Title: Shaping COVID-19 Interventions that Address Social Barriers among Older Latinos in Assisted Living Facilities
Additional Authors: Dr. Richard Beaulaurier
Research Abstract: The COVID-19 pandemic was, and remains, devastating to the life and health of older people, particularly those living in Assisted Living facilities (ALFs) and other congregate living facilities. The pandemic has had an exceptionally high impact on older Latinos. The gravity of this impact cannot be understated, as older adults have been identified as a high- risk group for severe illness and mortality from COVID-19 due to their age and underlying health conditions (McGarryNanda et al., 2020). While the medical

and public health communities developed clear insights into preventing or limiting the spread of infection, our understanding of barriers to adopting these measures has lagged, particularly in minority communities. While initial intervention strategies focused on medical interventions to mitigate the virus's effects, there has been a gradual recognition that barriers to prevention have increasingly shifted from medical to social domains. Objective This paper aims to document the existing knowledge and identify knowledge gaps concerning effectively managing these social barriers. Methods This review systematically examines peer-reviewed articles and reports focusing on the factors contributing to the disproportionate impact of COVID-19 on nursing homes. Databases such as PubMed, and Scopus were searched using keywords including 'long term care, ''Assisted Living Facilities, ' 'Latino, ' 'COVID-19,' and 'healthcare disparities ' . Studies were included if they were focused on COVID-19 in the context of long term care facilities and Latino culture. Studies were excluded if they did not provide empirical data, were not in English, and were studies outside the US. Titles and abstracts were initially screened for relevance, followed by full-text reviews to ensure compliance with inclusion criteria. Results Our analysis, depicted in Figure 1, highlights the disproportionate impact of COVID-19 on older Latinos in the United States. Despite Latinos over 65 constituting only 8.55% of the nation's senior population, they represented 13% of COVID-19 cases within this demographic. This disparity is further reflected in mortality data, with older Latinos comprising 13.7% of COVID-19 related deaths.