Student Scholarly Project Presentation Day

JANUARY 28, 2025

Tilman J. Fertitta Family
College of Medicine

UNIVERSITY OF **HOUSTON**

Program

TILMAN J. FERTITTA FAMILY
COLLEGE OF MEDICINE - ALC 1200
UNIVERSITY OF HOUSTON
JANUARY 28, 2025

PROGRAM STRUCTURE

The SSP is an in-depth, mentored learning experience. Projects should be in an area of personal interest and include a testable hypothesis. As a result of completing this project, students will be able to think critically, explore beyond the curriculum to investigate problems in more depth, ask and answer important questions, and work with a team of scholars. This project will be an opportunity for self-directed learning and integrate multiple curricular domains including professionalism, ethics, communication, research methods, epidemiology, biostatistics and biomedical sciences. The course culminates in an abstract and poster presentation allowing students to disseminate their research findings and obtain experience in the scientific process.

GOALS

1. Foster intellectual challenge and a spirit of inquiry within the College of Medicine
2. Provide the skills needed for lifelong learning and continuous quality improvement
3. Provide instruction in the scientific method and the basic scientific and ethical principles of clinical and translational research, including the ways in which such research is conducted, evaluated, explained to patients and applied to patient care

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FACULTY MENTORS

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Schedule

OPENING REMARKS   9:00 A.M. - 9:15 A.M.

POSTER SESSION 1   9:15 A.M. - 10:15 A.M.

BREAK   10:15 A.M. - 10:30 A.M.

POSTER SESSION 2   10:30 A.M. - 11:30 A.M.

BREAK & SCORING BY JUDGES   11:30 A.M. - 11:45 A.M.

CLOSING REMARKS & AWARDS   11:45 A.M. - 12:00 P.M.

Multi-Center Collection of Scleral Lens Outcomes: Patient Demographics in the United States

Authors: Ahsan Omer B.S., Kelsea Skidmore O.D., M.S., Maria Walker O.D., Ph.D.

Purpose/Objectives: The Multi-center Collection of Scleral Lens Outcomes (MCSLO) study is a retrospective cohort study of scleral lens (SL) wearers in the United States. Here we report on patient demographics, indications, and SL diameter.

Background: Scleral lenses are prescribed to patients as custom specialty contact lenses to manage ocular surface diseases. Due to the presence of underlying disease in most SL wearers, it is imperative to understand the outcomes of patients wearing these medical devices. The most reported indications for SL include keratoconus, post-surgical corneal irregularities, and dry eye disease; however, there have been no randomized clinical studies to assess the demographics, indications, and outcomes of SL wearers in the United States. The long-term goal of this research is to estimate the incidence of adverse events with SL, and this is the initial report on the demographics of SL wearers in the US.

Methods: Clinical sites were recruited via email, word-of-mouth, and online advertisements; interested parties completed an eligibility survey, and enrolled sites de-identified and submitted complete chart history for up to 25 randomly selected SL patients. Data was extracted from records and uploaded to REDCap, then demographic data as well as SL diameter was analyzed.

Results: From Aug 2022 to Sept 2024, 194 clinical sites completed eligibility surveys and 134 (66%) were eligible, and as of Sept 2024 a total of 740 records have been received from 32 clinical sites. Once the data analysis is completed, we will categorize patient demographics, specifically their sex, systemic and ocular co-morbidities, indication for SL wear, SL diameter, history of overnight wear, and rate of adverse events will be quantified.

Conclusions: The MCSLO study represents the first major effort in the US to collect data directly from SL records in a multi-center clinical study, which will help to understand and properly manage this high-risk patient population.

Epidemiology of Firearm Injuries in Texas: An Analysis of Trends and Geographic Disparities from 2018-2023

Authors: Elizabeth Eversole, Aleah Frison, Yabo Niu, PhD, Daniel Bonville, MD, Summer Chavez, DO, MPH, MPM

Background: Gun violence presents a significant public health challenge across the United States, affecting healthcare systems and communities nationwide. In Texas, Jaws regarding firearm carry have changed significantly in recent years, yet the impact on specific regions and demographics remains unclear. This study addresses gaps in understanding the geographic distribution of firearm injuries and the potential influence of place-based social determinants of health (SDoH) across Texas counties.

Objectives: The primary aim of this study is to characterize the epidemiology of firearm injuries in Texas from 2018 to 2023, with a focus on identifying geographic trends and the influence of place-based factors on injury prevalence.

Methods: This retrospective study analyzes de-identified data from the Texas Emergency Department Public Use Data File (PUDF) and inpatient and outpatient hospitalization records from the Texas Department of Health and Human Services. Our dataset encompasses firearm-related injuries from inpatient and outpatient records reported from 2018 to 2022, as well as 2023 Q 1-Q3 inpatient data. Descriptive analyses were performed to calculate injury rates by county and identify potential geographic disparities.

Results: Preliminary findings reveal that several rural counties exhibit high rates of firearm injuries, contrary to the common perception that gun violence is primarily an urban issue. The top ten counties with the highest firearm injury rates per 1,000 population are Potter County (1.69), Duval County (1.52), and Lubbock County (1.51), among others.

Conclusions: These initial findings underscore the need to reevaluate assumptions about the urban-centric nature of firearm violence. High rates in rural areas suggest that targeted interventions in firearm safety and violence prevention may benefit communities statewide. Further analysis will explore the role of SDoH and other place-based characteristics in influencing firearm injury rates across Texas.

Understanding and Improving Adherence to Substance Use Program Referrals: A Study on Under-Insured and Uninsured Individuals

Authors: Duque, Alejandra, B.S., Benjamin King, Ph.D., M.P.H., Christina Eyman, D.B.H., M.H.A.

Background: The opioid epidemic in the U.S. highlights the pressing need to improve adherence to substance use treatment programs. Despite efforts to the opioid address this crisis, low adherence to treatment remains a challenge. Reports indicate that 2 million individuals are currently battling opioid use disorder, with 10.1 million misusing prescription opioids (SAMHSA, 2022; HHS, 2021). Texas's Outreach, Screening, Assessment, and Referral (OSAR) strive to improve access to substance use services, yet low adherence continues to limit their impact.

Objectives: By comparing successful and unsuccessful referral outcomes, this study aims to identify key barriers to treatment engagement.

Methods: Data were analyzed from 1A45 participants referred through OSAR between January 2023 and January 2024. Exclusion criteria included age under 18, pregnancy, incarceration, intravenous drug use, and multiple screening reports. From this initial population, an eligible sample of 260 referral program participants was selected. Data were de-identified for confidentiality. Participant, treatment, and referral characteristics such as gender, race, active substance use, substances being used, age at first use, housing status, prior healthcare access, recommended treatment type, diagnosis severity, and referral success were abstracted.

Results: Every participant, treatment, and referral characteristic tested showed no association with referral completion rates. However, a wide variance in treatment completion was observed between groups partitioned by the substance for which treatment was being referred. This ranged from 28.6% referral success for clients misusing opioids, to 52% for participants misusing alcohol, up to 95% referral success for clients with more than one substance (polysubstance) listed in their record.

Conclusions: These findings suggest that treatment referrals are broadly and equitably accessible. However, further investigation into social and structural barriers is essential to enhance adherence and improve outcomes in vulnerable populations. Referrals made for participants within certain substance use patterns need to be further investigated to understand the wide disparities in referral success rates identified.

Identifying Barriers and Facilitators Faced by Community Health Workers: A Qualitative Study in the Sunnyside and Pasadena/Galena Park Neighborhoods

Authors: Amanda Hernandez

Background: This study explores the common barriers and facilitators faced by Community health workers (CHWs) in Houston, Texas as they build trust, promote preventive health, and aim to reduce health disparities in two of the city's marginalized neighborhoods. CHWs play a crucial role in addressing socioeconomic disparities, language differences, and limited resources by connecting individuals to essential services. Working within their communities, CHWs build trust and promote wellness, with the goal of reducing health disparities. This study explores the common barriers and problems faced by these CHWs in Houston, Texas.
Objectives: The study aimed to identify the most common barriers and facilitators faced by community health workers in the Sunnyside and Pasadena/Galena Park neighborhoods of Houston.

Methods: A series of in-person interviews were conducted to explore the challenges faced by community health workers in the Sunnyside and Pasadena/Galena Park communities. The interviews included two group interviews- the CHW teams from each neighborhood-and a series of individual interviews with each CHW to understand their experience. Interviews were transcribed and analyzed using NVivo software to identify recurring themes and patterns.

Results: CHWs bring dedication to their communities. However, they encounter barriers such as: low community awareness, competing personal priorities, constraints like childcare, lack of trust in program incentives, and language barriers. However, facilitators supporting CHW effectiveness stemmed from a management structure emphasizing independence, joint problem-solving, and ongoing training which enhanced CHWs' abilities to respond to community needs.

Conclusions: Enhancing participation requires addressing logistical, cultural, and social barriers faced by clients. By increasing community awareness, fostering trust, providing support, and ensuring language accessibility, CHW programs can be better tailored to meet the needs of underserved populations. Addressing these challenges is valuable given that CHWs recognize the impact of their work, but face burnout and discouragement when these persistent barriers limit their effectiveness.

Evaluating the Efficacy of Therapeutic Interventions for Post-Stroke Dysphagia: A Comparative Analysis of Short-Term Swallowing Improvements and Long-Term Health Outcomes

Authors: Areeba Al-Sharfeen, Camilla Arguedas, Dr. Lu Wang

Background: This study examines the impact of risk factors, cultural beliefs, and socioeconomic factors on the progression of post-stroke dysphagia to severe complications, such as aspiration pneumonia and malnutrition. Current research highlights age, stroke severity, and comorbid conditions as key predictors of dysphagia outcomes, yet gaps remain in understanding the effects of cultural and socioeconomic influences on patient adherence and treatment outcomes.

Objectives: The study aims to (1) identify cultural, ethnic, and socioeconomic factors affecting the management and progression of post-stroke dysphagia, (2) determine specific risk factors associated with severe complications, and (3) assess the effectiveness of existing prognostic indicators in facilitating proactive management.

Methods: A literature review was conducted, synthesizing findings from 10 articles published in the last 10 years. The review focused on studies exploring cultural beliefs, socioeconomic influences, and innovative interventions, such as transcranial direct current stimulation (tDCS), to understand gaps in dysphagia management within diverse populations.

Results: Research emphasizes the importance of early intervention in reducing severe dysphagia complications. Studies on tDCS show promising improvements in swallowing function when combined with traditional therapies, though accessibility issues limit applicability. Findings also reveal that cultural beliefs around caregiving and diet, along with socioeconomic disparities, affect patient adherence and treatment outcomes.

Conclusions: Incorporating cultural and economic considerations into dysphagia management could enhance patient adherence and outcomes across diverse groups. This study advocates for a holistic, interdisciplinary approach, tailoring early intervention strategies to patient-specific needs. Such an approach may improve care equity, reduce healthcare costs, and ultimately enhance quality of life for post-stroke dysphagia patients.

Context Effects on Sublexical Processing in Older and Younger Neurologically Typical Adults
Authors: Caroline Cone, Brandi BeCoates, Heather Dial PhD

Background: Prior behavioral work [CC1] (Dion, et al., under review) has indicated that the impact of context on language processing may differ between older and younger adults. There is an opportunity to further evaluate the impact of context on language from a neural perspective using event related potentials (ERPs). ERPs are derived from electroencephalography (EEG) to provide a time-locked measurement of electrical brain activity in response to a stimulus. Specifically, the N400 component is a negative peak around 400 milliseconds after the stimulus, with a larger N400 component correlating to semantically unexpected or incongruent stimuli. This current study aims to provide both behavioral and neural data to evaluate the influence of context on language processing in older and younger neurotypical adults, thus providing a basis for future testing ng in people with language disorders like aphasia.

Objectives: To provide both neural and behavioral data to identify if there is a difference in the influence of context on language processing in older and younger neurotypical adults

Methods: To determine how biasing each sentence stem is for a single word stimulus, we examined the cloze probability of proposed stimuli. Data were collected using a Qualtrics survey (n=122). Participants responded to sentence stems with individual, single syllable words they thought best completed the sentence stem. The cloze probability for the target response was calculated by dividing the number of times that word was chosen by the total number of responses. Direct next steps include behavioral and ERP sessions with recruited participants.

Anticipated Results: We anticipate that our chosen stimuli are sufficient to be used in our study. Direct next steps include behavioral and ERP sessions with recruited participants.

Adverse Maternal Health Outcomes Among Texas Women Living in Rural Communities

Authors: Cassie Leissner, Kenneth Janda

Background: Women in rural areas face more challenges accessing healthcare than those in urban areas, often leading to poorer health outcomes for mothers and children. Studies show higher rates of adverse outcomes, including pre-pregnancy hypertension and ICU admissions, among pregnant women in rural areas. While health disparities between these populations are known, few studies have quantified this gap or examined contributing demographic factors.

Objectives: This study aims to assess whether living in rural communities negatively impacts maternal and child health in Texas. We will quantify any associations between health outcomes in rural versus urban areas, identify trends over recent years, and identify any disparities.

Methods: Birth records from 2016-2022 are being requested from Texas DSHS's Vital Statistics Department. Birth records will include outcomes such as pre-eclampsia, gestational diabetes, and pre-term birth. Once received, we will generate descriptive statistics, compare rural and urban areas with bivariate statistics, use chi-2 analysis to evaluate independent relationships, and use regression models to account for confounders in assessing odds of adverse maternal and child health outcomes among women residing in rural areas.

Results: Upon completion, we anticipate finding greater odds of adverse maternal health outcomes among women in rural areas compared to women in urban areas. We are currently in the data request phase and are awaiting IRB approval from DSHS. Requesting data involves an extensive process to protect individuals' health information. This process, from request to data receipt, can take 6 months to a year. Publicly available datasets often suppress data when counts are low to protect privacy, which can lead to underreporting. To ensure accurate analysis and to prevent underreporting, we have requested unsuppressed data from DSHS.

Conclusions: This study is in progress and awaiting IRB approval from DSHS. Upon receiving the data, we will assess and quantify the association between maternal health outcomes in rural and urban areas.

Housing status and treatment setting impact treatment completion rate in individuals suffering from substance use disorder

Authors: Comfort Adedeji, Dr. Ben King

Background: Substance Abuse Disorder (SUD) is a complex condition in which there is uncontrolled use of a substance despite harmful consequences. SUD is killing people in homelessness at ever increasing rates due to lethality of drugs and the social and economic pressures of homelessness that makes people feel trapped. One of the CDC's recommendations to address the increases in fatal overdoses is to expand access to and provision of treatment for substance use disorders. This project aims to delve into treatment disparities for SUD in the housed vs unhoused individuals.

Objective: To compare treatment settings for improved treatment completion among individuals experiencing homelessness and suffering from drug overdose.

Methods: The Treatment Episode Data Set (TEDS) system comprises demographic and drug history information about each encounter funded by the Substance Abuse and Mental Health Services Administration (SAMHSA). TEDS-D records the treatment data available through discharges. This database was used to analyze the impact and the relationship of housing on treatment outcomes. We collapsed treatment completion into a dichotomous outcome and removed "transfers" as they did not indicate a true outcome.

Results: Patients who maintained housing completed treatment 52.3% and those for whom homelessness did not change over the course of treatment completed their SUD treatment 50.3% of the time. Treatment completion rates in unhoused individuals were lower in all but two treatment settings (both 24 hour detox program categories) in comparison to the housed individuals. It is interesting to note that these two treatment settings were the most commonly accessed and least time intensive options available (24 hour detox versus residential and ambulatory program types).

Conclusion: Overall, treatment completion rate for SUD is higher in housed individuals compared to unhoused individuals (absolute-diff: 2.0%, p<0.05). Completion rates were considerably higher for those who entered housing at some point during treatment and dramatically low for those who lost their housing during enrollment in a treatment program. These findings emphasize the need for wrap around services for those in treatment and the vital importance of residential programs for people experiencing homelessness.

Diet and activity behaviors in ROTC cadets in a weight management program: Does access to healthcare affect ability to meet Army body composition requirements?

Authors: Bennett D. & Mendoza M., Harrison L. PhD, LAT, ATC

Background: ROTC cadets are held to strict physical and body composition standards to maintain military readiness. Limited research addresses healthcare access for ROTC cadets in weight management, leaving gaps in understanding how healthcare interventions might support cadets in meeting physical requirements and maintaining long-term health.

Objectives: To assess healthcare access trends as part of a larger study examining the impact of a weight management program on ROTC cadets' diet, body composition, and quality of life.

Methods: ROTC cadets enrolled in the Army Body Composition Program at UH participated in a 14- week weight management class. Those who consented completed self-reported surveys and underwent body composition assessments at the beginning and end of the study. The self-reported surveys assessed demographics, eating behaviors, quality of life, and perceived access to healthcare. The healthcare access questions were adapted and modified from a previous 2021 survey-based student athlete study to assess Cadets' access and experience with on or offsite healthcare. The survey responses were entered into a spreadsheet and analyzed for positive or negative trends.

Results: During onboarding, cadets gave consent to participate and began the survey. Cadets participated in the healthcare access portion of the survey, including questions related to medical treatment. All students indicated that they either "completely" or "mostly" understood the role and capabilities of UH campus health and wellness resources. Further, all answered "yes" when asked if their Cadre encouraged them to seek treatment when an issue arises. When asked if they felt comfortable in seeking on campus healthcare, responses ranged from "strongly agreed," "agreed," and "neutral."

Conclusions: ROTC cadets failing to meet body composition requirements appear to have sufficient healthcare access. More data needs to be collected to analyze this trend for significance.

The production of rhotics by bilingual children with sensorineural hearing loss who use cochlear implants

Authors: KD. Awad, A. Khokar, C.E. Goodin-Mayeda, & F. Bunta

Background: Children with sensorineural hearing loss who use cochlear implants have access to sound that is qualitatively different from hearing with an intact auditory system. A known issue with accessing sound using a cochlear implant is the lack of fine temporal cue resolution, which may affect English and Spanish "r" sounds differentially.

Objectives: We are investigating the production of rhotic sounds ("r" sounds) in English and Spanish produced by bilingual children with hearing loss who use cochlear implants and their peers with typical hearing. We expect to find differential effects based on language and hearing status as well as an interaction effect between these variables.

Methods: Our study uses data collected from bilingual children with hearing loss and their peers with typical hearing using a single-word elicitation task. We are focusing on the production of /ɹ/ (English), /r/, and /ɾ/ (Spanish). The independent variables are language (Spanish versus English) and hearing status (hearing loss versus typical hearing). Our dependent variable is the accuracy of the above-identified sounds.

Results: We predict that children with hearing loss will have less accurate rhotic productions than their peers with normal hearing and there will be an interaction between hearing status and language. Our measurements are nearing completion, and our analyses are expected to be done shortly. Conclusions: Understanding speech development in bilingual children with hearing loss and their peers with normal hearing is critical for providing appropriate preventative care to children with speech, language, and hearing disorders so they can reach their full potential.

Assessing Lower Back Pain Treatment via Patient Interviews

Authors: Castillo, Edgard, BSA; Sarpong, Albert, BSS; Rowland, Kevin, Ph.D.

Background: Chronic lower back pain (LBP), defined as lumbar pain persisting for more than 12 weeks, affects approximately 13% of adults in the United States and is a leading cause of disability and healthcare expenditure globally1. There is mixed evidence that exercise treatment is more effective for chronic LBP compared to usual care2. While numerous studies have examined LBP treatments in various populations, there is a notable lack of research focusing on underserved urban communities. This study aims to explore patient's experiences with LBP remedies in underserved urban communities via interviews.

Objectives: To evaluate the perceived effectiveness of current LBP treatments among residents of Houston's Third Ward through in-depth patient interviews, identifying barriers to care and potential areas for improvement in treatment approaches. We hypothesize that regular physical activity (regardless of activity type) will result in reduced pain levels among participants.

Methods: This study will involve interviews with residents from the Third Ward community. Participants will be adults over 18 years of age who have experienced LBP for at least 12 weeks. The interviews will collect demographic data and assess the participants' experiences with various LBP treatments and its effects on pain management.

Results: We anticipate that this study will reveal unique insights into the LBP treatment experiences of Third Ward residents. Common themes may include the impact of socioeconomic factors on treatment adherence, the role of community support in managing LBP, and the need for emphasis on exercise as a treatment modality. The data will be analyzed using descriptive statistics, chi-square tests for categorical variables, and t-tests for continuous variables.

Conclusions: This study aims to provide insights into the effectiveness of exercise as a non-pharmacological treatment for LBP in underserved communities. Findings will be disseminated within the community to support informed decision-making and future community health initiatives.

Stress and Loneliness: Mediating the Relationship Between Perceived Social Support and Health Behaviors Among Black Adults

Authors: Hannah Winter, Gwynn Durham Seokhun Kim, Ph.D., Lorna H. McNeill, M.P.H., Ph.D., FSBM, Dalnim Cho, Ph.D.

Background: Black adults experience considerable health disparities, with physical inactivity and sedentary behavior being significant contributors. While social support is known to increase physical activity (PA) and reduce sedentary behavior, its specific influence on these behaviors in Black adults is underexplored. Although social support can alleviate stress and loneliness—both of which hinder PA and promote sedentary behavior—the mechanisms through which stress and loneliness mediate the effects of social support on these behaviors in Black adults remain unclear. This understanding is critical for developing culturally relevant interventions that promote active lifestyles and reduce health disparities in this population.

Objectives: To assess the indirect relationship between perceived social support and health behaviors (PA and sedentary behavior) mediated by stress and loneliness among Black adults.

Methods: We conducted a cross-sectional analysis of Project CHURCH, a community-based study by The University of Texas MD Anderson Cancer Center in partnership with Black churches in Houston. This study engaged 1,827 Black adults to address cancer research participation barriers. Structural equation modeling assessed direct and indirect effects, using stress and loneliness as mediators, adjusting for covariates. Bootstrapping with 2,000 iterations provided standard errors (SEs) for estimates, using missForest imputation for missing data.

Results: Social support had a significant indirect effect on PA (b=0.004, SE=0.002, p=0.018) and sedentary behavior (b=-0.927, SE=0.369, p=0.012) via stress, which was associated with more PA and fewer sedentary hours. Social support also indirectly influenced PA (ab=0.007, SE=0.003, p=0.021) and sedentary behavior (ab=-3.062, SE=0.653, p<0.001) through loneliness; social support reduced loneliness, associated with increased PA and fewer sedentary hours.

Conclusions: Higher levels of social support positively impact PA and reduce sedentary behaviors in Black adults, with stress and loneliness as mediators. Future interventions should strengthen social networks to alleviate psychosocial stressors and loneliness, enhancing health outcomes in this underserved population.

The Effects of Amylin on the Antimicrobial Activity of Amyloid Beta and its Implications on Alzheimer's Disease

Authors: Jada Dye, William Huang, Fernanda Navarro, Tameka Clemons, Ph.D.

Background: An important physicality of Alzheimer's Disease (AD) is the characteristic of amyloid beta (AB) plaques in the brain due to oligomerization. AB has also been shown to act as an antimicrobial protein (AMP). Amylin is known to contribute to Type II Diabetes through the formation of protein aggregates and has some AMP activity.

Objectives: The goal of this study is to corroborate the role of amylin and amyloid beta as antimicrobial proteins and determine if amylin acts as a regulator of amyloid beta's antimicrobial activity in the presence of gram-positive bacteria Staphylococcus epidermidis (S. epi).

Methods: AB and amylin were oligomerized using sonication and incubation. S. epi was diluted to a concentration of 0.063 (McFarland standard), then each mixture underwent serial dilutions, where columns 6, 7, and 8 were streaked on an agar plate and incubated overnight. Each protein combination was tested on the growth of S. epi twice.

Results: The plates with S. epi + AB demonstrated less growth than the control of S. epi. The plates with AB and amylin together showed less growth than the control as well.

Conclusions: Past studies have shown that AB and amylin behave as antimicrobial proteins, and our study aimed to see how they would affect each other in the same environment. The data demonstrates that both continue their AMP behavior in the presence of S. epi. Furthermore, amylin seems to work in tandem with AB to contribute to their AMP behavior. Our research corroborates the role of amylin and AB as AMPs and provides evidence of a possible role of amylin in the regulation of AB. The relationship between amylin and AB gives-- ontest to the relationship between Type II diabetes and AD.

Impact of total intravenous anesthesia (TIVA) vs volatile opioid based anesthesia on CRS-HIPEC surgery patients

Authors: Jasmin Ali, Nishanth Napa, Juan P Cata M.D.

Background: Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is a targeted cancer treatment where heated chemotherapy is applied directly to the abdominal cavity during surgery, enhancing treatment efficacy and minimizing systemic side effects. CRS-HIPEC is commonly used for cancers with peritoneal metastasis, including advanced ovarian, colorectal, and gastric cancers. Anesthesia choice in CRS-HIPEC may influence cancer outcomes. Propofol-based total TIVA has shown potential benefits in reducing side effects like nausea and promoting smoother recovery, while also potentially offering anti-tumor effects through pathways that limit cancer cell proliferation. In contrast, volatile anesthetics, commonly used for their proven safety, may pose risks, such as immunosuppression and potential promotion of cancer cell survival. Further research is warranted to assess how anesthetic choice in CRS-HIPEC impacts long-term cancer outcomes

Objectives: Determining if TIVA versus Volatile Opioid-Based Anesthesia in CRS-HIPEC surgery patients is associated with better oncological outcomes, including the rate of recurrence and survival.

Hypothesis: In patients undergoing CRS-HIPEC surgery, the use of TIVA will result in lower postoperative rates of cancer progression and mortality when compared to patients who either underwent the CRS-HIPEC procedure with volatile-opioid-based anesthesia or the combination group using TIVA and volatile-opioid-based anesthesia.

Methods: In this study, a retrospective analysis examined 570 adult patients undergoing elective CRS-HIPEC surgery for primary or recurrent peritoneal malignancies from April 1, 2016, to December 31, 2023. Patients received either TIVA, volatile opioid-based anesthesia, or a combination. The study's primary endpoints are overall and progression-free survival, with secondary endpoints including intraoperative hemodynamics, postoperative pain and opioid use, complications, inflammatory markers, and hospital length of stay. Statistical analysis will compare demographics and clinical outcomes, utilizing Kaplan-Meier survival analysis and Cox proportional hazards models to assess associations between anesthesia type and outcomes.

Results: Data is currently being analyzed by a statistician. Conclusions: Conclusions are still being examined.

Standardized Assessment Tools for Hidradenitis Suppurativa: Challenges and Innovations
Authors: Iman Bouchelkia, Jennifer Ezuruike

Background: Hidradenitis Suppurativa (HS) is a chronic skin condition that necessitates reliable assessment tools to ensure accurate diagnosis, effective treatment, and improved patient outcomes.

Objectives: This review aims to summarize the assessment tools for HS.

Methods: This systematic review followed PRISMA guidelines, identifying 213 studies on HS assessment tools. It aims to summarize advancements, outline strengths and limitations, and advocate for standardized tools to enhance clinical and research outcomes.

Results: The review highlights a spectrum of assessment tools, each with unique benefits and limitations. The Hurley staging system is a standard for categorizing HS severity, particularly in surgical contexts, but lacks dynamic assessment capabilities. The HS-PGA offers a quick, objective severity measure useful in clinical settings, though it may overlook subtle changes, especially in mild cases. HiSCR, widely used in trials, shows strong test-retest reliability and requires a 50% reduction in lesions, but it does not account for pain or quality of life. The HS-IGA offers predictive value for treatment outcomes but may not effectively capture responses in patients with fewer lesions or complex tunnels.

For quality-of-life assessments, the HiSQOL covers psychosocial and symptomatic burdens with 17 items assessing activities, emotional impact, and symptoms, though it requires further validation across populations. The Hidradenitis Odor and Drainage Scale (HODS) addresses drainage and odor but has generalizability concerns due to small sample sizes. Pain scales, such as the Numeric Rating Scale (NRS) and Visual Analog Scale (VAS), assess pain intensity but are limited by recall bias and response variability. Additional tools, like HASI-R and SAHS, offer insights into severity and treatment response but fall short in capturing scarring and quality-of-life impacts.

Conclusions: HS assessment tools show diverse strengths and limitations. Standardized terminology and methods are crucial for consistent evaluation of treatment efficacy and patient outcomes. These refined strategies will improve patient care and support therapeutic advancements, addressing the complexities of HS in clinical and research settings.

Predicting the Intentions of Family Physicians to Remain at Community Health Clinics
Authors: Steven Biegel, Kelly House, Ben King, Ph.D., M.P.H.

Background: Community Health Center (CHC) patients are often affected by multiple health disparities, including higher incidences of disease and lower life expectancy. Compounding this heightened vulnerability, the high turnover rate for family physicians (FPs) is disruptive for patient care, and increases the burden for CH Cs who must constantly recruit and train providers. Objectives: Does finding meaningfulness in their work influence FPs intention to stay at a CHC? If FPs do not find their worl< meaningful, can satisfaction with their compensation predict their ITS?

Method: We obtained family physician response data from the Health Resources and Services Administration (HRSA) 2022-2023 Healthcare Workforce Survey (HWS). 958 family physicians completed the survey and were included in this analysis. Levels of multiple domains in the HWS were summarized to characterize the drivers of family physician turnover in HRSA-funded clinics. Logistical regression models were used to assess the relationship between family physicians' intention to stay in their jobs for the next 12 months (ITS) and satisfaction with their compensation, and between ITS and finding meaningfulness in their work, separately and adjusting for each other.

Results: Overall, 83.6% of physician respondents agreed that they intended to stay in their current position for at least the next year, while over 16% were neutral or planned on leaving. Nearly 97% of FPs reported finding meaningfulness in their job. Meanwhile, 56% of FPs endorsed items about compensation and benefits on average. For FPs who reported low satisfaction with their compensation and benefits, feeling that their job was meaningful meant that they were 3.25 (95% Cl: 2.22-4.75) times more likely to stay in their position. Those who disagreed that their job was meaningful were 7.4 (95% Cl: 1.23-45.0) times more likely to stay in their position when they agreed with their compensation and benefits. Chi-square tests of independence revealed significant differences between the groups in these two models of X2 = 39.59, p<0.001, and X2= 5.68, p = 0.017, respectively.

Conclusions: The results support our hypothesis that meaningfulness is directly correlated with intention to stay for family physicians working at CH Cs. Those that found meaning in their work were much more likely to stay at their job relative to those who did not find meaning in their work. We also found that compensation matters more to intention to stay when meaningfulness is absent. This means that CHCs may be able to increase physician retention by bolstering ways in which physicians find meaning in their work rather than simply raising physician salaries.

Perceived Health and Healthcare-Seeking Behavior Among Latino Immigrants with Unauthorized Immigration Status: Retrospective Analysis

Authors: Julissa Mireles BS, Maria F. Ramirez Perez BS, Raphael Mora BS, Yabo Niu Ph.D., Luz M. Garcini Ph.D., M.P.H.

Background: Latino immigrants comprise a significant portion of the U.S. population, with approximately 11 million with unauthorized status.1 This group faces extensive barriers to healthcare, such as fear of deportation, financial constraints, lack of insurance, and language barriers, which result in lower self-reported health and use of preventive services.2,3 Systemic factors exacerbate these barriers, limiting affordable healthcare access. Social isolation, financial pressures, and discrimination heighten depression and anxiety risks in this population.4 This study investigates how perceived health influences healthcare-seeking behaviors within this resilient community.

Objective: Analyze the association between perceived health (physical and mental) and healthcare-seeking behavior among U.S. Latino immigrants.

Methods: We conducted a retrospective analysis of 254 Mexican immigrants near the California-Mexico border, using data collected from adults (18+) between November 2014-January 2015 using Respondent Driven Sampling (RDS). Recent healthcare use in the past 12 months served as the measure of health-seeking behavior, while chronic conditions, health satisfaction, and mental health (depression and anxiety) represented perceived health. Descriptive statistics, chi-square tests, and logistic regression assessed the impact of six variables (health satisfaction, chronic conditions, depression, anxiety, English proficiency, and time in the U.S.) on healthcare use.

Results: Among participants, 62.6% reported recent healthcare use, with 53.2% having one or more chronic health conditions. Depression and anxiety were reported by 22.05% and 16.1% of participants, respectively. Logistic regression showed significant associations between recent healthcare use and both chronic health conditions ($p = 0.0066$) and higher English proficiency ($p = 0.0137$). However, no significant associations were found between recent healthcare use and depression, anxiety, or health satisfaction ($p = .437$).

Conclusions: Chronic health conditions significantly increased healthcare use, while health satisfaction and mental health did not. Higher English proficiency and longer U.S. residency also positively impacted healthcare access. Further research on healthcare barriers is essential to create supportive policies for this vulnerable population.

Investigating the Impact of Shared Decision Making in Patients with Schizophrenia: A Systematic Review

Authors: Kierra Jackson, Alyona Lee, Dr. Mahbub Hossain

Background: Schizophrenia is a chronic mental disorder affecting emotional, cognitive, and behavioral well-being. It is often characterized by poor treatment adherence, frequent relapses, and increased hospitalizations. Shared decision-making (SDM) has been proposed to enhance adherence by involving patients in collaborative treatment decisions. However, its impact on adherence, quality of life, and mental health outcomes remains uncertain.

Objectives: This review evaluates the effectiveness of SDM interventions on treatment adherence in individuals with schizophrenia and explores outcomes like quality of life, mental health, self-efficacy, trust in healthcare providers, and self-regard.

Methods: Following PRISMA guidelines, PubMed, CINAHL, and Web of Science were systematically searched for studies evaluating SDM interventions in schizophrenia. Included were randomized controlled trials, quasi-experimental, and observational studies assessing adherence. Data extraction was performed by two independent reviewers, and study quality was assessed using the Cochrane Risk of Bias Tool.

Results: Eight studies with 2,314 participants met inclusion criteria. SDM interventions improved adherence in most studies, increasing rates by 9% (78% vs. 69%, $p < 0.01$). Quality of life improved by 8.03 points ($p < 0.002$), and self-esteem increased by 4.06 points ($p < 0.001$). Additional outcomes included a significant increase in problem-solving ability (106.68 to 124.00, $p < 0.001$), and higher perceived autonomy support, patient activation, and communication confidence for SDM participants ($p < 0.05$).

Conclusions: SDM interventions improve adherence, quality of life, and self-efficacy in schizophrenia, but evidence on long-term health impacts remains unclear. Further research is needed to optimize SDM strategies and advance evidence-based care.

Assessing Limb Ischemia Risk in Peripheral Vascular Procedures: The Role of Femoral Artery Anatomy

Authors: Ayman AL-Zubi, Omar Samad, Chakravarthy M. Sadacharan, Ph.D.

Background: Peripheral vascular interventions, such as angioplasty and catheter-based procedures, carry a risk of limb ischemia, especially in cases where femoral artery anatomy varies significantly. Understanding these anatomical variations is essential to optimizing vascular access and minimizing ischemic complications.

Objectives: To evaluate how anatomical variations in the femoral artery contribute to limb ischemia risk during peripheral vascular procedures and to develop guidelines for procedural adaptations based on anatomical findings.

Methods: This study examined 104 femoral artery specimens from cadaveric dissections, focusing on branch points, diameters, and distances from the mid-point of the inguinal ligament. We assessed the impact of high bifurcation and circumflex femoral artery patterns on blood flow dynamics and correlated findings with clinical outcomes in patients who underwent peripheral vascular procedures. Imaging data, including CT angiography, supplemented the anatomical findings by providing flow pattern analyses in both normal and variant femoral artery structures.

Results: Anatomical variations were noted in 21 % of cases, with high bifurcation or dual circumflex arteries contributing to altered blood flow distribution and increased risk of ischemia. Patients with these variations demonstrated higher rates of limb ischemia, particularly when procedures required prolonged or extensive vascular manipulation. Our predictive model identified a correlation between specific femoral artery patterns and ischemic outcomes.

Conclusions: Femoral artery anatomy plays a critical role in limb perfusion during peripheral vascular interventions. Recognizing high-risk anatomical patterns preoperatively can aid in selecting alternative access points or procedural techniques to minimize ischemic complications.

Mental Health and the Association Between Asthma & Allergies Among Children and Adolescents during the COVID-19 Pandemic
Authors: Pamela Ulloa-Franco, Mark Mathews

Background: Previous studies have shown that children and adolescents who suffer from asthma and allergies are more likely to be at a higher risk for mental health issues like anxiety, depression, and ADHD.

Objectives: The purpose of this study is to elucidate the connection between asthma and allergies with mental health disorders like anxiety, depression, and other behavior and emotional disorders during COVID-19.

Methods: PubMed, Embase, and PsycINFO were searched for studies on the topics of asthma, allergies, and eczema in children and adolescents with relation to mental health, anxiety, and depression during the COVID-19 pandemic. After removing duplicates, these criteria yielded 117 results. Following screening, ultimately 52 articles were used in this review.

Results: This systematic review shows that children and adolescents with asthma and allergies exhibited negative mental health outcomes throughout the COVID-19 pandemic. 54% of the papers demonstrated that the pandemic intensified symptom severity due to increased health-related anxieties and social isolation. In addition to this, 35% of the papers found that rural and underserved populations experienced delays in diagnosis and treatment, worsened by social determinants of health such as socioeconomic status and limited healthcare resources. Lastly, 3 papers found that there was decreased healthcare seeking behavior in emergency rooms due to the fear of contracting COVID-19.

Conclusions: This review emphasizes how the COVID-19 pandemic intensified poor mental health in children and adolescents with asthma and allergies. An integrated, multidisciplinary approach, including routine mental health screenings and expanded telehealth services, could address these challenges in the future.

Quantifying Martin-Gruber Anastomosis: A Cadaveric Study in Linkage to Transplantation

Authors: Paul Tran, Chakravarthy M. Sadacharan, Ph.D.

Background: As there are many injuries associated with the Median (MN) and Ulnar nerves {UN}, there is also more to assess about iatrogenic and trauma-related injuries concerning the Martin-Gruber anastomosis {MGA).

Objectives: The present aim of this study is to give further insight within both the measurements and parameters of the MGA.

Methods: Human cadaveric forearms (n = 24) were carefully dissected in anatomy lab at Tilman J. Fertitta Family College of Medicine to adequately map the pathways of MGA. The anastomosis data points were then measured for documentation and storage purposes. They were then compared to previous literature to assess for measurement variability.

Results: The average recorded length from the ME to the MN was approximately 6.5 cm. The average recorded length from the ME to UN was 8.2 cm. The average recorded diameter width between the branch points of the MN and UN was 5.9 cm.

Conclusions: From this study, there seems to be some variations in terms of distance from the ME to multiple points of measurements regarding the MGA. The pattern variations may have contributed to the differences in measured parameters. These variables can then be used as guidelines for surgeries and traumas within proximity of the MGA to avoid unnecessary nerve damage outcomes in relevant procedures such as ulnar nerve transplantation.

Factors Associated with Type 2 Diabetes Mellitus and Cost of Management and Prescriptions

Authors: Omolola Adepoju, Ph.D., M.P.H., Carlos Fuentes, Jiangtao Luo, Ph.D., LeChauncy Woodard, M.D., M.P.H., Ben King, Ph.D.,M.P.H., Todd Prewitt, Pete Womack, William Glasheen, Jessica Dobbins, Ioannis Kakadiaris, Ph.D., Winston Liaw, M.D., M.P.H., Rajit Shah, Mohammad Madani

Background: Management and complications associated with type 2 diabetes mellitus (T2DM) contribute to rapidly increasing costs. The cost of managing disease and prescriptions vary widely based on demographic variables such as gender, ethnicity, and insurance.
Objectives: To quantify how diabetes complications and demographic characteristics affect medical and prescription costs.

Methods: Medical and pharmaceutical costs were analyzed using enrollment claims data (2016-2020) from a national insurer. The study population included adults aged 65+ with T2DM enrolled in a Medicare Advantage plan. Dependent variables were medical costs and prescription costs, and independent variables included demographics (age, sex, race/ethnicity, insurance plan), geography (state, rural vs. non-rural), primary language, and DCSI. Two regression models were used—one for medical costs and one for pharmaceutical costs.

Results: Between 2016 to 2020, 48,843 individuals met the inclusion criteria. In model 5 (medical costs), females incurred an additional $238.35 annual cost compared to males. Black individuals had $1458 and Hispanic individuals had $1680 lower medical costs than White individuals. Spanish speakers had $2523 lower costs than English speakers. In model 6 (prescription costs), females incurred an additional $171 annual prescription cost compared to males. Black individuals saw $483 fewer prescription costs when compared to White individuals. Spanish speakers paid $326 less than English speakers. Dually enrolled patients paid an additional $3196 than those who were not dually enrolled in Medicaid and Medicare.

Conclusions: Younger age, female sex, rural residence, English-speaking, and dual enrollment in Medicare/Medicaid were associated with increased medical and prescription costs. Hispanic and Black ethnicity were associated with decreased costs. These results will inform a tool for primary care that uses artificial intelligence/machine learning to predict cost of care and encourage interventions to decrease costs.

Medical Student and Program Directors attitudes and opinions about the use of artificial intelligence in medical education

Authors: Alex Gibson, Ryan Wong, and Mike Liang

Purpose: This study aimed to explore the perspectives of medical students and program directors on the use of artificial intelligence (AI) in medical education.

Methods: A survey was distributed to gauge opinions on the potential benefits, challenges, and concerns regarding AI integration into the medical curriculum. Responses were collected from both groups, offering insight into the differences in perception between future physicians and educators.

Results: The majority of medical students expressed enthusiasm about AI's role in enhancing learning, particularly through personalized education, virtual simulations, and decision-making tools. Students highlighted AI's potential to supplement traditional learning, improve diagnostic accuracy, and help manage vast amounts of medical information. However, concerns were raised about over-reliance on AI, particularly regarding clinical reasoning and human judgment skills.

Program directors, while recognizing the potential of AI, exhibited a more cautious approach. They emphasized the importance of maintaining core competencies in clinical skills and communication while integrating AI. Directors also pointed to the need for updated curricula and faculty training to effectively implement AI-driven tools. Concerns about data privacy, ethical implications, and the risk of widening disparities in healthcare access were frequently mentioned.

Conclusions: The survey revealed a shared interest in AI's benefits but underscored the need for balanced integration, ensuring AI enhances but does not replace critical aspects of medical education. Both groups agreed that AI will play an increasing role in shaping the future of medical training.

Technology-enabled care coordination for children with debilitating chronic diseases: A systematic review

Authors: Sarah Strobel, Sabrina Chen, Hossain Md Mahbub

Background: During the COVID-19 pandemic, the adoption of virtual care appointments accelerated significantly. Given the limited access to in-person healthcare and the shortage of primary care physicians in rural areas, telehealth has emerged as an essential solution for enhancing healthcare accessibility. This systematic review examines the perspectives, challenges, and outcomes associated with integrating emerging technologies into care coordination for pediatric patients with chronic illnesses and disabilities. It focuses on continuity of care, accessibility for non-metropolitan populations, and the quality of healthcare delivery, aiming to determine how technology-enabled care coordination enhances the healthcare experience for both physicians and patients. The review also evaluates coordination outcomes, the effectiveness of various technological interventions, and their long-term impact on children's health.

Objectives: Evaluate the impact of technology-enabled care coordination on pediatric populations with complex medical needs and chronic illness. Identify the challenges with adopting virtual care models, and explore solutions for improving equitable access.

Methods: Using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines, we reviewed relevant literature on pediatric virtual care sourced from a wide range of studies, covering topics such as childhood cancer survivorship, children with complex medical needs, pediatric obesity management, movement disorders, and early childhood intervention. The concept of virtual care encompassed both telehealth services and the use of specialized medical professionals serving as virtual care coordinators.

Results: We identified 12 articles after literature search and screening that met all our eligibility criteria. An extensive review of various studies revealed that technology-enabled care significantly improves access to healthcare. Research has shown that virtual care models contribute to fewer unplanned appointments and emergency room visits. Pediatric patients managed through telehealth were less likely to require rehospitalization in the event of an unplanned visit. Studies highlighted that children with complex medical needs experienced improved healthcare outcomes with comprehensive virtual care models. Telehealth coordination led by APRNs was associated with increased caregiver satisfaction in managing medically complex children, with parents and guardians reporting more involvement in their child's care and higher rates of having their needs met. Additionally, some studies pointed to the potential benefits of technology-based functional assessments and digital health interventions to promote self-care practices. However, more research is needed to address challenges related to equitable access, privacy concerns, and technological limitations. Identified limitations included barriers to patient access to technology, the inability to perform physical exams, and potential isolation due to reduced in-person interactions.

Conclusion: Technology-enabled care has expanded rapidly in response to the demands of the COVID-19 pandemic, demonstrating promising results in maintaining continuity and enhancing the quality of pediatric healthcare, particularly in non-metropolitan and underserved areas. However, further research is needed to overcome barriers to equitable access and refine virtual care models to better serve diverse pediatric populations and ensure comprehensive, inclusive care delivery.

The effects of sleep duration and quality on the amyloid-Beta burden in patients with Dementia: a systematic review

Authors: Sarah Flores, Salvador Carrillo

Background: Dementia is defined as the severe decline in one or more cognitive fields such as memory, language production, and executive function, causing significant disruptions in the patient's life. Research has shown the link between amyloid beta deposition, or burden, and dementia, however, the research is lacking on the effects of reversing modifiable risk factors on amyloid plaque deposition. Our literature review is focused on analyzing the effects of sleep quality and duration on amyloid beta deposition in patients with dementia.

Objectives: How does sleep duration and quality affect the amyloid-Beta burden in patients with dementia?

Methods: This systematic review aims to analyze studies on the effects of sleep duration and quality on the outcomes of patients with dementia. We will be completing this systematic review in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We will be utilizing PubMed and UH Library databases for research articles that examine the effects of sleep duration and sleep quality on the amyloid-Beta burden in patients with dementia. The following keywords will be used: sleep duration, sleep quality, dementia, and cognitive decline.

Results: We expect to find a higher amyloid-Beta burden associated with shorter sleep durations and poor sleep quality (sleep latency, self-reported patients satisfaction, etc.).

Conclusions: While our literature review is not complete at this time, there is research that relates lower amyloid burden to patients who report higher sleep satisfaction/quality. However, further research needs to be conducted to corroborate a stronger correlation between amyloid burden and sleep quality as different factors may impact the findings, such as the lack of standardization of sleep measurements and unaccounted risk factors influencing amyloid burden.

CEAL Survey Examining Vietnamese Americans' Level of Trust in Sources of Information and Willingness to Participate in COVID-19 Clinical Trials

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Background/Significance: People of Vietnamese descent are one of the largest Asian American populations, but are underrepresented within the demographics of COVID-19 clinical trials. With the rising awareness of misinformation, there is concern about the sources of information Vietnamese Americans use and association with COVID-19 clinical trial participation.

Objective/Purpose: To investigate levels of trust in sources of information and correlate with the willingness of Vietnamese Americans to participate in SARS-CoV-2 trials.

Methods: The NIH Community Engagement Alliance (CEAL) Common Survey 2 contained questions about the level of trust in sources of information and willingness to sign up for a clinical trial for a COVID-19 treatment. The instrument was translated into Vietnamese and available electronically. Vietnamese adults in Texas were recruited between September 2021-March 2022 via partnerships with community organizations, health fairs, and clinics. Survey results were analyzed using logistic regression.

Results: In total, 212 were analyzed with case availability. Willingness to participate in a clinical trial was associated with trust in universities/hospitals (OR=4.91; 1.35-17.89) and the drug companies (OR=; 4.14; 1.77-9.67). Trust in information from federal (OR=2.27; 1.16-4.47) and local/state governments (OR=2.30; 1.17-4.52) was associated with a willingness to participate in a trial. Trust in information from local clinics was associated with unwillingness to participate in a trial (OR=0.30; 0.12-0.73).

Conclusion: The results provide insight into Vietnamese Americans' trusted sources of information regarding COVID-19 clinical trials and willingness to participate. Removing barriers of distrust is critical for improving racial and ethnic diversity in COVID-19 therapeutic clinical trials.

Examining Communal Coping Among South Asian Dyads Managing Breast Cancer

Authors: Shreya Desai, MS; Ranak Trivedi, Ph.D.

Background: Communal coping, or the sharing of stressors associated with an illness amongst dyads, improves health outcomes. Culture and gender roles influence how breast cancer is managed by South Asian survivors and the family and friends that support them. With breast cancer rates continuing to rise annually among South Asians, this study is imperative as communal coping has yet to be explored in South Asian patient-caregiver dyads.

Objectives: To assess how communal coping is expressed among South Asian breast cancer survivors, informal caregivers, and survivor-caregiver dyads using linguistic analyses.

Methods: Semi-structured interviews were conducted with adult breast cancer survivors and informal caregivers who self-identified as being of South Asian heritage. Interviews were transcribed by a professional service. Using Linguistic Inquiry Word Count software, we-ratios were measured and analyzed for concordance.

Results: In this study, 7 survivor-caregiver dyads, 1 survivor-caregiver-caregiver dyad, 5 survivors, and 4 caregivers completed the interview. We will explore how communal coping operates among these participants.

Conclusions: Our study in understanding the role communal coping plays in breast cancer care management amongst South Asians is innovative and hypothesis generating. Furthermore, our findings are vital to developing resources and services that can best support the psychosocial and cultural needs of South Asian breast cancer survivors and their informal caregivers.

Women that meet the muscle strengthening activity recommendation are less likely to report hypertension

Authors: Amanda Dike; Sumiya Wahab; Dr. Rosenda Murillo

Background: An estimated 43% of US women have hypertension, which can cause serious health conditions (e.g., stroke, heart attack). Previous research has shown that muscle-strengthening activity (e.g., resistance training, weightlifting) improves blood pressure in the general US population. However, less is known about this association among women across various racial/ethnic groups.

Objectives: To examine the association between muscle-strengthening activity and hypertension in US women and whether this association varies by race/ethnicity.

Methods: We used cross-sectional 2012-2018 National Health Interview Survey data on female participants ≥18 years of age (n=111,801). Hypertension was assessed based on whether they were told by a doctor that they had hypertension (yes vs no). Muscle-strengthening activity was categorized as 1) meeting guideline (muscle-strengthening activity ≥ 2 times per week), and 2) not meeting guideline (muscle-strengthening activity less than twice a week/never/unable). Logistic regression analyses were used to estimate the association between meeting the muscle-strengthening activity guideline and hypertension. Models were adjusted for age, education, race/ethnicity, and health insurance status. We also tested whether the association varied by race/ethnicity and stratified models accordingly.

Results: In adjusted models, compared with women that did not meet the muscle-strengthening recommendation, women that met the guideline were significantly less like to report having hypertension (Odds Ratio [OR]: 0.66, 95% Confidence Interval [CI]: 0.63-0.69). In models stratified by race/ethnicity, non-Hispanic White women, Hispanic women, and non- Hispanic Black women that met the muscle-strengthening guideline were significantly less likely Hispanic Black women that met the muscle-strengthening guideline were significantly less likely 0.82, 95% CI: 0.72-0.93, respectively).

Conclusions: Women that met the muscle-strengthening activity recommendation were less likely to report hypertension, with the strength of this association varying by racial/ethnic group. These findings underscore the importance of promoting participation in muscle-strengthening activity to potentially reduce hypertension disparities in women.

Characterizing Radiation-Induced Toxicity in Swallowing Muscles using Dixon MRI-derived Fat Fraction images

Authors: Irin Luke*, Sydney Thomas*, Sam Mulder, David Clifton Fuller MD, PhD

Background: Radiation-associated dysphagia (RAD) is a significant toxicity in patients treated for head and neck cancer, severely impacting survivors' quality of life and non-cancer mortality. Magnetic resonance imaging (MRI) Dixon T1 fat-water fraction (T1-FF) offers potential to measure changes in intramuscular physiology associated with RAD.

Objectives: This study aims to analyze changes in Dixon-MRI T1-FF as a potential correlate for RAD and the relationship between changes between baseline and follow-up (DT1-FF) and muscle radiation dose.

Methods: An NIDCR-funded prospective cohort followed 375 patients longitudinally after completion of external beam radiation therapy (EBRT) for >4-years with serial MRIs at baseline, during, and following radiation therapy. FF maps were derived from Dixon T1-weighted images. Segmentations were automatically generated with an atlas-based approach. Statistical analysis used paired-Wilcoxon signed-rank test to evaluate changes DT1-FF signal intensities across swallowing-related muscles and Pearson coefficient to correlate DT1-FF with muscle radiation dose (cGy).

Results: We aim to report on the assigned statistical tests to evaluate FF signal intensity kinetics in swallowing muscles as a monitoring biomarker for radiation induced dysphagia. We anticipate that there will be an increase in DT1-FF in the high dose regions at later time points and these FF will positively correlate with radiation dose.

Conclusions: Correlating DT1-FF with radiation dose helps identify key biomarkers of radiation-induced damage. As next steps, we will correlate Dixon T1-FF/DT1-FF with Dynamic Imaging Grade of Swallowing Toxicity (DIGEST) scores. By identifying statistical associations, this could improve the design of future clinical trials, including one with a Bayesian model for better statistical analysis.

Comprehensive Detailed Anatomic Ultrasound: Allotted Time of 30-versus 45-Minutes

Authors: Ashimi Balogun, O MD, Behnia, F MD, Chelliah, A MD, Jiangtao L, PhD, Chauhan, S, MD HPHD, Samuel, A, MBA, MD Gnikpingo, T, Lee, C

Objective: The purpose was to ascertain how often Registered Diagnostic Medical Sonographers (ROMS) complete a comprehensive detailed anatomy ultrasound (Current Procedural Terminology [CPT] code 76811) when allotted 30 versus 45 minutes to perform it.

Study Design: We conducted a retrospective cohort study within our Maternal-Fetal Medicine Ultrasound Clinics. The study included all singletons who had a comprehensive detailed anatomy ultrasound (CPT code 76811) performed by a ROMS at 18-24 weeks. We excluded pregnancies with major congenital anomalies, multiple gestations, and performance of a transvaginal ultrasound or fetal echocardiogram at the time of anatomy. The comprehensive detailed anatomy ultrasound study was considered to be complete when all items suggested by the American Institute of Ultrasound in Medicine (AIUM) Detailed Second Trimester OB Imaging Checklist were visualized. Based on a baseline rate of 45% of comprehensive detailed anatomy ultrasounds that were completed in our clinics in 30 minutes, to detect a relative increase of 30% (45% to 58%; alpha error=5%; 80% power), 430 women (215 in each group) were required to demonstrate a clinically significant improvement in our primary outcome. Thus, the two cohort groups were: 215 consecutive comprehensive detailed anatomy ultrasounds performed in July 2022, when ROMS were allocated 30 minutes to do it, and 215 comprehensive detailed anatomy ultrasounds consecutively performed in January 2023, when ROMS were given 45 minutes.

Results: Of the 215 comprehensive detailed anatomy ultrasounds performed in each group, 117 (54%) were completed when ROMS were allocated 30 minutes compared to 173 (80%) when ROMS were given 45 minutes (p <0.001). Additionally, the number of times the patient had to return to complete the detailed anatomy ultrasound was significantly more when sonographers were given 30 minutes compared to when sonographers were allocated 45 minutes (p=0.005). There was no statistical difference in maternal age, race, BMI, number of prior cesarean delivery, or co-morbidities between the two groups. There was a difference in gestational age and nulliparity between the two groups. (Table 1)

Conclusion: ROMS were significantly more likely to complete a comprehensive detailed anatomy ultrasound using the AIUM checklist when allocated 45 minutes vs. 30 minutes to perform it. Our findings provide guidance to clinicians and their practices in terms of logistics in schedule planning, billing, and allotment of resources. It can also help reduce stress in these pregnant women by avoiding additional ultrasound visits in order to complete items needed for comprehensive detailed anatomy ultrasound.

Expression of virulence factors of Vibrio cholerae in response to environment

Authors: Taylor Woodall, Nancy Chukwuneke, Vair Gomez, Janelly Reyes, David Raskin

Background: Cholera is diarrheal disease, caused by infection of the bacteria Vibrio cholerae. Researcher estimates 1.3 to 4 million cases of cholera per year with an estimated 95,000 deaths in endemic countries alone1. If untreated, the mortality rate can increase to 25-50%2. Previous literature has identified two major factors that contribute, to the virulence of the disease: Toxin Coregulated Pilus (TCP) and Cholera Toxin (CT). Additionally, stringent response (low-nutrient stress response) influences differential expression of CT and TCP. By studying how the bacteria sense their environment and adjust their expression of these factors to infect the host, specific processes can be targeted to decrease infection rates and therefore mortality. Application of this research may help develop treatments and vaccines.

Objectives: To determine how Vibrio cholerae stress response to nutritional availability is integrated into the virulence gene expression pathway.

Methods: Wild type and mutant* Vibrio cholerae bacteria strains were grown in overnight AKl media to mimic the digestive tract environment. The following day, the cultures were placed on a shaker for 1 hour at 2201 rpm and 37°C. After 1 hour, bacteria were then harvested, lysed using, GeneJET™ RNA Purification Kit, and RNA isolated. Using the harvested RNA, qRT-PCR was used to measure gene expression of virulence genes and gene regulators. Specifically, ctxA, tcpA, and toxT genes were measured and analyzed to determine production of CT, pilus, and transcription in the wild type compared to the mutant strains.
*Mutant strains consisting of knock-outs of genes: toxR; tcpPH; relAspoTrelVtcpPH; relAspoTrelVtoxTtoxR; relAspoTrelVtoxTtoxRtcpPH

Results: We anticipate that results will show decreased virulence factor expression in the mutant Vibrio cholerae compared to the wild type V. cholerae when both are grown under stringent response.

Conclusions: Gaining the detailed knowledge of Vibrio cholerae virulence can provide potential treatment and vaccine targets to lessen the disease burden.

Context Effects on Language Processing in Individuals with Alzheimer's Dementia

Authors: Yakob Zumlot, supervised by Heather Dial, PhD

Background: Alzheimer's dementia is characterized by cognitive decline that affects memory, reasoning, and judgment. It also impairs language abilities, causing issues with comprehension, word usage, and sentence processing. Research shows that while younger and older adults may experience varying levels of context effects in language processing, there is a lack of studies examining semantic context effects on auditory comprehension specifically in individuals with Alzheimer's dementia. This study seeks to address this gap and investigate how semantic context affects the language processing abilities in this population.

Objectives: To investigate how sentence context impacts the processing of sublexical information in individuals with dementia due to Alzheimer's disease and to determine whether semantic context can improve comprehension.

Methods: Participants in this study include individuals with mild-to-moderate Alzheimer's dementia who have been screened for hearing acuity and word reading ability. The task involves having participants listen to sentences and determine if a provided written word matches the final word in each sentence. To examine the influence of context, the study presents sentences under different conditions: semantically congruent or incongruent sentences paired with either matching or non-matching written text. Data collection focuses on both accuracy and response times, which will be analyzed in comparison to age-matched control data to gain insights into the specific processing challenges faced by individuals with Alzheimer's dementia.

Expected Results: The research anticipates that individuals with Alzheimer's dementia may show an exaggerated influence of context due to auditory processing challenges or a reduced ability to utilize context because of diminished cognitive resources.

Conclusions: The study could inform the development of targeted language interventions aimed at enhancing auditory comprehension in Alzheimer's dementia patients. If individuals are found to rely heavily on context, interventions may be designed to leverage this dependency. Conversely, if they struggle with using context, interventions may aim to encourage its use.

Facilitators and Barriers to COVID-19 Vaccination in Vietnamese Americans

Authors: D Omenge; Zeeshan Ali; Paul Gerardo Yeh; Angelica Nguyen; Jannette Diep; Shielene Vargas; Saba Siddiqi; Celine Nguyen; Carlos Fuentes; Bich-May Nguyen

Background: Qualitative research suggests that COVID-19 vaccination among Vietnamese Americans is facilitated by culturally appropriate language, generational differences, and a collectivist approach. Understanding these factors could improve outcomes in this population disproportionately affected by COVID-19.
Objective: To identify factors that are linked with COVID-19 vaccine acceptance within the Vietnamese American community.

Method: The NIH Community Engagement Alliance (CEAL) Common Survey 2 instrument was available in English and Vietnamese online and via paper. Trained volunteers, outreach events, and local clinics recruited adults of Vietnamese heritage from December 2022 to April 2023. Data was analyzed through multivariable logistic regression.

Results: Analysis of the 363 respondents showed having a great deal of trust in providers for COVID-19 information (Adjusted Odds Ratio (AOR) 6.88; p=0.035) was associated with increased odds of having received the COVID-19 vaccine in Vietnamese American adults. In contrast, a great deal of trust in peers at work/class for COVID-19 information led to decreased odds of receiving the vaccine (Odds Ratio (OR) 0.03; p=0.008). Adults endorsing the rationale of getting the COVID-19 vaccine to keep the community safe had significantly increased odds of having received the COVID-19 vaccine (AOR 14.4; p=0.008).

Conclusion: Trust in healthcare providers boosts COVID-19 vaccine uptake among Vietnamese, emphasizing the formative role of effective communication. Promoting collective responsibility enhances vaccination, while reliance on peers decreases acceptance, underscoring the need to combat misinformation for those who rely on peer information. Understanding facilitators and barriers to vaccination in Vietnamese Americans can improve COVID-19 health equity and outcomes.

UH College of Medicine Mission-based Longitudinal Evaluation (LMBE)

Authors: Nancy Chukwuneke, Blanca Morales, Bradley Smith, Benjamin King, William Elder

The mission of the UH COM includes training physicians to provide compassionate care. Studies show that empathy and compassion usually decline during the four years of medical school. This decline in compassion is associated with medical student burnout, which tends to increase as they progress through medical school. Furthermore, burnout is reported as one of the major reasons for student dropping out of medical school, and physicians leaving their job. By promoting training in empathy and compassion, the COM aims to help their medical students be better providers, who are resilient and effective physicians unlikely to leave the profession due to burnout. The LMBE research team has developed a survey designed to track empathy, compassion, and burnout for all COM students as part of their standard learning experience. The surveys measure empathy, compassion, and burnout as complex, multidimensional constructs that need to be comprehensively measured to get the most precise understanding of the inter-relatedness of these factors during medical school. The survey results are for internal educational program evaluation to help guide decisions related to the goal of training resilient, empathic, and compassionate providers.