UCF’s Health Sciences Program presents

The 14th Biannual Health Sciences Research Symposia

Dates: April 26th
      May 1st

Time: 8-930am (4-26)
      1-230pm (5-1)

Location: HPA1-Atrium
The 14th Biannual Health Sciences Research Symposia

Hosted by Dr. Michael J. Rovito

SYMPOSIUM A
April 26th from 8:00am to 9:30am

SYMPOSIUM B
May 1st from 1:00pm to 2:30pm
Welcome

Welcome to the 14th Biannual Health Sciences Research Symposia. The two sections of HSC4730 Applied Health Research Methods offer nearly 30 student group research proposals. Feel free to interact with each group to learn more about their project, their experiences, and their expanded skill-sets.

Enjoy!

Produced by

Health Sciences Program

&

The Behavioral Health Research Group
Abstract

Diabetes-themed Escape Room – Potential Replacement for Standardized Diabetic Care

Ahmed E Elsherbeny, Christopher M. Rivera, Christopher Ngo, Frederick Herx, and Johnathan Rosales

The purpose of this study is to examine if diabetes-themed escape rooms are a more beneficial alternative to standard educational diabetic care. Diabetes-themed escape rooms have been chosen to determine if their impact on the application and knowledge of diabetes management among diabetic patients is similar to how hands-on diabetes training programs can increase pharmacy student’s competence to provide diabetes care (Wongwiwatthananusak et al., 2013). Poor diabetes self-management can lead to serious health complications, which include, retinopathy, nephropathy, neuropathy, and macro vascular, such as, coronary heart disease, cerebrovascular disease, peripheral vascular disease (Nandan, Rao, and Obulesu, 2017, p. 39). A randomized control trial will be conducted on males and females, ages 40-65, which have type 2 diabetes mellitus. Participants will be divided into 2 groups, which are, a control group and an exposure group. The control group will receive standardized educational care and the exposure group will participate in a diabetes-themed escape room. A 23 question follow-up survey will be utilized to compare knowledge retention between the two groups and to compare application skills of diabetes management. Then, follow-up measurements of FPG (Fasting Plasma Glucose) will be done on each participant to observe changes in blood sugar levels (Diabetes Mellitus). The purpose of this study is to determine whether or not an association exists between increased knowledge about diabetes management through a diabetes-themed escape room and reducing blood sugar levels.

Keywords: Type 2 Diabetes, Escape Room, Standard diabetes education, FPG (Fasting Plasma Glucose), Coronary heart disease

Hypotheses

H1: Increased knowledge through diabetes-themed escape room will have a negative association on blood sugar levels in diabetic patients, ages 40-65.

H0: Increased knowledge through diabetes-themed escape room will have no association on blood sugar levels.

H2: Increased knowledge through diabetes-themed escape room will increase risk of blood sugar levels increasing in diabetic patients, ages 40-65.
Abstract

Relationship of Hormonal Birth Control on ACL Injuries Among Female College Soccer Athletes

Baron Li, Gianni M. Dattolico, Sura Alani

An anterior cruciate ligament (ACL) tear is the most common injury in the knee. The function of this connective tissue is to bring stability to the lower leg joint; without this security the knee is much more susceptible to serious injury. This study will employ a prospective cohort study design and will examine if hormonal birth control is associated with decreased risk of ACL tears in female college soccer athletes in the state of Florida. Estrogen and progestin levels in the body are affected due to the birth control, which in turn have shown to be linked to ACL tears in women. The rebalance of these hormones cause changes in the phases of the menstrual cycle by keeping estrogen at a constant level, which can help maintain muscle integrity. Absence of certain phases of the menstrual cycle can be attributed to the lower rates of ACL tears due to the birth control's effect on the cycle. A baseline survey will be used to gather data from the study participants, who will be Florida college female soccer athletes with 1 year of NCAA eligibility left (12 month follow up) that are both on birth control and not on birth control. Questions on this survey include if and when they received the birth control, if they have suffered a knee ligament injury previously and what grade of injury. A follow up survey will be used 12 months after the prior analysis. Analysis will be conducted by looking at the 12-month follow up results and comparing the two groups for incidence of ACL tear.

Keywords: anterior cruciate ligament, hormonal birth control, hormones, women, athletes

Hypotheses:
H1: Hormonal birth control is associated with decreased risk of tearing an ACL in female college soccer athletes.
H0: Hormonal birth control is not associated with the risk of ACL tears in female college soccer athletes.
H2: Female college soccer athletes who have been on birth control for 2 months or longer are at lower risk of ACL tears than those who have had it for a shorter period of time.
Abstract

Assessment of Frequency and Severity for Repeated Concussive Head Trauma in NFL Athletes as a Risk Assessment for Chronic Traumatic Encephalopathy (CTE)

Evan McElroy, Daniella Funes, Amarilys Montalvo, Kevin Sanchez Jimenez

Chronic Traumatic Encephalopathy (CTE) is a degenerative neuronal disorder resulting from repeated head trauma. This disease is found frequently in athletes who play contact sports and veterans who were exposed to direct head trauma from explosions. While there are numerous case reports on CTE seen in autopsied National Football League (NFL) players, there is a lack of research investigating the characteristics of concussions experienced by NFL players related to CTE development. The main objective of this study will be to assess the history of exposure for severity and frequency of repeated concussive head traumas experienced by NFL players diagnosed with CTE.

To conduct this retrospective case control study, participants will be divided into either the case or control group based on disease-status at baseline using a recently FDA-approved diagnostic blood test. A pilot study will be conducted prior to confirm the validity and reliability of the diagnostic evaluation of CTE. Both case and control groups will be matched based on distributions of age, ethnicity, time taken to return to play after head trauma, position played, and years played in the NFL. Inclusion criteria consists of playing in the NFL for a minimum of 5 years (60 games) and suffering at least one concussive event during that time, and exclusion criteria includes having existing heart conditions that could affect the blood test. The two exposures that will be investigated are severity and frequency, with positive severity exposure defined as suffering from a concussion above grade I level, and positive frequency exposure defined as the total number of concussive events experienced equaling five or more. This data will be obtained from the participants’ medical records received from the NFL team physicians, personal physicians, and a questionnaire. Analysis of collected data will comprise of an odds ratio, logistic regression, and Chi squared test. This research will potentially provide a foundation for more preventative measures, such as an updated NFL concussion protocol based on frequency and severity of each concussive event.

Keywords: Chronic Traumatic Encephalopathy, NFL, Concussion, mTBI

Hypotheses
H1: NFL players diagnosed with CTE will have a higher likelihood of having more severe concussions than more frequent concussions.
H0: There is no significant increased likelihood of concussion frequency compared to concussion severity in NFL players diagnosed with CTE.
H2: NFL players diagnosed with CTE will have a higher likelihood of having more frequent concussions than more severe concussions.
Aerobic Exercise and It’s Benefits in Those with Chronic Traumatic Encephalopathy.

Estefany Vargas, Cullen Lemieux, Aksel Knudsen, Nkiru Chukwuelue, Conner George

Chronic traumatic encephalopathy (CTE) is a degenerative disease that affects people who have suffered from repeated brain trauma. In this study our purpose is to determine a correlation between aerobic exercise and lowering levels of Tau protein in former NFL players. The symptoms of chronic traumatic encephalopathy include increased rates of aggression, dementia, and motor impairments. To lower the risk of CTE, football committees and safety organizations have implemented various new protective and preventative safety equipment in helmets to attempt to prevent concussions but are not always one hundred percent reliable. Tau proteins are a normal building block to our neurons and through traumatic injuries they become plaques that slowly spread throughout the brain and destroy normal functioning neuron cells (see Appendix H). Aerobic exercise may be a practical therapeutic treatment for those with symptoms that align with CTE, including tau protein buildup. Testing will include a lumbar puncture to obtain cerebrospinal fluid (CSF) to determine levels of Tau proteins, a Magnetic Resonance Spectroscopy (MRS) to detect physiologic changes to the brain, a brain trauma indicator blood tests to determine the presence of neuronal lesions, and a memory and motor skills examination to assess participants functioning. We will examine the change in concentration of Tau proteins in CSF of former National Football League (NFL) players after a consistent aerobic exercise regimen has been completed. Further, we will examine the relationship between aerobic exercise and the levels of Tau proteins in serum.

Keywords: CTE, Tau proteins, plaques, degenerative, MRS, aerobic, exercise, NFL

Hypotheses

H1: Increasing the levels of moderate to vigorous aerobic exercise causes the expression of symptoms of CTE to decrease.
H0: Professional athletes that engage in moderate to vigorous aerobic exercise has no effect on slowing down the symptoms of CTE.
H2: Athletes who suffer from Traumatic Brain Injury(TBI) and use Hyperbaric medicine as the recovery treatment will have a decrease in symptoms of CTE.
Abstract

Benefits of Chinese Diet in Lowering PSA Levels in African American Males

Mina A. Hanna, Warren Vega, Alina Tarrillo, Thomas Wirth

Evidently, African American Men exhibit the highest incidence and mortality rates with regards to prostate cancer compared to other ethnicities. On the other end of the spectrum, Asians experience the lowest rates of incidence of and mortality from prostate cancer as supported by recent statistics. The aim of this study is to examine the effect of the consumption of Chinese diet on the levels of PSA in 50 African American Males between the ages of 50 and 59 years. For five consecutive days, the researchers will administer 3 meals daily that adhere to Chinese diet to subjects in the experimental group. The control group will receive no intervention. This will be employed using a randomized control trial (RCT) to test whether or not this nutritional intervention will be an effective tool in decreasing PSA levels. The researchers will obtain the sample using convenience sampling techniques and will conduct a double-blind experiment in regard to allocation of subjects to experimental and control groups. Laboratory staff will take blood samples before and after the intervention and they will assess the change (or lack thereof) in PSA levels. Analysis of the categorical data will be conducted using Chisquared test. The study will demonstrate if there are certain nutrients in a standard Chinese diet (described below) that are potent in decreasing the risk of developing prostate cancer via decreasing PSA levels.

Keywords: prostate cancer, African American males, Chinese diet, antioxidants, prostate specific antigen

Hypotheses
H1: Chinese diet reduces PSA levels in (50-59 years old) African American males  H0: Chinese diet has no effect on PSA levels in (50-59 years old) African American males
H2: Intermittent fasting reduces PSA levels in (50-59 years old) African American males
Abstract

Socioeconomic Status and Risk of Developing Prostate Cancer in African American Males in Alabama

Violla Hanna, Loren Nappi, Monica Nicola, and Maddie Potter

African American males show the highest incidence and mortality rates with prostate cancer possibly due to lack of screening, hence, failure to prevent the disease from advancing. The fact that African American men are more likely to develop prostate cancer could be tied to the statistics that show that African Americans are more likely to have a lower socioeconomic status than other races. Socioeconomic status constitutes education, income, occupation and their effect on the individual's overall social position, as well as health. In previous studies, Socioeconomic status was seen to affect motivation levels and locus of control. Therefore, locus of control could be an underlying cause of the lack of screening in prostate cancer patients and the evolution of prostate cancer to castration resistant prostate cancer leading to higher mortality rates. This study aims to examine the incidence and prevalence of prostate cancer among African American males between the ages of fifty five and eighty in Alabama, which is one of the states that have high African American populations. Also, this study aims to discover if locus of control is legitimately tied to socioeconomic status and screening for prostate cancer. The participants will be divided based on low, middle, and high socioeconomic status. A cross sectional study will be used to determine if socioeconomic status is prevalent among African American males suffering from prostate cancer in Alabama. Three surveys [socioeconomic status survey, medical history survey, locus of control survey] will be obtained to gather all data for analysis at the conclusion of the study.

Key words: Socioeconomic Status, African American Men, Prostate Cancer, Locus of Control, Screening.

Hypotheses

H1: Socioeconomic status will have an effect on Prostate Cancer incidence in African American males living in Alabama.
H0: Socioeconomic status will have no effect on Prostate Cancer incidence in African American males living in Alabama.
H2: Socioeconomic status will be linked to locus of control and the likelihood of screening for Prostate Cancer in African American males living in Alabama.
The Association Between Major Depressive Disorder and Cross-Sex Hormone Therapy

Leila T. Booeshaghi, Leili T. Molzan, Brittany A. Presti, Maria F. Vargas

The transgender population is comprised of about 1.4 million adults (0.6%) of the U.S population and about 100,000 people (0.7%) make up the transgender population in Florida. This places Florida as the sixth highest state with individuals that identify as transgender. Of those 100,000 people, a little over 13,400 individuals are between the ages of 18-24. These individuals are 3 times more likely than those who are cisgender to develop mental health conditions, one being major depressive disorder. Major depressive disorder (MDD) accounts for 10.4% of the total young adult population in the United States and from that, 34.3% of them identify as transgender. Although there are other methods one can take to align their physical bodies with their gender identity, previous research has shown that about half of transgender individuals will decide to proceed with cross-sex hormone therapy. Our research will be utilizing a prospective cohort design to determine the association between cross-sex hormone therapy and MDD in the young adult (aged 18-24), transgender population in Florida. The study will take place over the course of 5 years and use rolling admissions to maximize our sample size (n=2,500). The PHQ-9 and a screener survey will be utilized to gather our study population. Participants will be asked after 1 year to complete the PHQ-9 survey a second time to determine MDD status. Confounding variables will be controlled for during the screening survey using previously piloted surveys to account for their confounding effects.

**Keywords:** transgender, cross-sex hormone therapy, major depressive disorder, Florida, young adults

**Hypotheses**

$H_0$: Major depressive disorder is associated with cross-sex hormone therapy in the transgender population between the ages of 18-24 in Florida.

$H_1$: Major depressive disorder has no association with cross-sex hormone therapy in the transgender population between the ages of 18-24 in Florida.

$H_2$: Cross-sex hormone therapy causes more cases of major depressive disorder in the Asian-American population when compared to the African-American population.
Effect of Lowered Advanced Glycation End Products on Type II Diabetes in Native American Men

Jaqueline Mandujano, Layne Myhrer, Solangie Negron, Tristan Tarantino and Audrey Vero

According to the Center for Disease Control in 2017, prevalence of Type II Diabetes in the United States was highest in Native American men and women, with the percentage of affected natives being 14.9% and 15.2%, respectively. A study conducted by Chodur et al. in 2016 found that there were significantly less healthy food options per square mile about tribal locations compared to non-tribal areas. This study aims to explore the effects of removing much of the dietary AGEs from Native American men who are diagnosed with Type II Diabetes. The study will sample Native American men with the disease in Arizona as it is home to tribes with the greatest incidence. In a randomized control trial, a group of Native American men (n=50) will be given prepared meals low in AGEs, while another group (n=50) will be given a similar diet, not specifically prepared to be low in AGEs, but one like a traditional Native diet. The traditional diet typically features including wild game (though this may not be a viable option for this study), berries, root vegetables and nuts. At the end of a three-month period, a matched pairs t-test will analyze the difference between baseline data and gathered data from three follow up sessions, one every month, that measure fasting glucose, glycated hemoglobin, blood pressure. The data from the traditional Native diet group and the low AGE diet group will be compared using an independent samples t-test to find a significant difference between lowered AGEs and the Native inspired diet.

Keywords: type 2 diabetes, advanced glycation end products, diabetes in Native Americans, diabetes in men, insulin resistance.

Hypotheses:

H$_1$: Providing a diet with low levels of advanced glycation end products will decrease symptoms associated with Type II Diabetes in Native American men.

H$_0$: Providing a diet low in advanced glycation end products will have no effect on the complications associated with Type II Diabetes in Native American men.

H$_2$: Providing a traditional Native American inspired diet will reduce the complications of diabetes but not as significantly as a diet formulated specifically for low AGEs will.
Does JUUL vape smoking cause infertility in women ages 21 to 30?

Sadie Ahmed, Sruthy Babu, Lauren Bates, Olivia Colbert, Tasneem Islam

This study aims to examine the effects of JUUL smoking on the prevalence of infertility in women in Winter Park, Florida. A prospective cohort study design with a sample (n=161) will be implemented in order to assess women between the ages of 21 and 30, who have smoked JUUL vape for the past 2 years. Who currently self-report smoking at least one JUUL pod a day compared to the likelihood of infertility in non-smokers, recruited from a fertility clinic in Winter Park, Florida. A 14 question screening survey serves as our inclusionary and exclusionary criteria. Our study population are cohorts of JUUL smokers and nonsmokers. The study participants that qualify are followed for an additional 23 months following the screening survey. Each month, subjects are asked to complete a follow-up survey discerning pregnancy status and changes to smoking habits. If pregnancy is self-reported, a urine pregnancy test is administered by a registered nurse and evaluated accordingly. Women that self-report pregnancy and test positive for the urine pregnancy test are tested again the following week for test-retest validity. The subjects are not followed post reported pregnancy. After data analysis, we will determine the incidence of infertility among JUUL smoking women in Winter Park, Florida.

Hypotheses

$H_1$: Women who smoke at least 1 JUUL pod of JUUL vape a day will experience infertility.

$H_0$: Women who smoke at least 1 JUUL pod of JUUL vape a day will not experience infertility.

$H_2$: Women who smoke at least 1 JUUL pod of JUUL vape a day will experience higher rates of miscarriage than women who do not smoke.

$H_3$: Women who are a particular race will have higher prevalence of JUUL vaping and infertility.
Determining Association of Childhood Abuse and Earlier Onset Age of Bipolar Disorder

Julia Aguirre, Raelyn L. Dowdy, Jonathan E. Lozovsky, Lucy Sanchez, and Anthony J. Stravato

This study aims to assess the developmental risk of early onset bipolar disorder associated with early childhood abuse (physical abuse, sexual abuse, and emotional abuse as well as neglect) among 650 patients diagnosed with bipolar disorder. Patients will be included in the study only if they received either a bipolar I disorder or bipolar II disorder diagnosis using a Structured Clinical Interview for DSM-IV (SCID-IV). Other forms of bipolar disorder (cyclothymic disorder) and patients diagnosed through a different diagnostic tool will not be included in the study to control for related confounding variables (e.g. non-standardized measures). Age ranges will include pediatric onset being defined as diagnosis prior to the age of twelve and adolescent onset prior to the age of eighteen. Presence or absence and severity of abuse subtypes will be retrospectively collected using the Childhood Experience of Care and Abuse Questionnaire (CECA.Q) from inpatient and outpatient participants recruited from five specialty treatment centers across Central Florida. Cases and controls will be differentiated based on age of onset, or the age of the first manic, hypomanic, or depressive episode or the first depressive episode a patient had experienced that was associated with dysfunction (American Psychiatric Association, 1994). We will utilize a T-test for a means comparison between cases and controls for their respective age of onset and presence or absence of childhood abuse. We plan to conduct a series of logistic regression analyses to determine the relative risk of onset age shifting according to abuse subtype or severity.

Hypotheses:

H$_1$: Patients with bipolar I disorder or bipolar II disorder with earlier ages of onset will have increased odds of being abused as children.

H$_0$: There will be no significant difference seen in cases or controls for histories of abuse and an earlier age of onset.

H$_2$: There will be increased odds of earlier age of onset being correlated to multiple forms of abuse, having more than two, rather than any singular abuse form.
Abstract

Alcohol Effects on the Rate of Manic Depression among American Indians

Jessica Almeter  Gabriel Rivera  Jennifer George  Emily Dao  Marian Ivanov

The alternation between abnormally high and low moods is a diagnosable mood disorder termed manic depression. These mood swings can be substantial and rapid; however, they are typically gradual. A variation of many factors leads to an increase in depression among American Indians. The decision to use American Indians in this cross-sectional study was based on their cultural beliefs, health care availability, poverty levels, employment, and genetics. These topics reflect how alcohol usage and manic depression are heavily saturated throughout the community. It is not uncommon for tribes to reject mental health disorders or categorize them as a sign of weakness. When compared to other ethnic groups, American Indians have a larger prevalence of uninsured and increased poverty levels. The purpose of this study is to identify if an association exists between alcohol dependence and manic depression diagnosis among the American Indian community. The sample used will include 384 individuals residing within Arizona. These individuals will be recruited by means of social media, flyers, and advertisements, focusing within American Indian clubs and organizations. Inclusion into this study will be based upon individual tribal acceptance, Arizona residency, and an age restriction of 21 and over. Variables will be measured using the NESARC-III, The Goldberg Depression Test, and The Mood Disorder Questionnaire. In order to analyze and report the results pertaining to our research study, we will utilize prevalence rate and Spearman’s Rho. The results of this study could be used to improve the health, knowledge, and livelihood of those within this community.

Keywords: American Indians, manic depression, alcohol dependence, culture, employment

Hypotheses
H1: An increase in alcohol consumption will have a positive correlation in the diagnosis of manic depression among American Indians.
H0: There will be no association between the amount of alcohol consumed and the rate of manic depression diagnosis among American Indians.
H2: There will be a negative correlation between increased alcohol usage and general happiness among American Indians.
The Increased Quality of Life in Women who chose to have a Double Mastectomy After Testing Positive for the BRCA1 Gene.

Kenzie Conner, Brian Ruiz, Mikayla Sanford, Haley Shinn and Alecia Noval

This study will look at women who have elected to have a double mastectomy due to testing positive for BRCA1 gene before being diagnosed with breast cancer. The women will have tested positive for the BRCA1 gene within the last three years. The women who elected to have a double mastectomy would have had underwent surgery within the past 18 months. We will be measuring the quality of life of these women who were found to have the BRCA1 gene. Measurement of quality of life will be assessed using two different surveys known as the DASS-21 (Depression, Anxiety, and Stress Scales) and the HRQOL (Health-Related Quality of Life). This analysis will be a prospective cohort study design. The sample will contain three subgroups which will have 200 women in each group. The first group is those who chose to have a double mastectomy within the last 18 months, the second group, which is the control group, is those who chose not to have the double mastectomy, and the third group will be women who had a double mastectomy, but also had reconstructive surgery after. Surveys will be distributed every three months throughout the year of research to determine whether the participants felt as though their quality of life has been affected as a result of undergoing a double mastectomy with or without reconstructive surgery and not having the double mastectomy. This study will find a relationship between people who chose to have a double mastectomy with or without reconstructive surgery as a preventative measure and see if they have had any change in their quality of life over women who did not choose to have the double mastectomy.

Keywords: BRCA1 gene, Double Mastectomy, Quality of life, Breast Cancer, Preventative Health

Hypothesis:
H1: Women who tested positive for the BRCA1 gene elected to have a double mastectomy experience improved quality of life.
H0: Electing to have a double mastectomy will have no effect on the quality of life for women who are positive for the BRCA1 gene.
H2: Electing to have a double mastectomy will decrease the quality of life for women who are positive for the BRCA1 gene.
H3: Women who tested positive for BRCA1 and elected to have the double mastectomy have decreased fear and anxiety in relation to the development of breast cancer.
Abstract 13

The Association Between Strength Training and Anterior Cruciate Ligament Tears in Athletes

Gabriel Gonzales, Taylor Swaford, Kaylee Barnard, Samantha Vargas, Jeff Perez

A study to evaluate how lower extremity strength training affects the risk of anterior cruciate ligament injuries in female athletes will be conducted. The purpose of this research is to bring awareness to young female athletes and coaches of those athletes that strength training is a preventative measure of the commonly occurring injuries of ACL’s. Lower extremity strength training leads to ligament stability, which is relevant to instances where the ligaments are exposed to stressful factors in sports such as jumping and landing or changing of lateral direction. Improving motor control and overall level of core and leg strength will prevent the inward collapse of the knee, a critical concern in athletes. The results of this study could influence strength training across the athletic network and possibly lower the amount of ACL injuries we see in female athletes.

Keywords: Anterior cruciate ligament, Strength Training, Female Athletes, Prevention, Injuries

Hypothesis
H1: Increasing strength training will have a positive effect on the prevention of ACL injuries in athletes
H0: Increasing strength training will have no effect on the prevention of ACL injuries in female athletes.
H2: Increasing strength training will have a negative effect on the prevention of ACL injuries in female athletes.
H3: Decreasing strength training will have a negative effect on prevention of ACL injuries in athletes.
The Association Between Celiac Disease and Breast Cancer Incidence among Caucasian Women

Hannah Reda, Balaji Chandrasekar, Chanakarn Smitasin, Emma Underwood, Melanie L. Risola

This study is intended to infer the relationship between Celiac Disease and acquisition of breast cancer in Caucasian women. The overall goal is to provide sufficient evidence that these women, aged between 40 and 50 years old, who were diagnosed with Celiac Disease at least 5 years prior to the study, have a lower risk of developing breast cancer than women who do not have the diagnosis. This is due to the restriction of gluten, which is often found in many fatty foods linked to cancer including but not limited to salad dressings, fried foods, condiments, and a wide variety of wheat derivatives. This prospective cohort study will analyze women with Celiac Disease by utilizing previous gastrointestinal histories. The medical histories will be pulled from gastroenterologist clinics across Florida in order to maintain similar dietary and environmental factors except for gluten consumption. The purpose of this study will be to illustrate the direct link that gluten has to breast cancer development, since there is still such high prevalence in populations worldwide without an evidence-based cure. If the analysis of the results from the research conducted supports the hypothesis stated previously, the causality between gluten and breast cancer can be inferred and the incidence rate may begin to decline.

Keywords: gluten; breast cancer; fatty foods; Celiac Disease

Hypotheses:

H₁: Women between the ages of 40 and 50 years old diagnosed with Celiac Disease will have a lower risk of developing breast cancer than women without the disease.

H₀: There is no relationship between Celiac Disease and the development of breast cancer in women between the ages of 40 and 50 years old.

H₂: The elimination of gluten from the diet allows for fewer health complications than diets that consist of gluten.
Abstract 1

How Do Life Experiences Affect Women’s Susceptibility to Severe Manic Depression?

Georgia Costigan, Isabel Gutierrez, Jessica Leal, Samantha Oberman

This study proposes to examine the different factors that affect the severity of a woman’s manic depression. There has been research done that shows that women are more susceptible to more rapid cycling, depressive episodes, and hypomanic episodes. In this study the main focus is placed on the woman’s life experiences that may have had a large influence in the outcome of their manic depression. The research will be done with the use of a case-control study design on women located in Orlando. The study population is going to come from mental health clinics, school campuses, and other public locations in Orlando. The participants are going to be selected based on their results on the screening survey. This survey is an original document specific to this research in order to set inclusionary and exclusionary factors. The cases are going to be women with manic depression, and the controls are going to be women without manic depression. They will then take the Life Experiences Survey by Sarason (1978). This study serves to determine if there is any association with life experiences and the severity of a woman’s manic depression. The depressive state leads to other more dangerous health conditions and it is important to understand why it is affecting women more in reference to manic depression.

Key Words: Women, manic depression, life experiences, mood episodes, severity

Hypotheses

$H_1$: There are negative life experiences that may trigger the onset of manic depression in women, and this increases the odds of their manic depression consisting of more rapid cycles and depressive episodes.

$H_0$: There is no correlation between life experiences affecting the severity of manic depression in women.

$H_2$: Positive life experiences are going to be a protective factor for women without manic depression.
Perceptions of LGBTQ Individuals on Suicide

Maria De La Espriella, Tayler Bentley, Jeffrey Umana, Khunsha Syed, Saher Ahmed

The following study proposes to examine the effects of bullying in the LGBTQ community and its association to suicide. LGBTQ is the acronym that represents lesbian, gay, bisexual, transgender, and queer/questioning for those who are uncertain of their sexual orientation and gender identity. Homosexuality has been a sensitive topic surrounded by negative feedback for many years, furthermore, this group is often troubled by various forms of discrimination. In addition, suicidal thoughts could be associated with bullying. This research will be achieved through utilizing a qualitative study design by enrolling a total population of fifty students recruited through purposive sampling from the University of Central Florida. This population will only include LGBTQ participants who have either or both, been bullied or had suicidal thoughts. Through observations, the grounded theory inductive reasoning process will be the approach considered to gather and interpret qualitative data explaining human behavior affected from bullying and pertaining to suicide in the LGBTQ group. Two-hour audio-recorded focus group discussions will be conducted in four groups of five participants each to understand and identify diverse perspectives in the LGBTQ community. The discussion will be hosted by two researchers. One will serve as the moderator while the other will be responsible of audio recording and note-taking. The analysis will be organized using discourse analysis to further understand written, spoken, or nonverbal language used by the participants. The researchers plan to derive a theory using gathered and analyzed data to improve societal expectations and prevent suicidal thoughts in this population.

Keywords: Bullying, suicide, homosexuality, grounded theory, perspectives

Specific aims
1. Conduct qualitative data based on the perspectives of LGBTQ individuals regarding bullying; and
2. Via focus group discussions, explore LGBTQ individual’s experiences and behaviors as a result of bullying and possible correlation to suicidal thoughts
In those diagnosed with Chronic Traumatic Encephalopathy, is there an association between age of symptom onset and stage of CTE?

Deanna Clayton, Eliezer Penias, Malene Saaby, Christopher Tortorici, Wesley Wilson

The disease caused by trauma to the brain, Chronic Traumatic Encephalopathy (CTE), has four stages of disease with each of the them marked by many behavioral and cognitive symptoms. These clinical symptoms include aggression, explosivity, depression, and frequent headache. We will observe and analyze a trend among the age of symptom onset and the stage of CTE from the brain bank provided by the Center for the Study of Traumatic Encephalopathy at Boston University School of Medicine. Using a cross-sectional study, we will look at the possible relationship between age of symptom onset and stage of CTE, while also looking at the possibility of neurodegenerative comorbidities affecting the association. The inclusion of comorbidities is to see if it is a confounding factor in stage of CTE. We want to know if this relationship will stay direct in those without comorbidities. In reviewing the data from the brain bank, we will compare the age of symptom onset with the stage of CTE and with the group containing comorbidities. Our purpose will be to analyze the possible association between age of symptom onset and diagnosed stage of CTE. We hope the results of this study has further implications in studies of CTE and its complexities since it is a rather new discovery.

**Keywords:** Chronic Traumatic Encephalopathy, Symptom Onset, Stages, Brain Bank, Comorbidities

**Hypotheses:**

**H1:** Those who show onset of symptoms at a later age will have a more advanced stage of CTE when diagnosed postmortem.

**H0:** Those who show onset of symptoms at a later age will have no difference in stage of CTE.

**H2:** The presence of comorbidities will contribute to a higher stage of CTE in those with later onset of CTE symptoms.
Is the exposure of hormonal contraception associated with an increased incidence of developing a blood clot?

Adrian Hernandez, Ashley Reith, Cassidy Herbert, Isabella Restrepo, Jadia Bashir, Ulysses Orellana

This study aims to investigate the correlation between hormonal contraception usage and the development of blood clots, such as deep vein thrombosis (DVT) or pulmonary embolism (PE). A mixed cohort (retrospective/prospective) design study will be implemented on women ages 15-60 of Hispanic background who may develop a venous thromboembolism secondary to being on hormonal contraception for a minimum of 6 months. The women in the study will be categorized in two groups; as either combined hormonal contraceptive users and single-type hormonal contraceptive users. Our team will distribute an original screener to various clinics in the South Florida region to recruit women who are currently taking or have previously taken hormonal contraception for at least 6 months. 250 participants from each group will be randomly selected and will be given a baseline survey to further investigate their hormonal contraception regimen and timeline. To ensure validity and reliability, participant’s data will be compared to the data in the PharMetrics system. This study helps to address the gaps in the research by focusing on Hispanic women- a significant underserved and understudied group- with a history of venous thromboembolism secondary to being on hormonal contraception.

Hypotheses

H₁: Combined oral contraception has the highest risk of developing a blood clot as compared to those who are currently taking or have previously taken only one type of hormone.

H₀: There is no association between taking combined oral contraception and having a higher risk of developing a blood clot compared to those who are currently or have previously only one type of hormone.

H₂: Combined oral contraception has the highest risk of developing a blood clot as compared to those who are currently taking or have taken only one type of hormone for at least five consecutive years.
Contingency of the Mediterranean Diet’s Capacity to Slow the Progression of Prostate Cancer along with its Adverse Symptoms

Odanis Cabral-Walker, Nikolas Goodenow, Stephen Brock, Basel Maswadi

It is well known that a good diet is associated with good health. The exact impact, however, remains unclear. This study will focus on one diet in particular, the Mediterranean diet (MD), and attempt to assess its impact on American men diagnosed with Prostate Cancer (PC). PC has various risk factors, the highest of which pertains to diet, such as red meat. The MD has been chosen as a template to follow due to its lowered incidence rates of cancer among nations that implement it. This study will aim to employ a randomized control trial consisting of two groups; one group will adhere to the MD, while the control group will resume their normal diet practices. Participants will be followed for a twelve-week duration; both groups will be prospectively monitored on a weekly basis, along with a six and twelve-month follow-up survey. The purpose of this research is to infer causality as to whether the MD has an impact on the digression of PC and its adverse symptoms associated with it.

Keywords: Prostate Cancer, Mediterranean Diet, Dietary Intervention, PSA Tests

Hypotheses:

$H_1$: Implementing the MD will slow the progression of PC and reduce the severity of its adverse symptoms.

$H_0$: Implementing the MD will show no association in comparison to the control group in regards to the digression of PC and its adverse symptoms.

$H_2$: PSA tests will be directly proportional to, either the improvement or disimprovement of, the adverse symptoms associated with PC.
Are Knee Strengthening Exercises or Specialized Knee Braces More Effective at Preventing Anterior Cruciate Ligament Tears in College Football Players?

Paul Boss, Alex Areopagita, Kelcey Cumella, Megan Winston, Ariona Thornes

This study looks to observe the effects of two preventative methods for Anterior Cruciate Ligament (ACL) tears in college football players, which include specialized knee braces and overall knee strengthening exercises. The purpose of this study is to determine which preventative method is the most effective at preventing ACL tears in college football players. In this study, we will take a sample of three hundred college football players in Florida, who have never torn their ACL or had any previous knee injuries, and randomly allocate them to our two experimental groups and our control group. After analyzing the number of ACL tears (partial and complete tears) that occurred in each group throughout an entire football season, we can determine which preventative method was the most effective in preventing ACL tears. The results of the data will allow us to develop better methods or devices that can be used to help prevent ACL tears in athletes.

Key Words: Anterior Cruciate Ligament, Preventative, Football, Knee Brace, Exercise

Hypotheses:

H₁: Wearing a knee brace and performing knee strengthening exercises are effective in preventing ACL tears among football players.
H₀: There is no correlation between wearing a knee brace or performing knee strengthening exercises and preventing ACL tears.
H₂: Knee strengthening exercises are more effective at preventing ACL tears than wearing a knee brace.
Analyzing Prevalence of CTE Symptoms in Football Players Depending on Position Played

Mohammad Usman, Raul Jimenez, Sha'ury Dorelien, Virginia Fleming, Alyssa Fonseca

Chronic Traumatic Encephalopathy (CTE) is caused by repeated head trauma and subsequent concussive/sub-concussive events. In American football, due to the constant head-to-head collision, football players are put at a higher risk of developing CTE and its precursor symptoms. In particular, linesmen tend to sustain the most frequent head trauma in comparison to other positions, which may experience less trauma at a higher impact. The aim of this study is to determine whether or not the type of position played in football increases a player’s risk of developing the precursor symptoms of CTE, such as neurological impairments, emotional distress, and slowed motor skills. A retrospective cohort study will be employed on retired NFL football players, 25 to 45 years old, from three Cleveland Clinics who provide the Brain Health and Restoration Program in the Weston, Florida area. The information collected from the programs evaluation will be used to classify potential participants as either diseased (precursor symptoms present) or non-diseased (precursor symptoms not present). The participants selected for the study population will be organized into two groups; linesmen (exposed) or all other positions (non-exposed). An original questionnaire will be used to assess the frequency and severity of their symptoms, as well their football history. The purpose of this study is to determine if playing the position of linesmen increase the risk of developing the precursor symptoms of CTE.

Hypotheses
H1: Playing the position of linesmen increases the risk of developing precursor symptoms of CTE.
H0: The type of position played by a football player has no relationship to the amount of risk for developing the precursor symptoms of CTE.
H2: Playing the position of quarterback, in comparison to playing the position of linesmen, has a greater increased risk of developing precursor symptoms of CTE.
H3: Playing the position of defensive lineman, in comparison to offensive lineman, has a greater increased risk of developing precursor symptoms of CTE.
H4: Football players with a football history of more than five years have a greater increased risk of developing precursor symptoms of CTE in comparison to football players who have a football history of less than five years.
Abstract

Parental perception of risk affecting pre-diabetic children's HbA1c levels

David Bermudez Jr, Katherine Cancel, Anel Couzo Herrera, Ryan Lockwood, and Miranda Ramka

The prevalence of adolescent Type 2 diabetes is a growing public health concern. This study aims to look at how parental perceptions of risk can affect a child's HbA1c level. A cohort study design will be used to look at incidence rates of Type 2 diabetes among pre-diabetic, African American children, ages 10-13. A sample of six hundred and six children with single mothers willing to take a screener survey along with a "Risk perception for developing diabetes" survey will be included in the study. The "Risk perception for developing diabetes" survey is a modified tool used for analyses. A pilot study will ensure its ability to produce reliable and valid data prior to commencement of the study. The participants will be broken into two groups based on their mother's risk perception survey results: the high parental perception of risk group or the low parental perception of risk group. Over two years, the children's HbA1c levels will be monitored. A risk ratio will be calculated to see whether low parental perception of risk increases a child's likelihood to have their HbA1c levels move from prediabetic into diabetic range. The purpose of the study is to determine whether a link exists between parental perceptions of risk and incidence rates of Type 2 diabetes among adolescent African Americans.

Key Words: Prediabetes, Parental perception of risk, HbA1c, African American, Type 2 diabetes

Hypothesis

H₁: The high parental perception of risk group will have fewer incident cases of diabetic HbA1c levels when compared to the low parental perception of risk group.

H₀: The parental perception of risk had no effect on the incidence of Type 2 diabetes.

H₂: The low parental perception of risk group will have a larger net average HbA1c increase than those in the high parental perception of risk group.

H₃: The low parental perception of risk group will have more individuals with increased HbA1c levels when compared to baseline than the high parental perception of risk group.
Abstract 9

Salient Risk Factors Associated with Manic Depression

Valerie Melkumova, Emmanuella Roche, Britney Urie, Nicole Nunez, Asia Byrd

The aim of our research is to understand what risk factors are the most prevalent in the lives of those who have been clinically diagnosed with Manic Depression. During our research, we will distribute a survey to patients who have been clinically diagnosed with Manic Depression. The survey will be presented to any patients that are currently attending therapy sessions with a psychiatrist who has agreed to participate in our study. We will approach twenty different psychiatric offices in the Greater Orlando Area and ask them to present our survey to their patients. The survey will ask questions about different risk factors that may be present in the patient’s life. Questions will include, but are not limited to, gender, age, family history, and social environmental factors. The data collected from the surveys will help us identify what risk factors have affected the patient’s lives the most in relation to the manifestation of their Manic Depression. After the surveys are taken, we will analyze the results to identify the most prevalent risk factors amongst the patients. Identifying the most common risk factors amongst patients will help us to further our efforts in education and prevention. Our ultimate goal is to use the information gathered through this study to educate people on what we have collected to be the most prevalent risk factors associated with Manic Depression. Those who find themselves associated with such risk factors, we hope will seek preventative strategies in their community.

Keywords: Manic Depression, Family History, Environment, Mental Health, Risk Factors

Hypotheses

$H_1$: Family history is one of the most prevalent risk factors contributing to the manifestation of Manic Depression in adults

$H_0$: There is no significance in the association of family history risk factors and the manifestation of Manic Depression in adults

$H_2$: Previously diagnosed mental health disorders are one of the most prevalent risk factors contributing to the manifestation of Manic Depression.
Testicular Abnormalities and Testicular Trauma Related to the Development of Male Breast Cancer

Brittyn N. Hamer, Janice M. Lopez, Kelli N. Kennedy, Madelyn M. Nurge, Natasha M. Mistry

This study proposes to investigate the prevalence of various testicular abnormalities and testicular traumas in 150 men diagnosed with breast cancer in the United States. The testicular abnormalities reviewed in this study include Klinefelter’s syndrome, cryptorchidism, mumps orchitis, past testicular cancer, or orchiectomy. More specifically, this study aims to find a link between past testicular trauma and the development of breast cancer in men. Past testicular torsion, hydrocele, or varicocele will be investigated and classified as testicular trauma. A case-control design will be utilized to retrospectively investigate testicular abnormalities and traumas in males with and without breast cancer. Participants will be allocated to two groups: cases (with breast cancer) and controls (without breast cancer) to investigate the presence of testicular abnormalities or traumas. Data will be collected through consented overview of the subjects’ medical records regarding testicular abnormalities and traumas. The data collected will be utilized to determine if past testicular abnormalities or testicular trauma increases the risk for developing male breast cancer.

Keywords: Male breast cancer, testicular trauma, testicular torsion, Klinefelter’s syndrome, varicocele

Hypotheses
H1: Testicular trauma with the absence of testicular disorders will increase the risk of breast cancer in males.
H0: A history of testicular abnormalities and testicular traumas has no effect on the development of breast cancer in men.
H2: The most prevalent testicular disorder associated with male breast cancer is Klinefelter’s syndrome.
Abstract

Body Image Following Double Mastectomy in American Women Diagnosed with Breast Cancer

Emily Aguilar, Julina Dinh, Rachel Hochman, Michelle Nieveras

The aim of this study is to examine a group of 250 American middle-aged women that has been diagnosed with breast cancer once, living in Orlando, Florida and who will undergo a double mastectomy to see how it affects their view on body image. This research will also compare this to American middle-aged women that has also been diagnosed with breast cancer once, living in Orlando, Florida but will not undergo a double mastectomy. This will be achieved through a retrospective cohort study that uses a series of questions that are included in a survey that is analyzed along with the Body Image Scale (BIS). The results will be analyzed by comparison of the non-exposed (early stage of breast cancer) to the exposed (have undergone a double mastectomy) data. The analysis used in this study will be the Attributable Risk Percent, Person-Time, and Incidence Rate Ratios. The purpose of this study is to identify if there is an association between a double mastectomy and a poor view on their body image in women.

Keywords: Breast Cancer, Double Mastectomy, Middle Aged, American Women, Body Image

Research Question: Do American women between the ages of 40 to 50 years old, who have lived in the United States for 10 years, who have been diagnosed with breast cancer and have undergone a double mastectomy have a negative impact on their quality of life in regard to body image after 5 years?

H1: Middle aged American women who have been diagnosed with breast cancer and undergone a double mastectomy have a poorer view of their body image.

H0: Breast cancer and a double mastectomy may not have an association to middle aged American women and their body image

H2: Middle aged American women who have been diagnosed with breast cancer and undergone body reconstructive surgery has a poorer view on body image.

What factors influence a Hispanic women

Guadalupe Barco

This study aims to examine what factors influence a Hispanic woman to use intrauterine devices (IUD), and therefore usage of this form of contraceptive. A mixed method cross-sectional observational study will be conducted incorporating focus groups to further explore the perspectives of Hispanic women in greater detail. The sample will include Hispanic women, ages 18 to 35, who are sexually active and are fluent in English. Recruitment will be conducted through flyers posted around public communities such as the University of Central Florida, grocery stores, and health clinics. For the first phase of the study six focus groups, each consisting of five different randomly selected women, will be administered to gain initial insight into common themes that are prevalent within the Hispanic population regarding IUDs. Qualitative data collected from the focus groups will be coded with the assistance of qualitative analysis program to determine trends in the views and thoughts of Hispanic women. Using these thematic concepts, a survey will be created to further elaborate on these themes to analyze to what extent they influence a woman. Descriptive statistics will be conducted using composite variables, measures of central tendency, means, and t-tests to determine the perspectives of the Hispanic female population regarding IUDs and their resulting usage.

Keywords: Hypotheses

H1: There is an association between family and community factors that will influence a Hispanic woman to use intrauterine devices.

H0: There is no association between family and community factors that will influence a Hispanic woman to use intrauterine devices.

H2: The higher the socioeconomic status of a Hispanic woman, the more prevalent the usage of intrauterine devices will be and the greater her extent of knowledge on intrauterine devices.
What factors influence a Hispanic women’s knowledge on intrauterine devices, and therefore usage of this form of contraception?

Guadalupe Barco-Garcia, Analucia Cabanillas, Fedline Oscar, Gabriela Oyola, Alejandra Robles

This study aims to examine what factors influence a Hispanic woman’s knowledge on intrauterine devices (IUD), and therefore usage of this form of contraceptive. A mixed method cross-sectional observational study will be conducted incorporating focus groups to further explore the perspectives of Hispanic women in greater detail. The sample will include Hispanic women, ages 18 to 35, who are sexually active and are fluent in English. Recruitment will be conducted through flyers posted around public communities such as the University of Central Florida, grocery stores, and health clinics. For the first phase of the study six focus groups, each consisting of five different randomly selected women, will be administered to gain initial insight into common themes that are prevalent within the Hispanic population regarding IUDs. Qualitative data collected from the focus groups will be coded with the assistance of Atlas.ti, a qualitative analysis program to determine trends in the views and thoughts of Hispanic women. Using these thematic concepts, a survey will be created to further elaborate on these themes to analyze to what extent they influence a women’s knowledge on IUDs and their usage or non-usage, in addition to other underlining sentiments. Analysis of the resulting survey responses will be conducted using composite variables, measures of central tendency, means tests, and Cronbach’s alpha. The purpose of this investigation is to gain insight into the perspectives of the Hispanic female population regarding IUDs and their resulting usage.

Keywords: contraception, intrauterine device, Hispanic women, knowledge, survey

Hypotheses:

H1: There is an association between family and community-based preferences regarding contraceptives that will influence a Hispanic woman’s decision to use intrauterine devices.

H0: There is no association between family and community-based preferences regarding contraceptives that will influence a Hispanic woman’s decision to use intrauterine devices.

H2: The higher the socioeconomic status of a Hispanic women, the more prevalent the usage of intrauterine devices will be and the greater her extent of knowledge on intrauterine devices.
Does Dynamic Intraligamentary Stabilization have a greater success rate than traditional ACL reconstruction in female athletes?

Fatima D. Alvarez, Casey N. Deming, Dongyun Huang, Shannon A. McKeon, Amardeep Singh

This study aims to assess the success of a new recovery method as opposed to typical reconstruction after an anterior cruciate ligament (ACL) injury. The new surgical procedure being employed is Dynamic Intraligamentary Stabilization (DIS) which encourages self stabilization of the ACL during the healing process. The population of our study is female soccer players between the ages eighteen to twenty four who have torn their ACL within the last twenty one days and plan to undergo either DIS or traditional ACL reconstruction within three months. The sample population will be selected from various sport injury rehabilitation centers in the Greater Orlando area. The overall outcome we will be studying is which recovery method has a larger success rate. A recovery will be considered “successful” when an athlete achieves a normal degree of function including, normal range of knee flexion and extension for range of motion (ROM) and reports low or minimal knee pain through completion of the Kujala Anterior Knee Pain Scale (KAKPS). Through employing a prospective cohort study, participants will be split into two groups. One group will consist of female soccer players between ages eighteen to twenty four that have torn their ACL and plan to undergo traditional ACL reconstruction. The second group will consist of female soccer players between ages eighteen to twenty four who have torn their ACL and plan to undergo DIS.

**Keywords:** Anterior cruciate ligament, Soccer, Dynamic Intraligamentary Stabilization, Females, Treatment

**Hypotheses:**

H$_1$: The ACL tear recovery rate for the dynamic intraligamentary stabilization treatment is higher than for anterior cruciate ligament reconstruction in female soccer players ages eighteen to twenty four.

H$_0$: There is no significant difference in ACL tear recovery success rates between the dynamic intraligamentary stabilization treatment and the surgical reconstruction treatment in female soccer players ages eighteen to twenty four.

H$_2$: Recovery after undergoing dynamic intraligamentary stabilization provides a higher recovery of function for those athletes who have participated in competitive soccer since childhood as opposed to those who began competitively playing soccer in their teen years.
Project Abstracts

Type 2 Diabetes and Consumption of Organic Versus Processed Red Meat

Ceasha Smith, Hannah Watcke, Franishia Bivens, Shannon Fitzpatrick, Gianna Romulus

The prevalence of type-2 diabetes in the United States population is quickly rising into a major epidemic. Personal diet choices have been known to have significant impacts on the effect and management of type-2 diabetes. Recent studies have shown that increased consumption of omega 3 fatty acids can improve insulin homeostasis within individuals, and therefore reduce the severity of type-2 diabetes. We plan to employ a 2-group pre-test post-test randomized control trial. This study will examine the effect of omega-3 fatty acids found in organic red meat on the impact and management of type-2 diabetes as compared to processed red meat. Participants for the study will include 90 individuals ages 18 to 40 who have an active diagnosis of type-2 diabetes. The individuals will be separated randomly into two groups; one of which will resume their normal diet, and the other which will replace red meats in their diets to implement organic red meat instead. Participants will take a baseline A1C test and 3 additional check-ins every 90 days to monitor changes in A1C levels. The hypothesis of this experiment is that increasing the consumption of organic red meat in type-2 diabetic patients will lower A1C levels and have a positive effect on type-2 diabetes status. If this hypothesis is correct, the results from this study could drastically alter the way we go about treatment and management forms for type-2 diabetes.

Hypothesis

H1: Organic red meat lowers A1C levels in type-2 diabetic patients.
H0: Organic red meat has no associated effects on A1C levels for type-2 diabetic patients.
H2: Younger aged individuals have a better response in lowering A1C when implementing the organic red meat intervention in type-2 diabetic patients.
The 14th Biannual Health Sciences Research Symposia
Special Thanks

A special thanks to all of the students in both sections of HSC4730 for their hard work, dedication, and perseverance this semester. I am proud of your efforts. Good luck in all you do in your future careers.

To my BHRG Research Team, you know how much I appreciate your devotion to our collaborative work. Here’s a toast to “The Burg”.

To Dr. Schneider and the HIP Coach family...thanks for the opportunity.

To the DHP and HSC staff who helped make this event possible. A very special thanks to Ms. Kim Maclennan for her design efforts with our logos and posters. Your skills are unmatched!

To my wife, Kathy, your patience is as high as Kilimanjaro and support as wide as the Pacific. To Aria, let’s go to the zoo to watch the croc feeding.

Word,

MjR