



Stephens College School of Health Sciences presents

Spring Health Science Research Conference

2022 Research Conference Research Abstracts

**10:30-11:20am. Center Stage: Spotlight on Student and Faculty
Research – Windsor Auditorium; Dual Mode**

Characterizing Anatomy and Predicting Function of the Male

Florida Softshell Turtle Phallic Glans Presenting Author: Sydney Harrison Co-Author: Brandon Moore; Mark Does; Ruth Elsey

The sulcus spermaticus, or semen-transporting open groove, terminates into a cup-like lumen on the ventral surface of the glans. The inflatable corpus spongiosum flanks the sulcus spermaticus and invests the lateral appendages. Our preliminary results have better defined further questions. We can infer the corpus fibrosum aids intromission and the spongiosum inflates to produce an elaborated glans shape via the lateral appendages. However, the sulcus spermaticus does not travel to the terminal glans. Therefore, its direct role in insemination is unclear. Glans inflation most likely serves as a copulatory lock prolonging intromission, but additionally, inflation of the lateral appendages may produce male-to-female stimulation invoking cryptic female choice. Progressing from these results, we will investigate male glans function in vivo and begin an extensive analysis of female cloacal morphology.

Impact of incubation regimes on genital differentiation in hatchling

American alligators Presenting Author: Amanda Kujiraoka Co-Author: Mark Does; Kevin Flaherty; Ben Parrott; Matthew Milnes; Brandon Moore

All crocodylians, including American alligators (*Alligator mississippiensis*), utilize temperature-dependent sex determination (TSD), where the nest temperature during egg incubation regulates gonadal differentiation into testis or ovary. TSD, in turn, drives sexually dimorphic hormonal milieus that generate secondary sex characteristics during development. For example, sexually dimorphic genital morphology is generated from early development bi-potential anlagen.

Alligator eggs incubated at a constant 33°C result in testis development and hormone expressions that result in subsequent penile formation, while incubation at 30°C results in ovary development and associated clitoral morphology. However, the fine-scale details of this genital morphological divergence that occur primarily around the time of hatching require further clarifications. In this study, we compared the morphology of male (33°C incubation, n=15) and female (30°C incubation, n=19) external genitalia at seven days post-hatching. Post-necropsy, phalli were dissected from cloacae and their left lateral faces were digitally photographed to perform Geometric Morphometry, Procrustes Superimposition, Principal Components Analysis (PCA), and an ANOVA. Sex was verified with histology of gonad, as well as gene expression for a subset. The ANOVA from the results of the PCA showed a significant ($p=0.007$) morphological difference between male and female genitalia. Here we present key anatomical sources of male-female genital divergence. While there was substantial overlap of overall genital morphologies, 33°C incubated animals showed narrowing and elongation of the of the glans tip in PCs 2 and 3. These are indicative of ongoing genital masculinization after hatching. Additionally, we noticed pigmentation variation on the ventral aspect of the glans and quantified a sexual dimorphism: females presented a greater amount of pigmentation than males. Moving forward, we plan to measure phalli from hatchlings incubated at intermediate temperatures (31.5°C) and under fluctuating temperature regimes to better characterize genital differentiation under more normal nest environments.

The automatic detection of malaria (*p. falciparum*) from erythrocytes: optimization of a convolutional neural network (CNN) model. Presenting Author: Julia Moffitt, PhD

Malaria continues to exact an enormous global health burden even though a clear understanding of pathogenic mechanisms, detection, prevention and treatment exists. Despite promising trends in treatment and prevention, progress towards milestones has reversed particularly in areas with few economic resources to devote to the problem. Recent advances in artificial intelligence (AI) and computer vision technology have enabled the detection of malaria through automated means. The goal of this project was to develop a CNN model that would allow for rapid, accurate detection of malaria in a computationally inexpensive manner such that deployment on a smartphone device would be possible. 13,029 uninfected and 13,032 parasitized pathologically-verified colored microscopic images were obtained from a publicly available data set. Data were divided into an 80:20 train:test split and shaped into appropriately sized vectors. Images were normalized to max pixel and 64x64 image size. Several CNN model architectures were explored some of which included data augmentation and conversion to hue, saturation and value (HSV) color space. Benchmark metrics of F1 score, accuracy, precision and recall were used to evaluate model performance on the test data. The best-performing CNN model consisted of three – 2D convolutional layers using 32 kernels, 3x3 size with a ReLU activation function. Max pooling layers, batch normalization and 30% dropout were used to stabilize the model and prevent overfitting. Data were flattened and fed into a fully connected dense layer of 512 neurons, followed by batch normalization and 50% dropout. The SoftMax activation function was used in the final output layer for classification of uninfected and parasitized cells. Data augmentation did not improve performance. This model attained 99% accuracy, 99% precision, 99% recall and a

99% F1 score indicating that an extremely high level of performance in a computationally efficient AI model for the automatic detection of malaria is feasible.

Can Parasite Diversity Predict Ecosystem Integrity? Parasites of Fishes in the Big Thicket National Preserve Presenting Author: Mike Barger, PhD

A long-term effort to determine if the Big Thicket National Preserve (BTNP) in Texas effectively protects its aquatic habitats utilizes parasite diversity as a proxy for ecosystem properties. Previous work demonstrated that parasite diversity and abundance in select catfishes (Ictaluridae) is higher inside the BTNP than outside, largely because of higher diversity of adult endohelminths. The present investigation expands this study to include results on parasite diversity in 4 species of catfishes and 6 species of suckers (Catostomidae). Since 2006, 137 catfishes (73 inside BTNP) from 20 sites (10 inside BTNP) and 133 suckers (64 inside BTNP) from 15 sites (10 inside BTNP) were collected and examined for parasites. Observed parasite diversity was higher inside the BTNP than outside for catfishes (34 vs. 20 species), primarily due to more adult nematodes, acanthocephalans, and trematodes. In addition, measures of abundance for catfish specialists and adult endohelminths, in general, were higher inside the Preserve than outside. These results suggest that the BTNP has some positive effects on the aquatic communities it was intended to protect via maintaining larger and more interactive fish and invertebrate communities. However, parasite diversity was similar for suckers inside and outside the BTNP (26 vs. 24 species). Different feeding habits of catfishes and suckers might be responsible for these differences in patterns of parasite diversity between host groups. In addition, most suckers were collected from only 1 or a few locales, statistically confounding host species and locale to some extent. The results of these studies suggest that parasite communities are potentially effective tools in aquatic ecosystem management, but also caution against utilizing these metrics absent calibration with other measures of ecosystem structure, function, and resilience.

11:30-12:20 In-Person Poster Session; Lela Raney Wood Ballroom

Current Trends in Wildlife Rescue and Rehabilitation Presenting Author: Karrie Armstrong

In this systematic review, trends in wildlife rescue and rehabilitation were investigated to discover strengths and weaknesses in the field: such as rehabilitation success, longevity, and communication. Most animals brought to rehabilitation centers are native species categorized as of least concern in conservation. Birds are the most common (63.5%), followed by mammals (31.9%), then reptiles (5.5%). The main reason for admission across all taxonomic groups is trauma. For both birds and mammals, the majority (47.8% and 45.4% respectively) brought in are either euthanized or die naturally. The second most likely outcome for these two groups is release. For reptiles, the majority of animals are released with the second most likely outcome being dying. For all groups there is a high number of cases where the cause of admission and/or outcome is not recorded. Most rehabilitators point to a lack of government funding and support

as the main issue. Due to the lack of funding, rehabilitation centers rely on volunteers. Labor shortages cause rehabilitators to have little time to properly fill out paperwork, including documentation of key attributes of the rehabilitation process. This causes gaps in case knowledge, limiting the inferences that can be drawn from the available data. Current rehabilitators recommend a national online database with nationwide standardized protocols and criteria for the methods used and how data is kept and shared.

Determining how Biochemistry courses are taught in R1 Universities, if they use real-world connections, and how that has differed before and during Covid.

Presenting Author: Noa Emerson Co-Author: Katherine Sharp, PhD

Universities in the United States that are accredited through the American Chemical Society (ACS) require Biochemistry. Commentary and conversations surrounding biochemistry suggest that lecture is heavily utilized within classrooms instead of student-centered learning approaches. However, lecture has long been shown to be a method of instruction that promotes memorization rather than complex understandings essential in problem-solving. The objective of this study is to analyze biochemistry syllabi from Research One (R1) universities to determine curricular trends. This presentation will include a discussion on common learning approaches, the frequency of real-world examples, and the shift of curricular changes prior and during the COVID-19 pandemic. By looking at 26 syllabi, we determined the frequency of topics presented to students as outlined by the American Chemical Society (ACS), in addition to topics outside the recommendations of ACS. Preliminary findings suggest that few courses provide appropriate scaffolding to support developing real-world connections and the significant use of lectures to teach biochemistry. Results demonstrate the need to promote student-centered learning at R1 universities to support critical thinking skills and foster connections between content and real-world applications.

Ultramarathon Pacing: Does Experience Flatten the Curve? Presenting Author: Cassidy J. Filipiak Co-Author: Julia Moffitt, PhD

Introduction: It has previously been established that linear regression analysis of the best performances at an ultramarathon distance running event display a more even (flatter slope) pacing profile with a slower initial start (lower y-intercept). Previous research on pacing ultramarathon distances has also found that variables such as age and sex, can influence pacing but little research has examined the effects of experience on pacing these distances. The purpose of this research was to determine if repeat performances at the Umstead 100-mile endurance run showed successive improvements in pacing ability. We hypothesized that the slope and y-intercept of the pacing profile would improve with successive performances. Methods: Sixteen years (2003-2019) of finish times, including checkpoint splits, were analyzed from n=209 runners with a focus on repeated race performances, with statistical analysis of the first 5 instances. Running pace was expressed as the percentage of normalized mean running speed over the 100-mile distance and fit to a linear regression to examine the data. The R-squared, slope and y-intercept were statistically compared across each instance of race experience through a one-way ANOVA for repeated measures. Significance was set as $p < 0.05$. Results: There were no

significant differences in the R-squared value, indicating a similar fit to the data across all performances. The y-intercept was significantly different ($p=0.0086$) showing a progressive decrease for each successive performance. The slope, while not statistically significant, trended towards significance at $p=0.098$. Conclusions: These preliminary data support our hypothesis that repeat performances lead to improvements in pacing thus adding evidence to the theory that experience is a significant factor in pacing performance at ultramarathon distances. Future research will focus on adding more repeat performance observations from other races to conclusively confirm the hypothesis.

How an Ethics Course Enhances Medical Students' Perspective of Patient Quality Care Presenting Author: Briana Parrott

Medical professionals often deal with ethical dilemmas and need to develop strategies to overcome those problems. It is important for a medical professional to know how to treat a patient not just clinically, but also with dignity and respect. Knowledge of problem-solving in the area of ethics can improve a patient's quality of care. The purpose of this qualitative single case study was to show if a medical ethics course has an impact on the decision making of medical professionals, and whether it helps them feel more capable of making these decisions. A nine-question survey was distributed among a population of size of 56 current physician assistant students attending different institutions in North Carolina. The results of these surveys indicated that most of the participants believed that a medical ethics course was essential to their role as a health care provider. Helping students focus on empowered caring in medical practices may be a significant way in which all health professionals can reform the flawed healthcare delivery systems.

Concussion Protocol Effectiveness Presenting Author: Allyssa Wilmoth

The purpose of this review was to examine the effectiveness of concussion protocols intending to protect children as they return to play and return to learn. Concussion protocols are in place to properly diagnose a child and provide the necessary treatment plan specific to the child. It is important to understand that the treatment process for each child will be different and the protocols are based off symptoms instead of a specific time frame. The current concussion protocols were not supported with sufficient data collected from prior studies, and the stepwise policy for return to play and return to learn strategies are not working considering the increasing rate of post-concussion complications. However, there are only few studies considering a shorter rest time than current protocols, and so it is not possible to determine if recommended rest time should be changed. The studies that were evaluated for student-athletes of all ages provided data that demonstrated physical activity within the first seven days of diagnosis helped prevent symptom severity and reoccurrence. Specifically, five studies were evaluated, the most comprehensive being the retrospective cohort study involving 95 student-athletes, mostly males, around 15 years old. The results showed that high-intensity activity showed worse performance, while moderate activity at level 2 showed the highest cognitive function and lowest symptom severity scores. Unfortunately, many of these studies set poor parameters for their control groups, which makes the recommendation regarding more physical activity within the first seven days difficult to evaluate fully.

Rural Suicide Rate Disparities Presenting Author: Lauren Ruff

Suicide is one of the leading causes of death in the United States. In rural areas, the rates of suicide are even higher. A variety of factors contribute to the difference seen between rural rates of suicide and urban rates of suicide. These factors include the lack of mental health resources and the rural lifestyle. This poster combines research to determine the specific factors that cause the suicide rate in rural communities to be higher than in urban communities. As well as examining the variety of ways the disparity seen in rural communities could be mended. It aims to help viewers understand the difference in suicide rates between rural and urban communities.

Do Urban and Rural Areas Have an Effect on Anti-Predator Behaviors in Fox Squirrels (*Sciurus Niger*)? Presenting Author: Abigail F. Hatfield Co-Author: Isabelle R. Marquier; Julianna E. Farr; Joeley K. Clark; Stephanie M. Crocker

Humans' rapid urbanization has rendered many wildlife species from being able to utilize their environment, while some, such as squirrels, have been able to alter their population dynamics, habitat selection, and anti-predator behaviors in response to these new surroundings (VanDruff et al. 1996; Adams et al. 2005; Ditchkoff et al. 2006). This led us to wonder what affects urbanization has specifically had on fox squirrels', *Sciurus Niger*, and their anti-predator behaviors. To address this question, we decided to test the difference in distance one can get to a fox squirrel before it decidedly runs away in an urban environment compared to a rural environment; providing a good idea as to the behavioral changes fox squirrels have had to adapt in order to co-exist in urbanized areas. We hypothesized that if a human approaches a fox squirrel in an urbanized area, then the distance between where the approacher had stopped and the location in which the squirrel decided to take off will be shorter than a squirrel being approached in a rural area. Our procedure consisted of appointing an individual to approach a fox squirrel in our selected urban environment and our selected rural environment. Once the squirrel respectfully decided to scurry away, the appointed individual stopped wherever they were so that the distance between the squirrel's previous location and the individual's current standing point could be measured. Once repeated a total of 10 times, in each location, the average distance in the urban location and the average distance in the rural location was compared. This process was then repeated for a total of three rounds, each consisting of a different selected individual. When completed, the concluding results provided support our hypothesis and suggest that the predator stimuli created by humans in urban environments are altering animals' anti-predator behaviors. Keywords: *Sciurus Niger*, anti-predator behaviors, urbanization, predator stimuli.

Disparities in breast cancer care of African American women Presenting Author: Lyndsey Hood

This review will examine the health disparities associated with breast cancer care of African American women. African American women have a 7 percent lower risk of being diagnosed with cancer. However, white women are 13 percent less likely to die from the disease (American Cancer Society [ACS], 2019). The disparities affecting breast cancer morbidity and mortality

rates among African American women include socioeconomic status, access to care, lack of healthcare coverage for preventative care or health insurance all together. The disparities in healthcare often lead to delayed treatment, lack of follow-up appointments, and late-stage diagnosis (ACS, 2017).

Effects of unequal educational attainment on African American health literacy Presenting Author: Erin R. Hickey

This review of literature will investigate how unequal opportunities disproportionately affect how African Americans can obtain a quality education, aiming to find how lack of and or poor educational attainment affects the health of this specific population. Attaining a high-quality education is only one of many factors that can impact a person's health, being a place where individuals can develop and strengthen health literacy skills, which are essential to understanding and practicing health-related knowledge and capabilities. Unequal opportunities to access a quality education disproportionately affect African American populations in the U.S., made possible through historical and systemic barriers, which have kept this population from acquiring high health literacy skills. Additionally, this literature review seeks to find potential solutions that can help to dispel this current issue, including healthcare, institutional, and public perspectives.

From Classroom to Clinic Presenting Author: Megan Coffman Co-Author: Olivia Petruska

Nursing students are educated on understanding the diseases their patients have, and how that correlates to the signs and symptoms that are observed. In order for the nursing student to understand these illnesses and why they cause the observed signs and symptoms, the student must take Pathophysiology. Pathophysiology is the study of the physiology of the human body and illnesses that can occur within. The course of Pathophysiology is required through the Bachelors of Science in Nursing at Stephens College. It is to be taken during the second clinical semester and runs concurrently with Care of Adults 1. This is an intentional pairing as the didactic information being taught correlates directly with clinical experiences that are being gained by the nursing student. This presentation reviews the transition from didactic knowledge into critical thinking on the clinical floor.

HIV and AIDS in African Americans in southern United States

Presenting Author: Aditi Chohan

Human Immunodeficiency Virus or HIV is a disorder that affects almost all the ethnicities across the globe. However, within the United States, the African American community, especially those residing in southern states like Texas, Florida, Georgia, Louisiana, etc. are regions where rates of HIV and AIDS are higher than other parts of the country. African American men, particularly homosexual men are the target population of the south. Reasons for higher rates of HIV and AIDS is due to the increasing health disparities such as low socioeconomic status, lack of access to healthcare, lower rates of education, etc. When compared to their white and Hispanic counterparts, there are higher rates of testing and diagnosis among the African American

community. There are other factors too that indirectly affect the rate of HIV and AIDS rates in these communities and majority of the time, most cases go undiagnosed which increase the number of disparities. Increasing funding and addressing the social determinants in these communities and potentially might help close the incidence gap and reduce the death rate in the “Deep South.”

Oral Health Disparities Presenting Author: Anya Castelli

The purpose of this poster is to highlight the health disparities in oral health. Factors that lead to oral health disparities are socioeconomic status, community, insurance, and other reasons that will be addressed. The need for this research is to gain knowledge on disparities of the mouth and create an awareness. The groups that are affected by this problem are: people with low socioeconomic status, minority groups, elders, low education, people in rural areas, and people with a lack of health insurance all are at a risk of poor oral health. These groups listed are at an increased risk during the COVID-19 pandemic with special instructions to only give dental care for medical emergencies from the American Dental Association (ADA) to dentists during the pandemic. Overall, there is ongoing research and studies in place to eliminate oral health disparities. The National Institute of Dental and Craniofacial Research (NIDCR) has been researching oral health disparities to gain knowledge and create plans to eliminate oral health disparities through a three-phase study.

Effectiveness of Mask Wearing & Face Touching in a Small Midwestern Private College Presenting Author: Madison Heflin, Sophia Shepherd, Sophia Rush, Oshin Jones, Alivia Forck

The COVID-19 pandemic brought forth many challenges for everyone all over the world. COVID-19 took away families and it was society's job to do what they can to try to prevent this virus from taking any more - by wearing masks. Mask-wearing became a normalized and required habit over the last three years. How effective are the mask-wearing practices of students attending Stephens college? Effective mask-wearing is defined by us as a CDC-approved mask, covering both the mouth and nose. To test if academic levels play a role in mask-wearing researchers sat in the back of an organic chemistry course and a psychology course and observed upper and lower division mask-wearing behaviors. Observed was what type of mask students were wearing, cloth versus paper, how often students touched their mucosal areas of the face, and if the mask was correctly worn. The results showed upper-division students are more aware and effective in their mask-wearing. These results suggest that we need to be more conscious of how often one touches their face and if their mask is being worn correctly - therefore, worn effectively.

Prostate cancer in African American verses White American men Presenting Author: Olivia Williams

Elderly men around the age of 65 are at risk for prostate cancer (PCa) however, African American men are often diagnosed with PCa than a White American man. African American men are likely to have a more aggressive form than a White American man. The purpose of this

poster is to dissect the health disparities that happen between White American and African American men who have prostate cancer. It will also talk about medical mistrust that African American men face versus a White American man, it will also bring attention to the lack of Black Urologist and the socioeconomical levels that contribute to this.

What Caused the Drop in Women's Interest in Computer Science, and What can be Done to Fix it? Presenting Author: Allison Ainsleigh, Anya Castelli, Alexis Heaberlin

The purpose of this poster is to identify, explain, and give knowledge to why there has been a drop in women's interest in pursuing a career in computer science. Studies have been done by Kevin Harmon and Eric Walden to try to identify the cause of gender gap in the computer science field on three theories of career choice: expectancy-value theory, role congruity theory, and field-specific ability theory. The need for further research on why the number of women in computer science has dropped is needed to develop a plan of action to create an increased number of women in computer science careers. Research shows in the 1960s women made up for most of the workforce in this area, but since then has been unable to hold a steady percentage of women in the workplace. Computer science courses and negative implications are factors that negatively impact the interest and retention of women in the computer science field. Overall, there needs to be programs, organizations, early education and access to computer science classes in place that can lead to an increase in women's interest in computer science.

The Diving Reflex: Beneficial Drowning? Presenting Author: A&P II Class

The A&P class dives into the physiological response to cold water facial immersion. Scan the QR code to view our semi-serious TikTok explaining how this phenomenon influences stress physiology and cardiovascular functioning. You may see a celebrity guest star...

Suicide Rates Among College Students Presenting Author: Mariah Thibodeaux

As of 2019, suicide in America is the tenth leading cause of death of all ages and was the second leading cause of death among young individuals (ages 15-24). Since then, suicide rates have begun to decrease slowly and have instead become the fourth leading cause for this age group. However, suicide and other mental health issues have affected and continue to affect college students around the U.S. drastically. Influences such as individual, relationship, and societal factors have contributed to thoughts of suicide and suicide attempts as well as clinical and psychological factors such as depressed moods, sleeping disturbances, and experiencing traumatic or stressful life events. Minority groups have higher rates of suicide and mental health problems due to discrimination, feelings of loneliness, and lack of support from their counterparts. According to Healthy People 2030, the overall goal for the U.S. is to have decreased the annual rate from 14.2 to 12.8 suicides per 100,000 people. Social connectedness and family and/or peer support can majorly help prevent suicidal thoughts and the right preventative factors taken can help college students work their way out of their mental health issues, and towards a better and more connected society in the coming years.

Health Disparities in Minority Populations: Suicide Rates Among Native Youth Presenting Author: Kamaryn G. M. Sullivan

Native communities experience higher rates of suicide compared to other racial ethnic groups in the United States. Suicide is the eighth leading cause of death among all American Indian/Alaskan Natives (AI/AN), but Native youth ages ten to twenty-four have suicide listed as their second leading cause of death. The Native youth suicide rate is 2.5 times higher than the overall national average. This review will examine some of the possible reasons behind this rise in suicide rates among this young population, such as mental health struggles, drug and substance abuse, and suicide clusters. It will also examine potential interventions and prevention plans such as letting the youth guide their treatment to try and eliminate the high rates at which Native young people are dying.

Cervical Cancer in Hispanic/Latino Women Presenting Author: Madelyne Denslow

This review will examine cervical cancer rates among Hispanic/Latino women. Latina/Hispanic women face higher mortality rates and more aggressive diagnoses. The gap between Latino women's survival rates for cervical cancer compared to women of other backgrounds may be attributed to: communication barriers and lack of trust between the patient and health provider; fear of embarrassment; lack of knowledge and education; lack of awareness; transportation issues. Finally, this review will offer programs and interventions that offer feasible ways to reduce this health disparity.

Food insecurity and its effects on college students: Problems in rural communities Presenting Author: Kelsey Ross

This poster explores the mental health among student and professional female athletes. Some factors in the development of poor mental health are expectations, standards, and access to counseling resources for female athletes on a professional and college level. In the most serious of cases, disorders such as depression, anxiety, and anorexia can potentially result in athletes taking their own lives. Our poster dives deep into the causes, disorders, and possible solutions that may assist female athletes experiencing mental health issues. Additionally, abuse and harassment from coaches and athletic trainers can factor into athletes' mental health. Harassment within athletic programs can be verbal or physical and can take psychological or emotional tolls on the athletes directly affected. This can then impact the performance of female athletes in both professional and collegiate sports in a multitude of ways. As a result of busy schedules, stigmas surrounding female athletics, low mental health literacy, and dependence on economic benefits, professional female athletes are struggling with mental health problems. Improvements such as higher mental health literacy, accessibility to counseling resources, and more encouraging and professional coaching systems will help immensely. These are all ways that cultural pressures and mental health disorders can be addressed to promote improved mental health among female athletes.

African American Women & Increased Postpartum Presenting Author: Kiana Ellison

Many women suffer from postpartum depression, but research indicates African American women suffer from higher rates of postpartum depression than their white counterparts. In this review, different types of health disparities that can affect postpartum depression among African American women will be explored. This poster will also examine: LGBTQI+ community's experience with postpartum depression, body dysmorphia, cultural differences, and higher rates of C-sections along with how they affect African American women. Finally, different types of programs or preventative measures that can be implemented to lessen the gap between African American women, and their counterparts will be explored.

Mental Health Among College Students Presenting Author: Morgan Lowery

This review will examine health disparities surrounding mental health among college students. After reflecting on the college population as a whole, the review will reflect on the minority college students. An overwhelmingly large number of non white students experience negative mental health. Mental illnesses and mental health issues tend to manifest among people in their 20s, which is the average college student age. The pressure to succeed in school and the lack of support that college students often receive, especially among minority students, does not make the mental health disparities among this population any easier. Mental health disparities affect college student performance in school work and practice so it is important to acknowledge and help in any way possible. At the end of this review, there will be ways in which students of color and colleges/universities explained to help reduce the mental health disparities that college students experience.

African American Women and Maternal Health Presenting Author: Lauren Vineyard

This review of literature investigates health disparities surrounding African American women and maternal health. Health disparities are described as an avoidable differences in medical care, health services, health outcomes, implicit biases, and other outliers in health involving minority populations. African American women are more likely to perish or have complications with pregnancy, birth, or life a year after birth; African American mothers are also at greater risks for being uninsured or have lack of access to health care. This review will examine the differences in specific health disparities such as but not limited to maternal health and mortality, infant mortality, low infant birth weight, miscarriage, and stillbirth. This review will also examine the factors that cause these previously mentioned disparities. Some examples of factors that may influence these health disparities are racism, sexism, low socioeconomic status and the additional stress added to life by all of these examples.

Asthma Rates in the African American Community Presenting Author: Megan Reese

This review of literature will investigate the impact of asthma among the African American community. There are multiple elements that lend themselves to the higher rates of asthma

within this community such as economic stability and the environment an individual lives in. Children in the African American community experience higher rates of asthma compared to other specific populations within the community. These two social determinants provide a larger insight into why these rates are occurring. A low economic stability supply's an individual with poorer health outcomes due to the lack of life necessities. An individual living in an underdeveloped environment or neighborhood may experience physical harm to their respiratory system, increasing their risk of asthma. Research indicates that reducing the number of people living near the poverty line and in insufficient living conditions would likely help decrease the rates of asthma in this community.

School Counseling Comparison: Missouri vs. Indonesia Presenting Author: Catherine McNeely Co-Author: Sarah Irvin, PhD, LPC, NCC

Development and implementation of school counseling programs continue to grow in the United States of America (USA), with the State of Missouri at the forefront of creating school counseling guidelines (Carey & Dimmitt, 2012; Lapan, et al., 2012; Werner, 2014). Due to the significant growth of school counseling programs and the creation of the American School Counseling Association (ASCA), many nations outside of the USA decided to create school counseling programs based on the ASCA model of school counseling (Karaman et al., 2019; Smith-Augustine & Wagner, 2012). Indonesia is one nation that created a school counseling model based on the ASCA model (Kumara et al., 2016). Even though Indonesia has a lengthy guidance counseling history and a lengthy school counseling model, there continues to be confusion about the education, training, and general guidelines for guidance counselors working in Indonesian schools (Gunawan & Wahab, 2015; Susilowati, 2018). Based on Missouri's substantial and rigorous school counselor guidelines, this research project aims to compare and contrast Missouri and Indonesian school counseling guidelines and propose necessary changes to the guidance counselor guidelines in Indonesia. Keywords: Guidance Counselor, School Counselor, Indonesia, Missouri, Guidelines, State Laws, Education, Southeast Asia, ASCA.

The Current State of Concussion Prevention in Football and the Future of Athlete Safety Presenting Author: Bridget Corcoran, Karishma Sherchan, Brittany McIntyre, Stephen Newberry, Paige Renfrow

A concussion is a type of traumatic brain injury that results from the skull and the brain colliding. It is diagnosed clinically by symptoms such as loss of consciousness, lack of balance, delayed responses, confusion, headaches, nausea, sensitivity to light/noise, and memory problems. Concussions are not fatal, but the effects can be life altering and should be promptly recognized for adequate treatment. There are a variety of long term sequelae linked to concussions, such as an increased vulnerability to psychiatric disorders and incidence of suicide. One of the most concerning sequela is chronic traumatic encephalopathy (CTE). CTE is a neurodegenerative disorder that shows the abnormal accumulation of tau proteins in the brain resulting in symptoms such as difficulty with impulse control, aggression, mood swings, depression, paranoia, and eventually short term memory loss, confusion, and dementia. American football has historically been a significant source of annual concussion rates. Due to the detrimental health effects, the NFL has been at the forefront of many changes to game rules

in order to protect its players. These changes also include fines, ejections, and suspensions for players who use excessive force. There are physical safety measures in place to protect players such as helmets, padding, and mouthguards. The American Society of Testing Materials is responsible for setting helmet and protective equipment requirements based on current research. Currently, no prototype of new helmet or mouth guard design has proven efficacious in preventing concussions. Studies have shown that future concussion prevention is better directed at improving neck strength, standardizing guidelines for return-to-play, and educating coaches on recognizing the signs of a concussion in their players.

The Effects of Cannabis on Epilepsy Presenting Author: Riley Busch, Madelyn Lorei, Tuan Phung, Kelly Schultz, Chris Klipfel

The use of cannabis for medicinal purposes is becoming a popular treatment option for multiple disorders. Research has shown that in one particular disorder, Epilepsy, cannabis can provide different uses due to its anti-convulsive properties. The two major components responsible for these properties are Tetrahydrocannabinol (THC) and Cannabidiol (CBD). Although research on cannabis use and epilepsy is limited due to legal limitations, data has shown there is evidence that supports its use in therapy.

Prevalence of Growing Antibiotic Resistance and Ways to Address

It Presenting Author: Kerissa Harris Co-Author: Allison Johnson; Brett Metzger, Mikaela Shapiro, Clayton Vogt

An increasingly problematic issue in public health is antibiotic resistance. Since the beginning of their use in the 1940's, antibiotics have revolutionized medicine and saved countless lives. However, limited recent pharmaceutical development combined with patient and provider missteps in antibiotic use have made it difficult to stay ahead of the curve against rapidly evolving bacteria. This multifaceted issue can only be effectively addressed if both the provider and patient are held responsible for their contribution to the problem and commit to changing their behavior. Antibiotics are increasingly prescribed for various medical complaints and their efficacy is dependent on a few critical factors, such as the type of pathogen and its susceptibility. From a provider standpoint, relying on evidence-based medicine to prevent over-prescription and educating the patient is imperative in slowing the rate of resistance. Additionally, the patient is an important component in solving this dilemma as their often demanding expectations and non-compliance have contributed to widespread health issues including reinfections and superinfections. Consequently, this costs the U.S. Healthcare system over 20 billion dollars annually and puts Americans at risk of resistant strains of pathogens. With the implementation of several simple strategies including reduction in prescription and patient education, improved health outcomes that can greatly benefit American society are possible. Through our research, we aim to address the issues leading to this public health crisis and provide information for antibiotic stewardship among the current and future generations of health care providers.

Nature's Impact on Mental and Physical Health Presenting Author: Caroline Williams, Kelli Rosen, Sarah Burns, Wayne Morris, Kami Tabor

As the progressing world begins to move us more indoors, overall health could begin to decline. Healthcare is moving toward a more holistic approach to include mental health, as well as physical, with more natural treatment options preceding pharmacological treatment. By looking at postoperative patients and incarcerated persons, we can begin to see the great impact that exposure to nature, or lack thereof, has on our overall health. This research will explore how even a small exposure to nature can lead to improved mental and physical health in a multitude of settings. Additionally, it has been shown that removing access to nature can have negative effects on mental and physical health. The knowledge gained through this research can be used to arm clinicians in their intention of improving patients' lives without the direct leap to pharmaceuticals.

Mental Health Disparity within the Chronic Pain Population

Presenting Author: Courtney Felten, Kate Doerhoff, Marie Kurzner, Charlotte Burns, Hayden Gunther

Since the 1990's, opioids have routinely been used for acute and chronic pain management. Unforeseen consequences have resulted in an opioid addiction and mental health crisis in the United States. Of American adults, 20% seek treatment for chronic pain and of those 60% suffer from depression. Currently, treatment is aimed at the two separately, either the pain or the mental health. Due to a lack of funding in public health, many of those addicted or mentally ill are not able to get the resources they need to overcome their situation. In efforts to turn around the crisis, forms such as PHQ-9 and GAD-7 can be attached to intake paperwork to address mental health concerns at the time of wellness visits for pain. Referral for psychiatric consultation may be ordered during the same visit to fast-track treatment plans. Chronic pain physicians could also complete psychiatry training to improve their ability to approach patients with addiction and mental health disorders. Ultimately, mental health and addiction can be treated simultaneously to benefit those affected by the crisis.

Migrant Status and Its Effect on Health Outcomes Presenting Author: Husref Rizvanovic; Lauren Crawford; Catie Kifer; Tyler Harrelson; Jayeeta Devi

As our world population fluctuates, many people find themselves removed from their country of origin. In the United States, this transition can cause several concerns for quality and continuity of health care. The three main concerns consist of the quality of service, language barriers to care, and provider bias. A literature review was conducted to investigate the impact on health outcomes for migrant populations in the United States. This review aims to bring attention to these issues and address how they can impact future patients. Many socioeconomically disadvantaged immigrants are less likely to seek out preventive care and are less likely to have a primary care source. This leads to minimal screening and subsequent treatment of chronic disease. A major concern with immigrant populations is the language barrier between provider and patient. The inability to communicate thoroughly leads to low satisfaction and suboptimal care. Although the use of interpreters may seem to be an easy solution, there are concerns with the training and medical proficiency of the translators. The immigrant population also tends to reside in underserved urban areas where they face cultural and racial discrimination. This can lead to inadequate treatments and suffering. Attention should be brought to these three major concerns to help health care providers to better serve immigrant populations.

To Touch or Not to Touch: Implications for Guidance on Touch in Counselor Education Programs Presenting Author: Hayley M. Smith Co-Author: Cassandra R. Malcolm, Sarah Irvin, PhD, LPC, NCC

The use of non-erotic touch in the mental health field often yields mixed reactions from counselors (Harrison et al., 2012). Despite the well-known benefits of touch during human development and in times of distress, many counselors shy away from using non-erotic touch with clients due to fear of litigations, ethical boundary issues, and general detriment to the therapeutic working alliance (Phelan, 2009). This study aims to review current and past literature analyzing population, ethical, historical, and cultural factors of touch and how touch impacts therapeutic outcomes. Furthermore, this study plans to provide an overview of the various ideas and rationales for using or not using touch through influential psychological theorists. The review concludes with research findings about the use of touch in counseling and provides guidelines for using touch in current counselor education programs. Keywords: Touch, Non-Erotic, Psychotherapy, Counseling, Ethics, Culture, Therapeutic Alliance, Mental Health.

12:30 – 1:20. Concurrent Session I

Student Cognitive Engagement and Learning Presenting Author: Jenna Young

An increasing number of American citizens, primarily children, suffer from food insecurities daily. There are proven mental and physical health issues that arise when children do not have access to healthy and regular food during their development. Distinct behavioral health issues can also arise when children face hunger. Older children and teenagers are likely to suffer from high rates of depression, and younger children are more likely to act out in anger. Rates of anxiety in all ages of children are also at an increase and can affect their social interactions, their school work, and their relationships with friends and family. Reviewing several different public studies that focus on the wellness of rural youth indicated that having little access to consistent and healthy food can decrease their overall development into adulthood. Children in these families are at a higher risk for developing life-long health issues such as high blood pressure, diabetes, and obesity, as well as becoming malnourished. These studies revealed that the families who suffer at a disproportionate rate are Black, Latino, and Native people, as well as those of low-income status. Communities that are not primarily white are typically faced with fewer options to obtain healthy and affordable food. Most of these communities have fast-food restaurants and convenience stores that do not have access to produce products. In conclusion, supplying communities with easier access to fresh and healthy food can decline the rate that children begin to develop illnesses and thus can lead to healthier lives.

The Dark Side of Personality and Its Role in Long-Term Romantic Relationships Presenting Author: Ashley D. Lopez

This study focuses on the relationship between the quality of romantic relationships and the dark side of personality, specifically narcissism, machiavellianism, and psychopathy. While previous

studies have correlated these personality traits with a preference for and quality of short-term relationships, little research has addressed possible correlations with perceived quality of long-term relationships. Thus, this study is meant to fill that gap by answering this research question: Does psychopathy, machiavellianism, and narcissistic characteristics have an impact on the quality of long-term romantic relationships? To research the above question, participants first answered several demographic questions and then completed two online surveys: the Dark Triad personality questionnaire and the Perceived Relationship Quality Components (PRQC) scale. A multiple correlation analysis showed a significant positive relationship between psychopathy and the perceived levels of passion in a long-term relationship. As levels of psychopathy increased, the perceived levels of passion increased. Results also showed a marginally significant negative relationship between Machiavellianism and perceived levels of commitment in a long-term relationship and a marginally significant negative relationship between Psychopathy and perceived levels of trust. Thus, higher levels of Machiavellianism were associated with lower perceived levels of commitment, while higher levels of Psychopathy were associated with lower perceived levels of trust in a long-term relationship. The findings of the study further the understanding of the role of personality factors in people's satisfaction with their romantic partner and provide insight in relationship strategies that couples can engage in to increase the quality of, thus their satisfaction with their romantic relationship.

An Adult Life with a Childhood Disorder: The Persisting Effects of Selective Mutism Presenting Author: Cameron Northlake

Selective mutism is a childhood anxiety disorder characterized by an inability to speak in certain situations (e.g. school) while being verbal in other situations (e.g. home). Due to SM being typically diagnosed during childhood, there is not much research done in the realm of adults who had or continue to have this disability. Especially without proper treatment, selective mutism may still affect the lives of those diagnosed into adulthood. This study aimed to collect varying personal experiences with childhood SM in adults and how they feel it has continued to affect them and their worldview. Participation was voluntary, and data was collected through a series of open-response questions submitted through Google Forms. Participants were asked about their diagnosis background, experiences growing up with SM, and their life in the present related to SM. Preliminary results have shown that adults who previously experienced selective mutism continue to have difficulties with social anxiety, verbalization, and other mental health conditions. These results suggest that even if one is able to reliably communicate verbally, there are still long-term psychological effects that participants considered linked to their childhood mutism.

Exploring the Adult ADHD Experience for Women Presenting Author: Mary A. Leibovich

Women diagnosed with Attention Deficit Disorder (ADHD) in adulthood have a unique experience, but there is a lack of research on the topic. This study aims to bring awareness to the individual and collective experiences of these women, and gain insights for understanding and bettering those experiences and the experiences of women diagnosed with ADHD in the future. For this study women diagnosed with ADHD and over the age of eighteen were interviewed and given a series of assessments to gain knowledge of these women's experiences in areas of life

including self-esteem, motherhood, private and public life, and spirituality. Interview audio was recorded for further assessment. Women were asked to participate through word-of-mouth requests from the researcher and announcements on social media. Preliminary analysis suggests a pattern of shame, low confidence, or negative self-view before diagnosis, as well as an increased understanding of self after diagnosis. Before diagnosis, negative self-talk was also a minor theme, and a small number of participants attributed diagnosis to a decrease in suicidal thoughts. Additional findings of post-diagnosis include a better understanding of how one's brain works, increased self-compassion, and self-characterization of resilience. These results suggest the importance and impact of a diagnosis of ADHD for adult women and warrant further research and intention to increase awareness and diagnosis in this and other underdiagnosed populations.

Moral Leadership in The "Ten Ideals" Recipients Presenting Author: Avery Byrd

Stephens College holds a long-standing tradition of nominating a selection of students who best embody their "Ten Ideals" to take part in a secret society known as "The Ten." These ten students are seen as exemplars in their associated ideal of any of the following: respect, courage, independence, support, sensitivity, responsibility, creativity, belief, intelligence, and leadership. The secret society of The Ten nominate a handful of students and faculty that are representing each ideal throughout the semester by watching from the sidelines. In honor of the 100th year of this tradition, everyone who has been a member of The Ten for the past 15 years has been invited to participate in a study to determine moral development in community exemplars and analyze personal and character development for those who were identified as "top" student leaders in their day. Some Do Care interviews conducted by Colby & Damon informed the research and findings on moral development of today and many of the questions are based upon the findings of this study. The research analyzes if a statistical relationship exists between any of the 10 Ideals and what had been identified as traits of moral exemplars, as well as a qualitative approach that seeks to find information from the participants about their own perception of these ideals and their lives post-graduation. Responses are still being collected, but initial findings suggest that some Ten Ideal traits potentially indicate higher morality than others, particularly the ideal of sensitivity. Qualitative analysis is ongoing.

Ovarian Cancer: Disparities between African-American Women and Non-Hispanic White Women Presenting Author: Cassidy Filipiak

Many different health disparities are visible throughout both the world and The United States. A health disparity is defined as a health outcome being present to a greater or lesser extent throughout different populations. This poster's purpose is to examine the health disparities seen between African American Women and non-Hispanic White Women with Ovarian Cancer. It will highlight the differences in rates of occurrence versus rates of fatality in women with ovarian cancer. It will also describe the various treatment plans used on Women of Color versus non-Hispanic White Women. It will continue to mention the various possible reasons behind these various differences seen between populations with Ovarian Cancer.

Disparities within the American Indian/Alaskan Native population

Presenting Author: Allyssa Wilmoth

This review will examine the effects of the disparities of American Indian/Alaskan Native (AI/AN) people in the United States healthcare system. AI/AN people in the United States have higher rates of cancer than white Americans in most regions across the United States. In the types of cancer that white Americans do lead in, all of them lead to higher death rates due to the lack of screening and treatment options for AI/AN people. While there are many organizations and services in place to improve the quality of care for AI/AN people, the focus still needs to be on reducing the amount of preventable or treatable diseases that lead to death. Environmental, social, and economic factors all play their own part in the outcome of many AI/AN people. This requires an increase in education, screenings, and treatments for AI/AN people.

Effects of online learning during Covid-19 Presenting Author: Lupita Arias, Erin Hickey, Megan Reese

This poster seeks to examine how grade level and students of different genders' academic performance and mental health were affected by online learning during the Covid-19 pandemic. Investigation of students in kindergarten through 8th grade, high school, and college was the priority. The pandemic has caused a major disruption in the ways students traditionally learn in kindergarten through eighth-grade classrooms, forcing them to participate in online instruction as an alternative. Reduced time spent in the classroom and participating in learning can have lifelong and serious effects on development, which results in younger students lacking structures that support positive educational outcomes. High school students demonstrated an increase of stress when being moved 100% online learning. The use of online sources for educational purposes took away opportunities for engagement in classrooms and extracurricular activities which caused a decline in students' mental health. This decline in mental health also caused a sudden drop in motivation for studies decreasing the students' academic performance. Female students had a higher level of online learning barriers than their male counterparts. College students faced many struggles as they are in the process of becoming adults and following their career paths. Newly incoming college students struggled the most as they were not able to receive the full social aspect of college life. Others stayed at home and took on other responsibilities such as helping younger siblings with their online schoolwork and maintaining household responsibilities. These worries as well as living through a pandemic can lead to a decrease in college enrollment plans.

Health Disparities for American Veterans Presenting Author: Noa Emerson

This review will examine health disparities for American Veterans. It will investigate the disparities between Veterans compared to civilians. It will also look at the disparities of different populations among American Veterans. There are hospitals and medical professionals allocated specifically for Veterans. However, these hospitals do not always provide the best care which results in health disparities for the population. Even among Veterans, populations can face discrimination. Some of these populations include gender, race, and sexual orientation.

3:30-4:20 Concurrent Session II

The effects of abuse and athletic biases on the mental health of both professional and non-professional athletes

Presenting Author: Kelsey Ross
Co-Author: Sivan Guzman; Olivia Williams

This poster explores the mental health among student and professional female athletes. Some factors in the development of poor mental health are expectations, standards, and access to counseling resources for female athletes on a professional and college level. In the most serious of cases, disorders such as depression, anxiety, and anorexia can potentially result in athletes taking their own lives. Our poster dives deep into the causes, disorders, and possible solutions that may assist female athletes experiencing mental health issues. Additionally, abuse and harassment from coaches and athletic trainers can factor into athletes' mental health. Harassment within athletic programs can be verbal or physical and can take psychological or emotional tolls on the athletes directly affected. This can then impact the performance of female athletes in both professional and collegiate sports in a multitude of ways. As a result of busy schedules, stigmas surrounding female athletics, low mental health literacy, and dependence on economic benefits, professional female athletes are struggling with mental health problems. Improvements such as higher mental health literacy, accessibility to counseling resources, and more encouraging and professional coaching systems will help immensely. These are all ways that cultural pressures and mental health disorders can be addressed to promote improved mental health among female athletes.

Health Disparities Contribution to Depression in African Americans

Presenting Author: Madison Heflin

Depression is a mental illness that affects the lives of almost 300 million worldwide. Research has determined that depression is the primary underlying cause of disability across the globe giving it the title as the overall global burden of disease's top contributor. Depression is categorized as mild, moderate, and severe. Oftentimes one might express that their depression is so bad that they can no longer take the pain anymore often leading to thoughts of suicide. African Americans are more likely to suffer from serious consequences due to mental health, but less likely to reach out and receive the help they need. There are a variety of reasons for the hesitation for mental health care among the African American community: socioeconomic status, lack of education, lack of access to healthcare, lack of diversity among healthcare, and negative past experiences that have led to mistrust within the medical community.

The Undermining of Female Patients: Does it increase with age?

Presenting Author: Cassidy Filipiak Co-Author: Madison Robertson; Olivia Wheeler

This poster will examine the undermining of female patients in the healthcare industry. It will also show the differences in interactions between female patients and male and female physicians. This poster will also highlight how these interactions may change as a female patient continues to age. It will show how the failure to acknowledge ailments female patients are experiencing can negatively impact both the relationship between the patient and physician and the patient's self-image. It will also explore measures of age discrimination, even when shown implicitly. The poster will define the differences between ageism and age discrimination female patients experience within the healthcare industry.

The Lifelong Consequences Gender Roles Have On Children

Presenting Author: Karrie Armstrong Co-Author: Kiana Ellison; Nicole Mattingly

In this literature review, we will discuss the lifelong effects gender roles have on children. We will examine how enforced gender norms influence the mental and physical health of people both in childhood and adulthood. We will also investigate how gender norms affect higher level education paths and career paths chosen, along with the experience of the people on a "non-traditional" path. Finally, we will discuss how enforced gender norms at a young age affect the social interactions and the preconceived social roles expected of certain genders.