2024 REACH-OUT Poster Forum

Book of Abstracts

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Dear colleagues,

I would like to extend a warm welcome to all of you who are joining us for the first time as well as to those who have been long-time supporters of research on the OU-Tulsa campus. It is my pleasure to share with you the abstract book for the 2024 REACH-OUT Poster Forum (**R**esearch **E**xpo **A**bout **C**ommunity and **H**ealth at **OU**-**T**ulsa). Formerly the OU-Tulsa Research Forum, this is an annual event to showcase student, staff, and resident research.

We are happy to host the REACH-OUT Poster Forum in person this year. In addition to presenting posters live at the Poster Forum, the presenters have an opportunity to upload their posters to the Open Science Framework (OSF). Posters uploaded to OSF will be more widely disseminated to a global community. We hope this will enhance what people can learn about each research project. First, second, and third place winners will be selected from all presented posters along with two awards for our special categories.

We hope members of the research community and the greater Tulsa community will enjoy the array of research projects presented this year. This book contains the abstracts of accepted posters for the 2024 REACH-OUT Poster Forum.

I would like to acknowledge the School of Community Medicine's Office for Research Development and Scholarly Activity and the OU-Tulsa Schusterman Library for their dedicated commitment in planning and organizing the 2024 REACH-OUT Poster Forum.

On behalf of the 2024 REACH-OUT Program Committee, we look forward to learning about the innovative research projects across our campus. Thank you in advance for your support of research in the Tulsa community.

Sincerely,
Kent Teague, PhD
Assistant Vice President for Research, OU-Tulsa

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*Please note that the abstracts in this book are from the authors' original submissions. Any revisions an author has made to an abstract upon acceptance are available to read when opening their poster on the Open Science Framework.

Biomedical

Abstract #3 Significant Decrease in Alcohol Use Disorder Symptoms Secondary to Semaglutide Therapy

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Introduction

Despite being a major cause of preventable death worldwide, Alcohol Use Disorder (AUD) currently has only 3 FDA-approved pharmacotherapies. The glucagon-like peptide 1 receptor agonist (GLP1-RA) semaglutide has shown promise in preclinical studies for reducing alcohol consumption, but there are currently no randomized clinical trials that associate a decline in AUD symptoms with semaglutide use. This case series presents 6 patients with positive AUD screenings who were treated with semaglutide for weight loss. All subsequently exhibited significant improvement in AUD symptoms.

Methods

Retrospective chart review was utilized to identify patients treated with semaglutide for weight loss who also had positive screenings for AUD on the Alcohol Use Disorder Identification Test (AUDIT; score > 8 considered positive) prior to initiation of semaglutide therapy. Six patients were identified who met these criteria. A paired t-test was utilized to compare initial AUDIT scores with AUDIT scores after initiation of semaglutide therapy.

Results

The mean AUDIT score at intake was 14.0 ± 3.9, consistent with hazardous or harmful alcohol consumption. At follow-up, the mean AUDIT score was 4.5 ± 2.0, consistent with low-risk drinking behavior. All 6 identified patients (100%) had significant reduction in AUD symptomatology based on AUDIT score improvement following treatment with semaglutide (mean decrease of 9.5 points, paired $t5= 8.50$, $p<0.001$). The interval between AUDIT tests varied between patients, ranging from 1 month to 9 months. Decrease in AUDIT score was not related to the prescribed dose of semaglutide, nor to the amount of weight lost during the measured interval.

Discussion

This case series is consistent with preclinical data and suggests that GLP1-RAs have strong potential in the treatment of AUD. Additional randomized, placebo-controlled clinical studies are needed to fully assess the efficacy of semaglutide in treating AUD.

Abstract #10 Predictors of Mortality and Major Complications after Colostomy Reversal: A National Analysis

Authors

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Introduction

Colostomy reversal has been shown to be associated with a significant risk of post-operative morbidity and mortality. We aimed to better determine the predictors of post-operative complications to facilitate surgical decision making and informed consent for patients potentially undergoing colostomy reversal.

Methods

From the ACS National Surgical Quality Improvement Program (NSQIP) database, we identified patients undergoing elective open or laparoscopic colostomy reversal based on procedure and diagnosis codes. A multivariable analysis using data from 2012-2021 was performed to determine independent risk factors of 30-day major complications (any complication except urinary tract infection and superficial wound infection) and death following a colostomy reversal.

Results

A total of 19,542 patients were analyzed with 59 mortalities. Independent predictors of death were being 70 years old or older (OR 4.11, 95% CI 2.43-6.95), history of severe chronic obstructive pulmonary disease (COPD) (OR 3.55, 95% CI 1.85-6.83), having a dependent or partially dependent functional status (OR 2.88, 95% CI 1.28-6.49), steroid use for a chronic condition (OR 2.29, 95% CI 1.02-5.13), and being currently on dialysis (OR 7.15, 95% CI 2.51-20.37). Independent predictors of a major complication following surgery were being 70 years old or older (OR 1.24, 95% CI 1.12-1.38), having a BMI≥40 kg/m2 (OR 1.42, 95% CI 1.19-1.69), being a smoker in 12 months prior to surgery (OR 1.24, 95% CI 1.12-1.37), history of severe COPD (OR 1.96, 95% CI 1.67-2.30), having a dependent or partially dependent functional status (OR 1.48, 95% CI 1.19-1.84), hypertension requiring medication (OR 1.25, 95% CI 1.14-1.36), steroid use for a chronic condition (OR 1.38, 95% CI 1.15-1.65), being on dialysis (OR 2.37, 95% CI 1.68-3.34), and having a bleeding disorder (OR 1.6, 95% CI 1.22-2.09). When compared with laparoscopic reversal, the open approach was an independent predictor of both major complications (OR 1.67, 95% CI 1.48-1.88) and death (OR 3.42, 95% CI 1.24-9.47).

Discussion

Colostomy reversal can be associated with a higher risk of complication and death in patients with older age, morbid obesity, dependent functional status, recent smoking, steroid use, and certain comorbidities including COPD, current dialysis, hypertension, and bleeding disorder. Identifying higher-risk patients can help in preoperative counseling before colostomy reversal. Prehabilitation and optimization of modifiable factors, as well as considering a laparoscopic approach, may decrease postoperative mortality and morbidity in this group of patients.

Abstract #16 High Prevalence of KIDINS220 Mutations in Individuals with Obesity and ESRD

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Introduction

The prevalence of end-stage renal disease (ESRD) has doubled over the last twenty years. Mutations in kinase-D interacting substrate of 220 kDa (KIDINS220) have been linked to genetic neurologic conditions as well as genetic obesity syndromes, but have not previously been linked to ESRD. The KIDINS220 gene produces an essential scaffold protein involved in coordinating neurotrophin signaling pathways and impacts gastrointestinal secretion and motility through regulation of neurotensin secretion. Here, we present a case series of four patients with early onset obesity and ESRD who were found to have KIDINS220 polymorphisms.

Methods

Nineteen patients with ESRD and obesity presented to an interdisciplinary obesity medicine clinic for pre-transplantation weight management. Sixteen of these individuals reported early-onset obesity consistent with potential genetic obesity syndrome and were screened for genes associated with obesity. Rates of identified polymorphisms of obesogenic genes within this sample were compared to national polymorphism hit rates in screened individuals with obesity.

Results

Of the 16 patients with ESRD screened for genetic causes of obesity, 81.3% (n=13) possessed at least one obesogenic polymorphism. Four (25%) of the 16 individuals were found to have a KIDINS220 polymorphism. Compared to the KIDINS220 hit rate in all screened individuals with obesity nationally (2.3%), this sample of individuals with both obesity and ESRD possesses a significantly higher rate of KIDINS220 polymorphisms ($\chi2=36.6$, $p<0.01$). This case series presents the 4 individuals identified to have KIDINS220 polymorphisms, early-onset obesity, and ESRD. These individuals were unrelated, aged 36 to 62, dialysis-dependent, and all possessed comorbid conditions such as HTN, DMII, and/or CAD. The underlying etiology of ESRD in these individuals varied.

Discussion

The prevalence of ESRD is increasing rapidly, and ESRD significantly reduces quality of life in those affected. In this case series, we present 4 individuals with both obesity and ESRD who were found to have KIDINS220 polymorphisms. This sample exhibits a significantly higher prevalence of KIDINS220 polymorphisms compared to the expected hit rate, suggesting a potential link between this gene and ESRD. Further research is essential to identify the role of KIDINS220 in ESRD and potential pharmacological targets to manage patients with this chronic condition, or even prevent the need for dialysis or kidney transplant.

Abstract #22 Assessment of Mandated Newborn Screening for Critical Congenital Heart Diseases in Oklahoma

Authors

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Introduction

In 2013, Oklahoma mandated newborn critical congenital heart defects (CCHD) screening to improve CCHD detection prior to hospital discharge and associated outcomes. Our objective was to determine the impact mandated CCHD screening had on early diagnosis when controlling for other factors such as CCHD classification, neonatal care level, gestational age, prenatal care, and maternal race/ethnicity.

Methods

This retrospective review utilized public health surveillance data from the Oklahoma Birth Defects Registry and Newborn Screening program. Data were split into pre-mandate (01/01/2006-12/31/2010) and post-mandate periods (01/01/2015-12/31/2019). Births were limited to live born infants born in an Oklahoma hospital, who were >20 weeks gestation and not prenatally diagnosed with a birth defect. Due to increasing sensitivity of diagnostic imaging, isolated cases of mild coarctation of the aorta were excluded. SAS 9.4 was used to conduct backward stepwise logistic regression, which removed the least significant variable one at a time, with a significance level of p<0.05. To better determine the impact of mandated CCHD screening on timing of diagnosis (before discharge vs. after discharge), we controlled for CCHD classification (primary vs. secondary), neonatal care level (1-2 vs. 3-4), gestational age, prenatal care, and maternal race/ethnicity.

Results

There were 525 births with a CCHD diagnosis. Of these, 321 (61%) were born in the pre-mandate period and 204 (39%) post-mandate. Timing of birth (pre/post-mandate), gestational age, care level, and CCHD classification were retained in the final model. After controlling for gestational age, care level, and CCHD classification, infants born in the post-mandate period had 1.67 greater odds (95%CI: 1.07, 2.60) of being diagnosed before discharge compared to infants born in the pre-mandate period. Additionally, infants with a primary CCHD had 3.13 times higher odds (95%CI: 2.05, 4.79) of diagnosis before discharge compared to infants with a secondary CCHD when controlling for the other variables. Infants at a level 3-4 center had 2.18 times higher odds (95%CI: 1.38, 3.46) of getting diagnosed before discharge compared to infants being born at level 1-2 centers, when controlling for the other variables.

Discussion

This study demonstrated state mandated newborn CCHD screening improves timing of diagnosis, allowing for prompt treatment. It also confirmed neonatal care level, gestational age, and CCHD classification impacts diagnosis timing. Further work should explore if these promising results translate to better outcomes for infants with CCHD.

Abstract #23 What Was Once Thought Impossible: Improving Pancreatic Function in Cystic Fibrosis

Authors
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Introduction
Cystic Fibrosis (CF) is caused by genetic mutations in the CF transmembrane conductance regulator (CFTR), potentially leading to dysfunction and destruction of pancreatic cells as early as the antenatal period. Recent evidence has suggested improvement or recovery of pancreatic function following CFTR modulator therapy. Our objective was to determine the impact of elexacaftor/tezacaftor/ivacaftor (ETI) on pancreatic function in individuals with CF.

Methods
A retrospective study of CF Registry data for individuals 2-21 years old receiving care at the Tulsa CF Center was conducted to evaluate changes in fecal elastase (FE-1) values pre- and post-ETI. Data included demographics, BMI percentile, FEV1 percent predicted, and FE-1 values. Individuals were included for analysis if they had >1 post-ETI FE-1 and were pancreatic insufficient (FE-1 < 200) at their pre-FE-1 assessment, if available. SPSS 28 was used to perform descriptive statistics, and paired t-tests with a significance threshold of $p<0.05$.

Results
Individuals (n=37) were predominantly White, Non-Hispanic (n=17, 46.0%) followed by Indigenous with or without another race/ethnicity (n=16, 43.2%), female (n=21, 56.8%), and homozygous for the F508del mutation (n=28, 75.7%). Median age at ETI start was 8.3 years (IQR: 6.0). A statistically non-significant increase in mean BMI percentile was noted between the pre (58.7, SD=25.0) and post (60.6, SD=29.4) periods (p=0.46). There was a statistically significant increase in FEV-1 percent predicted between the pre (100.9, SD=20.9) and post (110.9, SD=16.6) periods ($T26=-2.76$, p=0.01). Post ETI, 32 individuals (86.5%) had severe pancreatic insufficiency, and five (13.5%) individuals who were also homozygous F508del had moderate insufficiency (FE-1 value 100-199). The median length of time between ETI start and first post-FE-1 was 1.4 (IQR:1.5) years. Sixteen individuals had both pre- and post-FE-1 values. Pre-FE-1 values were lower (M=22.0, SD=22.0) than post-FE-1 values (M=25.6, SD=37.9), but the change was not statistically significant (p=0.75). At post, two individuals (12.5%) moved from severe insufficiency to moderate insufficiency while 14 (87.5%) remained pancreatic insufficient.

Discussion
Although findings related to FE-1 values were not statistically significant, there is evidence to suggest an increase in FE-1 for certain individuals. Moving from severely to moderately insufficient often results in a decrease in pancreatic enzyme dose, lowering medication burden. Additional investigation with a larger sample size, younger children, and ongoing monitoring of FE-1 values while on ETI therapy is warranted to understand effects on pancreatic function.

Abstract #49 Hepatitis C Treatment in Primary Care: Improving Access to Cure Through Physician Education

Authors

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Introduction

In 2021, Oklahoma reported a 3.4% prevalence of Hepatitis C virus (HCV) infection, surpassing the national rate of 1.34%. Oklahoma leads in HCV-related deaths in the US, despite effective treatments. HCV infection poses irreversible consequences, like cirrhosis, hepatocellular carcinoma, and death, impacting patient well-being and straining the healthcare system. This quality improvement project aimed to increase by 20% the physician knowledge and confidence in diagnosing and treating HCV at OU-Tulsa Family Medicine clinic (OUTFM).

Methods

We evaluated the residents and attendings' confidence and understanding of HCV diagnosis and treatment. Our PDSA cycle #1 involved a baseline survey to understand their feelings of competency in diagnosing and treating HCV which was followed by an education session on steps to diagnose and treat HCV in our clinic. A post-survey assessed the effectiveness of this educational session. We used descriptive statistics to compare pre-survey responses to post-survey responses. Three primary categories assessed were: 1. Confidence in clinic HCV workflows; 2. Confidence in HCV diagnosis and treatment regimens; 3. Confidence in treating HCV. Our PDSA cycle #2 consisted of a Hepatitis C point of care diagnostic test workshop. We applied a second post-survey to evaluate the effectiveness of this HCV point of care workshop. The category used in this second PDSA cycle was 1. Confidence in ordering pretreatment labs for Hepatitis C.

Results

The pre-PDSA cycle #1 survey was completed by 25 participants (20 residents and 5 attendings) and the post-PDSA cycle #1 survey was collected from 12 participants (11 residents, 1 attending). Initial confidence in clinic HCV workflows increased from 44% to 100% post-PDSA cycle #1, with confidence in HCV treatment regimens rising from 24% to 58% and confidence in treating HCV increasing from 24% to 75%. The post-survey after PDSA #2 involved 10 participants (9 residents and 1 attending). Initial confidence in ordering pretreatment labs for Hepatitis C was 64%, improving to 80% post-PDSA cycle #2.

Discussion

Physician confidence in HCV diagnosis and treatment increased after educational session and workshop. After the education session, more physicians expressed intent to provide HCP care, indicating potential benefits from provider education. The more confident and engaged in diagnosing and treating Hepatitis C residents and attendings at OU-Tulsa Family Medicine clinic are, the more likely they will be to screen and treat their patients thereby improving increasing the numbers of patients treated at our clinic.

Abstract #51 Detection of Gait Disorder Based on Plantar Pressure Patterns Using Dynamic Mode Decomposition

Authors

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Introduction

This research presents a novel approach to gait analysis. By leveraging pressure sensor-embedded walkways, we can translate a person's footfalls into signals that reflect their health condition. Human walking, being a well-learned, repeatable motor pattern, offers a unique opportunity for health monitoring. Our study focuses on the consistencies of these signals, aiming to identify a person's unique walking pattern and detect unfamiliar variability and large deviation before it exposes the patients to harmful situations. We propose a systematic data-driven artificial intelligence framework that can identify an individual's gait consistency and quantify meaningful pattern changes with minimal human interventions.

Methods

We collected plantar pressure data from 16 cancer patient participants while walking over a 20-foot Tekscan® Strideway™ walkway. We applied the data-driven dynamical modeling technique, Dynamic Mode Decomposition (DMD), to the pressure signals of the footsteps. We characterized the gait features in terms of frequency content, the rate of decay, and initial condition. Using machine learning clustering, the unique gait pattern(s) for each patient is identified at each rehabilitation stage. The onset of abnormal walking patterns is detected by implementing data drift detection algorithm with a permutation testing of several statistical metrics: Kolmogorov-Smirnov, Energy, and Anderson-Darling.

Results

Using the gait features (frequency, decay rate, initial condition) of the footstep samples, we found that the complex pressure signal can be described by a handful of dynamic modes (18 feature variables). We could identify the participants' unique walking patterns with 87% to 89% accuracy prior to the start of the chemotherapy treatment that might have nervous toxic elements. We detected abnormal walking patterns within 2-3 weeks in 87% and warning in 5% of participants compared with those before starting the chemotherapy. Gait abnormality might be an early sign of treatment induced peripheral neuropathy or fatigues; regardless of the reason, this novel scheme demonstrated its effectiveness in detecting gait variability.

Discussion

Our research has significant implications for the field of gait analysis. We have demonstrated a robust analysis technique that uses data-driven dynamic system modeling and a machine learning algorithm to detect a person's unique walking pattern with high accuracy. Importantly, our approach can also detect the onset of disorders in health status, providing early warning signs that can lead to timely interventions and improved patient outcomes.

Abstract #60 Combating Binge Eating Disorder: Tackling Contributing Factors, One Step at a Time

Authors

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Introduction

Binge eating disorder (BED) involves the presence of recurrent episodes at least weekly for three months involving excessive and rapid oral ingestion, as well as distress. These are assessed by the Binge Eating Scale (BES). Food insecurity involves difficulty with obtaining adequate food. Positive childhood experiences (PCEs) involve factors such as caregiver affection, and relationships and activities outside the home. Adverse childhood experiences (ACEs) are potentially traumatic childhood events. It was hypothesized that the BES score would negatively correlate with PCEs, while positively correlating with food security score and ACEs.

Methods

A survey with 16-item BES, the six-item USDA food security scale, ACEs, and PCEs Scale was distributed to OU internal medicine patients. A 17-point cut-off was used as a diagnosis of BED from the BES. The continuous food security score was categorized as high (0 points), marginal (1 point), low (2-4 points), and very low (5-6 points). Pearson correlation was used to test the relationship between food security, BES, ACEs, and PCEs. A one-way ANOVA tested if BES score differed by food security category.

Results

There were 71 participants who completed the survey, and 25 (35.2%) patients met the criteria for BED. Food security categories were as follows: High: 33.8% (n=24), Marginal: 17.1% (n=14), Low: 25.4% (n=18), and Very Low: 21.1% (n=15). There was a significant positive correlation between the BES score and food security scale score, $r(69) = .37$, $p=.001$. Mean BES score significantly differed by food security category ($F(3, 67) = 4.37$, $p=0.007$). Those with very low food security had significantly higher BES scale scores than those with low ($p=0.040$) and high ($p=0.004$) food security. There were 29 participants who completed the PCEs, ACEs and the BES. The mean PCEs score was 7.5 (SD=2.3), mean ACEs score was 3.4 (SD=2.8), and mean BES score was 14.7 (SD=9.8). There was a significant negative correlation between PCEs and the BES ($r(27) = -0.54$, $p=0.003$). There was not a significant correlation between ACEs and the BES ($r(27) = 0.29$, $p=0.127$).

Discussion

In this population, poor food security is associated with higher BES scores. Dealing with inadequate food can promote behaviors that encourage overeating when food is plentiful. Having numerous positive childhood experiences may promote the development of healthy coping strategies, thereby lowering tendencies to overeat during stressful situations. These findings could be used to increase patient and clinician awareness of BED, food security, and PCEs.

Abstract #61 Novel Analysis of Toe Strength Measurements for the Detection of Neuropathy

Authors

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Introduction

The assessment of toe strength is a widely used measure for stability. According to literature, it is often linked to balance and the likelihood of falls among the elderly. The traditional testing method is the manual testing but recently our team had developed the QuHalEx Ver. 2, an innovative OU patented testing device that aims to replace the golden standard manual testing to provide broader and more precise insights into toe strength, thereby improving diagnostic accuracy and pattern recognition.

However, beyond the maximum force measurement, there is little research on the important indicators that strength measurements tests can reveal. Therefore, this study focused on methodology development to extract important features from toe measurements, demonstrating the diverse patterns that can be extracted. It also highlights the limitation of using maximum force only as a measure of toe strength.

Methods

Twenty-eight female cancer patients participated in this study. Participants were asked to flex and extend their Hallux using the OU patented QuHalEx. The flexion and extension strength were measured and analyzed to detect early signs of peripheral nephropathy due to chemotherapy treatment. We developed algorithms to process time series force signal into a unique set of features that differentiate individual patient's tests based on their unique characteristics. These features are examined in multiple domains, time, frequency, and distribution. Furthermore, the developed algorithms capture the deviation from the patient's ideal toe force profile during test time. Machine learning (ML) models trained on the extracted features to quantify and track measurement variations to obtain better understanding of the patient's unique toe strength variability as the patient receives chemotherapy treatment.

Results

The developed algorithms are able to extract in excess of fifteen features including deviation from ideal, distribution of force, force growth and decay tendency, force patterns and fluctuations, spectral patterns, and others. The features capture comprehensive characteristics, beyond maximum force and rise to peak measurement, of a patient's toe strength level progression during chemotherapy treatment. Furthermore, the extracted features allowed us to benefit from implementing machine learning techniques. The develop ML model was able to 80% successfully differentiate between patient and control participants based on toe strength measurements. The research team will improve the accuracy as more patients are recruited to the study.

Discussion

The algorithms we've developed present a significant advancement in the understanding of toe strength testing as related to neuropathy detection at an early stage. Such insight was not clearly detected with manual testing.

Abstract #73 Shifting Perspectives: Diphenhydramine Usage in Anaphylaxis and Urticaria Across US Emergency Departments

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Introduction

In recent years, there has been a notable shift in the medical community's perspective regarding the use of diphenhydramine for allergic reactions, specifically for urticaria and anaphylaxis. This shift primarily stems from diphenhydramine's side effect profile and the superior efficacy of second-generation antihistamines in achieving comparable outcomes with fewer associated adverse effects. In fact, the American Academy of Allergy, Asthma & Immunology (AAAAI) released updated anaphylaxis guidelines in 2020 recommending against the routine use of diphenhydramine in anaphylactic episodes in the acute phase or to prevent biphasic reactions. In light of these developments, our study aimed to assess diphenhydramine utilization in US emergency departments (EDs) for anaphylaxis and urticaria from 2019 to 2021.

Methods

A cross-sectional study was conducted utilizing data from the Centers for Disease Control and Prevention's (CDC) National Hospital Ambulatory Medical Care Survey (NHAMCS) from 2019-2021.The NHAMCS compiles extensive nationwide data on patient visits to hospital EDs, outpatient departments, and ambulatory surgery centers, including details on demographics, reasons for visit, diagnoses, treatments, and outcomes. For our analysis, we focused on emergency department data, restricting the population to individuals with ICD-10 codes for anaphylaxis (T78) and/or urticaria (L50) who had at least one medication reported as prescribed/given. NHAMCS allows for the inclusion of 30 drugs to be reported - records including: 'diphenhydramine' and 'Benadryl' were coded as administering diphenhydramine. Design-based Pearson chi-square was utilized with $P<0.050$ for significance.

Results

Of the 450 cases including anaphylaxis and/or urticaria, 61.99% (n=276) included administration of diphenhydramine. Specifically, in instances of anaphylaxis (n=295) and urticaria (n=131), diphenhydramine administration rates were 57.99% (n=170) and 69.45% (n=88) respectively. Cases involving both anaphylaxis and urticaria (n=24) had a 73.4% (n=18) diphenhydramine administration rate. No significant change in diphenhydramine use for these conditions was observed from 2019 to 2021 (P=0.9421).

Discussion

Despite emerging evidence and evolving clinical guidelines related to the administration of diphenhydramine, our findings suggest no discernible changes in ED practices after the updated AAAAI guidelines. Moving forward, bridging this gap between evidence-based guidelines and clinical practice is imperative for enhancing patient care and ensuring adherence to evolving standards in urticaria and anaphylaxis management. As such, future research should focus on identifying the barriers to timely adoption of clinical guidance across EDs in the United States.

Education

<u>Abstract #12</u> Exploring Technology Usage in Myanmar Immigrant Families: A Focus on Support for Children's Education and Academic Success

Authors

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Introduction

Burmese refugees have been a significant group resettled in the United States in recent years (Monin et al., 2021). However, the U.S. education system faces challenges in meeting the unique needs of these families, particularly in terms of technology integration (Tobin & Hieker, 2021). Access to digital technologies is essential for improving school readiness and peer interactions, but it is crucial for families to have access to and use technology appropriately at home (Luo et al., 2022). Early childhood education (ECE) programs are suggested as a key strategy to bridge the digital divide and enhance technology access, internet access, and language skills for Burmese refugees in their new country (Harper, 2017).

Methods

The study involved 30 mothers and 22 fathers, mostly aged 30-39, who spoke Chin-Zomi at home. Fathers were mostly Chin-Zomi speakers and worked in factories. The data was collected through a face-to-face survey in a child's preschool, available in English and Burmese. It facilitated by one of the authors who is fluent in Burmese. The survey covered demographic information, technology use, community resources, transit to the U.S., stress and depression issues. The total number of families represented in the findings was 30. Code weaving was used to triangulate technology questions, demographic data, and literature to understand technology usage among Burmese families.

Results

The study revealed that most participants owned cell phones, with fewer families having TVs, computers, and tablets. Children primarily used technology for educational purposes, supervised by parents or adults, with some using it independently. Additionally, technology was used for fun and pleasure, including games, videos, music, and video chatting. Families preferred educational apps and provided support while children used technology. Contrary to expectations, the findings did not suggest that parents with low socioeconomic status lacked self-efficacy, digital literacy, or had a negative attitude towards technology.

Discussion

Refugee parents possess both technological proficiency and cultural assets to facilitate their children's development. However, the Head Start program's resources exhibit a notable absence of technological references. To address this disparity, it is imperative for organizations like Bridge Refugee Children and Youth Services to furnish comprehensive guidance encompassing the advantages of technology employment, available devices, avenues for interactive involvement, educational application recommendations, and procedural directives. Additionally, scholarly inquiries are warranted to delve into the phenomenon of refugee families refraining from enrolling their children in Early Childhood Education (ECE) establishments.

Abstract #34 Using Case Studies in a Technology Course for Pre-Service Teachers

Authors

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Introduction

This research explores the importance and practicality of integrating technology in early childhood teacher education using case studies designed to understand pre-service teachers' viewpoints and encourage technological integration in their classrooms. Despite widely known benefits of technology in education, many pre-service teachers (PSTs) are reluctant to completely integrate it (Backfisch et al., 2021). Research on the potential impact of technology is increasing in aspects such as children's development (Blut & Wang, 2020). For example, research has explored how using technology in the classroom can have negative impacts on children's learning (Gottschalk, 2019). This brings up important concerns for PSTs who are considering how to implement technology into their future classrooms. Case studies, which illustrate practical applications of technology integration in many contexts, including subjects like screen time regulations, virtual reality, technology access as an issue of equity, and the use of Chat GPT in ECE settings, can be used to help PSTs effectively integrate technology. The article examines the development of PSTs throughout their academic program by evaluating student responses using the SAMR paradigm (Substitution, Augmentation, Modification, Redefinition), providing insights into their evolving technological ideologies (Puentendura, 2014).

Methods

Data was gathered from nine PSTs enrolled in Learning with Educational Technology; a course focused on introducing PSTs to technology. As part of their course assignments, PSTs completed 4 case studies covering various topics: screen time, investing money in virtual reality, equity in access, and Chat GPT. Using a constructivist research paradigm, we coded student responses using the SAMR as starter codes. We also used open coding to explore themes across the different case studies.

Results

Two main findings were identified in the analysis of the case studies. Many PSTs viewed technology adversely, seeing it as a source of irritation, monotony, and a waste of time. The SAMR model indicated they often saw technology as a simple substitute for hands-on experiences, underscoring the need to reevaluate their understanding. However, some PSTs recognized the potential of virtual reality technology for improving and enriching education (i.e. redefinition).

Discussion

These findings highlight the need for firsthand experiences to counteract unfavorable opinions (Cooper et al., 2019). Case studies are a potent method for analyzing principles underlying PSTs' thinking and challenging assumptions related to technology use and can also assist teacher educators in fostering a deeper understanding of technology integration (Tijan et al., 2019).

Abstract #46 Improving Access to Obstetric Care in Tribal, Rural, and Underserved Communities

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Introduction
There is a shortage of family medicine (FM) physicians cross-trained in obstetrics (OB) to manage OB care for individuals in Oklahoma's tribal, rural, and underserved (TRU) communities. The Departments of Family and Community Medicine (FCM) and Obstetrics and Gynecology (OBGYN) at the University of Oklahoma School of Community Medicine (OU SCM) jointly developed an enhanced FMOB track to meet this need. The FMOB program targets 2nd and 3rd year FCM residents at the OU SCM. Residents who choose to participate in the FMOB program receive an enhanced OB curriculum and clinical opportunities in providing OB care. Here we present the evaluation findings from the first 2 years of the FMOB program.

Methods
We tracked FMOB residents' completed procedures data from 2021-2023. We conducted descriptive statistics to compare maternal health procedures of FMOB residents to those of FM residents in the regular FM residency training program.

Results
From 2021-2023, 4 residents were admitted to and graduated from the FMOB program (n=4). On average, residents dedicated 84 hours in an OB clinic, 256 hours practicing OB in a hospital, and 30 hours on a community project to improve maternal health in underserved areas. When comparing procedures of FMOB participants to FM residents, FMOB residents conducted more obstetric procedures. FM-OB residents averaged 71.8 vaginal deliveries, 14.0 labor inductions, 24.0 vaginal laceration repairs, and 17.8 intrauterine device placements, compared to 28.4, 5.2, 6.2, and 5.0, respectively, for FM residents. After graduating from the program, FMOB program participants pursued fellowship (n=1), a FMOB faculty position (n=1), and FMOB community practice (n=2).

Discussion
As a result of participating in the FMOB program, FMOB residents performed over double the amount of OB procedures when compared to the regular FM residents. FM physicians are a vital component for improving maternal health and healthcare in Oklahoma as they are frequently the only maternity care physicians in TRU areas, often caring for socially vulnerable and geographically isolated populations. The FMOB program is successfully preparing FM residents to provide comprehensive-level OB care in Oklahoma's TRU areas through enhanced training opportunities.

Abstract #48 Medical Student and Faculty Opinions Regarding Trauma Informed Care (TIC) in Curricula

Authors

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Introduction

Trauma has profound impacts on health and increases the risk for chronic disease and psychological problems. Its negative impact is magnified among patients who are already underserved. Trauma-informed care (TIC) provides a framework for understanding and mitigating trauma's impact on health. Integrating TIC principles into medical training equips healthcare professionals with the skills necessary for delivering compassionate, patient-focused care. However, the implementation and scope of TIC at the University of Oklahoma College of Medicine (OUCOM)1 remain unclear. This research explored the experiences and perspectives of OUCOM faculty and students regarding the inclusion of TIC in medical curricula.

Methods

A survey with novel and adapted questions from the University of Iowa and the OUHSC Diversity, Disparity, and Bias Working Group was developed and emailed to all medical students (n=673) and faculty (n=1136) who attend or work at OUCOM. Anonymous responses were collected for one month. Qualitative and standard quantitative analysis of the results was performed.

Results

Responses from 55 students (8.17%) and 85 faculty members (7.48%) were received. A significant majority of faculty (83.7%) and students (92.5%) recognized the relevance of TIC to clinical practice. However, only 37.0% of faculty reported incorporating TIC into their teaching. Courses that included TIC primarily include Clinical Medicine; Patients, Physicians, and Society; Psychiatry; and OB/GYN. Despite its acknowledged importance, only 20.4% of students felt satisfied with how TIC was taught at OUCOM. On a Likert scale of 1-5, students reported a comfort level of 1-2 for trauma-informed screenings (31.5%) and physical exams (62.9%). Respondents' proposed solutions to increase TIC education both at the student and faculty level include the implementation of longitudinal curricula, workshops, and more frequent conversations about trauma's effects when interacting with patients in clinical environments.

Discussion

TIC is perceived as relevant to medical education and clinical practice among students and faculty. However, its integration into the OUCOM curriculum is sporadic; while certain courses incorporate TIC, there lacks a cohesive teaching approach throughout the curriculum. There is uncertainty among faculty regarding the definition of TIC and what aspects may be lacking in the curriculum, highlighting a gap in knowledge and application. Furthermore, the intermittent teaching of TIC affects students' ability to conduct appropriate physical examinations and fully understand the impact of trauma in the clinical setting. The low response rate and potential for bias may impact the study's findings, but our results support the integration of a more comprehensive TIC education in curricula.

Abstract #50 Evaluating a Preconception Care Program: Participant Perspectives

Authors

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Introduction

The maternal mortality rate in Oklahoma is ranked among the worst in the United States and continues to climb. Preconception care involves providing healthcare to people of reproductive age before conception to optimize physical, social, and emotional wellbeing and ensure optimal conditions for fetal development. The preconception care program (EMBRACE) was developed to educate and support people who want to manage their health before pregnancy. We surveyed the women who completed the course to evaluate their experience.

Methods

The EMBRACE consisted of six in-person weekly meetings lasting 1.5 hours each. Participants were of reproductive age (18-24) who intended to become pregnant within the next year. Topics covered during the sessions included goal setting, nutrition, chronic disease management, self-care, self-advocacy, and available resources. We applied a 21-item post-course questionnaire among women who completed the EMBRACE (n=6) to assess various aspects of their experience. The evaluation consisted of nine items about the overall sessions and twelve items on the facilitator's performance on a five-point scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), supplemented by three open-ended questions for qualitative feedback. Data collected from the questionnaire underwent descriptive and content qualitative analysis.

Results

The average score of 4.5 (±0.25), ranging from 4.2 to 4.8, indicates a high level of participant satisfaction with EMBRACE. The overall sessions scored an average of 4.5 (±0.18), with the highest rating for punctuality and the lowest for session length. The facilitator's performance also averaged 4.5 (±0.27), with the highest ratings observed for encouraging participation and adhering to the rules of the group, while responses were lower for addressing questions and facilitating sharing among participants. The qualitative answers gave feedback on how they benefited from the program. Half the participants mentioned the facilitator in this portion, describing personalized care and consistency. They mentioned self-care, advocacy, and nutritional information as the most beneficial. The feedback for the program's improvements included the facilitator including more time to allow the participants to share and answer questions, and one participant indicated that a zoom option would be helpful.

Discussion

The positive scores of both the overall session and the facilitator's performance indicate that the participants found the program convenient and successful. The qualitative feedback indicates a promising start for the program and underscores the facilitator's role in establishing a positive learning environment.

Abstract #54 The Social-Emotional Development of Foster and Non-Foster Children in Early Care and Education Settings: The Role of Dual Language Learning.

Authors

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Introduction

Fostering and Early Care and Education (ECE) are associated with positive social-emotional behaviors in children experiencing adversity (Humphrey et al., 2022; Pakarinen et al., 2020), evidence suggests that certain aspects of fostering may negatively impact social-emotional development outcomes (Jacobsen et al., 2020). Despite mixed findings, there is limited evidence about differences in social-emotional development between foster children (FC)and non-FC in ECE programs, and the factors that could buffer risks associated with foster care placement remain unclear. The present study investigated trajectories of social-emotional development in both foster and non-FC within high-quality ECE programs, aiming to identify factors that could mitigate potential disparities in their growth.

Methods

A longitudinal dataset comprising 3,658 children particularly from families in under-resourced contexts with a mean age of 28.38 months (SD=15.60) in a Midwest State, spanning from 2007 to 2020 was used. Among them, 7% (n=265) were foster children, and 32% (n=1,157) were Daul Language Learners (DLLs). Social-emotional development was assessed using the Devereux Early Childhood Assessment (DECA; LeBuffe & Naglieri, 1999) measured behavior concerns and protective factors. Classroom Assessment Scoring System (CLASS; Pianta et al., 2008) measured emotional, instructional, and organizational classroom quality. Data analysis utilized two-level multilevel models with linear growth curves.

Results

The findings revealed a significant disparity in social-emotional behaviors between FC and non-FC, with foster children exhibiting more problems (B=0.12, SE=0.05, p<.001). DLL status served as a mitigating factor in reducing the gap in social-emotional growth between FC and non-FC; this resulted in non-DLL foster children displaying higher behavioral concerns (B=-0.24, SE=0.12, p<.05). Neither classroom quality (B = -0.07, SE = 0.09, p > .05) nor foster parental education (B = 4.75, SE = 2.78, p > .05) mitigated social-emotional growth disparities.

Discussion

The study revealed that foster children in high-quality ECE programs exhibited higher behavioral concerns compared to non-foster children. These results contrast with previous research attributing better social-emotional outcomes to foster care and high-quality ECE settings (Burchinal et al., 2008; Lee, 2020, 2022). Our study found that DLL status acted as a buffer against the negative impact of foster care on social-emotional outcomes. Evidence suggests that parental education level can play a critical role in mitigating the effects of childhood maltreatment. However, our study did not find a significant buffering effect of parental education level on the negative impact of FC's outcomes. Future research is thus needed to untangle inconsistent findings and expand understanding of FC development within ECE contexts.

Abstract #59 Resident Scholarly Activity in Traditional Schedules vs. Newer "3+1" Models

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Introduction

The ACGME guidelines require resident physicians to participate in scholarly activities; however, they lack specific goals related to scholarly output. Research has highlighted barriers to resident research, including lack of dedicated time to complete research projects and lack of knowledge. We began an X+Y schedule in 2022, which divides the month into three weeks of a regularly scheduled rotation followed by one week dedicated to continuity clinical days, administrative time, elective rotations, and scholarly activity. The "Y" week allows for protected scholarship time, usually as a half-day session in conjunction with administrative time. The purpose of this study was to assess if implementation of an X + Y schedule as opposed to the traditional monthly schedule in a pediatric residency increased scholarly activity.

Methods

A retrospective study was conducted assessing resident scholarly work products from academic years 20-21, 21-22, and 22-23. Scholarly work products included: the first submission of a manuscript, accepted poster and platform presentations, and published abstracts. The number of each resident's scholarship half days for 22-23 was also collected. Data were not recorded for chief resident years. Using SPSS, total work products were compared across each academic year by program year (PGY) cohort. Spearman's Rank was utilized to determine if the number of research half days each resident received was correlated with their total number of work products for 22-23 with a threshold of $p < 0.050$ for significance.

Results

A total of 42 residents were included in the analysis. Total scholarly work products increased from 46 for both 20-21 and 21-22 to 69 in 22-23. The overall percentage of residents involved in one or more scholarly work products also increased from 58% in 20-21 to 75% in 21-22, and to 88% in 22-23. While increases in scholarship involvement were noted for PGY2 (20-21: 38%, 21-22: 100%, 22-23: 100%) and PGY3 (20-21: 63%, 21-22: 71%, 22-23: 75%) cohorts, involvement varied for PGY1 cohorts (20-21: 75%, 21-22 56%, 22-23: 88%). No statistically significant association was found between the number of research half days assigned and the number of scholarly work products for 22-23 ($p = 0.673$).

Discussion

After implementation of the X+Y schedule, scholarly activity increased across years for both overall percent of residents involved in scholarship and number of scholarly products. Given that the number of assigned scholarship workdays did not predict scholarly output, other programmatic initiatives could have contributed to increases.

Engineering & Applied Research

Abstract #19 Holistic Mobility Management: A Risk-Averse Reinforcement Learning Approach

Authors

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Introduction

The trend towards denser base station deployment and multi-band operations in emerging cellular networks such as 5G has made mobility management and handover (HO) optimization a formidable challenge. The challenge is further aggravated by the scarcity of practical multi-objective mobility management solutions optimizing both intra and inter frequency HO.

Methods

This study presents a holistic multi-objective mobility management solution for both intra and inter frequency HO employing multiple parameters of standardized HO events. In contrast to existing approaches focusing on optimizing a limited number of key performance indicators (KPIs), we formulate and solve a multi-objective optimization problem that jointly minimizes five KPIs number of HO failures (HOF), HO latency, signaling overhead, number of radio link failures (RLFs) and load dependent network power consumption.

We utilize the soft actor-critic reinforcement learning (RL) algorithm to address the multi-objective optimization problem and employ the digital twin as the training environment for the RL agent to prevent potential network performance degradation. We outline a three-step road map to construct a digital twin for creating, testing, and optimizing mobility management solutions.

Results

Results show that the digital twin (DT) trained RL solution converges seven times faster compared to the brute force approach, making it highly adaptable to rapidly changing network conditions and dynamic user requirements.

While the two RL agents with different rewards give identical surface-level performance with similar attainable objective function value and convergence time, a closer examination of the individual KPI values returned by these RL models reveals an interesting finding: each model has learned the interaction between multiple KPIs differently. This analysis highlights the importance of gaining a deeper understanding of system dynamics and adopting a domain-aware approach when designing the reward function for RL algorithms that tackle multi-objective optimization problems.

Discussion

We also evaluate the performance of the framework by testing it with varying levels of fidelity in the digital twin, assessing the impact of realistic modeling of different cellular network components. This analysis reveals that realistic modeling of path loss and user mobility in a digital twin can increase the likelihood of success when RL model is deployed in a real network.

Abstract #45 A Hybrid Deep Learning-Based Framework for Multi-fault Diagnosis Using Sparse MDT Reports

Authors

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Introduction

Management tasks in emerging cellular networks are becoming more complex due to evolving network architecture, rapidly increasing and diversifying network traffic and the growing number of network parameters. An efficient and cost-effective solution for fault diagnosis is imperative for achieving the desired quality of service expected by cellular network users.

Traditionally, outages resulting from faults are detected by human-based monitoring of either alarms, performance counters, or complaints filed by network subscribers. This can take hours and at times days to resolve outage issues. Therefore AI-based solutions exist in literature but the current AI-based solutions for fault diagnosis lack in 1) Capability to diagnose multiple faults in multi-base station deployment scenarios. 2) Capability to operate with sparse/incomplete minimization of drive tests (MDT) reports.

Methods

In this research, we present a novel framework named Hybrid Deep Learning-based Root Cause Analysis (HYDRA) that uses a hybrid of convolutional neural networks, extreme gradient boosting, and the MDT data enrichment techniques to diagnose multiple faults in a multiple base station network. This is a new method to solve a problem that is already been attempted to solve using classical machine learning applied to numerical data. That approach has limitations because it works with simulated data.

Results

We compared HYDRA with multiple methods available in the literature for both sparse as well as enriched coverage maps. The performance evaluation under realistic and extreme settings shows that HYDRA yields an accuracy of 93% which is 7% improvement on 56000 coverage maps, compared to the state-of-the-art fault diagnosis solutions, HYDRA is far more robust to MDT report sparsity. Given nature of the problem multi-class multi-label fault diagnosis, we used exact match (subset accuracy) and Jaccard similarity as the performance metrics.

Discussion

This is a major domain shift in terms of network anomaly diagnosis. Future research areas are, multiple directions can be investigated. One interesting direction with practical impact would be an investigation of techniques that can delineate the two faults that show a high confusion rate i.e., low Tx power and cell outage. This can be done by leveraging Bayesian or other conditional classifiers that can account for priors by analyzing previous fault history. Inclusion of more coverage anomalies e.g., cell individual offset (CIO), etc., exploration of different KPIs e.g., RSRP, that can help improve diagnosis in the presence of more faults, and investigation of problem-specific ML and data enrichment methods, are other few research directions among many others.

Abstract #55 Denoising Diffusion Models in Pancreatic Tumor Segmentation Using CT Images

Authors

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Introduction

Cancer, a formidable disease, poses challenges in early detection, particularly for pancreatic tumors. The complexity and late diagnosis, coupled with the limitations of abdominal imaging, make it difficult to discern cancerous regions. Conventional techniques struggle with the low quality of CT images.

This work explores the potential of deep learning, specifically denoising diffusion models, in medical segmentation tasks, focusing on pancreatic tumor detection. This work contributes to the development of denoising diffusion models, hinting at their superiority in future research for challenging applications in cancer diagnosis.

Methods

Addressing challenges through image processing and a denoising diffusion model with classifier guidance, the preprocessing involves resizing CT images, focusing on the pancreas region, and emphasizing the pancreas head over the tail for better task performance, given the fact that most pancreatic cancers develop from the head region of the pancreas. The denoising diffusion model employs a classifier trained on healthy and diseased cases, guiding the denoising process towards the desired label. The classifier will guide the denoising process, steering the noisy diseased image towards a healthy representation. Subsequently, the disparity between the resulting image and the original will manifest as the anomaly map highlighting the tumor region. The study uses a 90-10 train-test data split due to limited data and model complexity when using MSD(Medical Segmentation Decathlon) datastet.

Results

The study categorizes results into groups, initially determining optimal trained weights for the classification and diffusion model. The classifier, based on the Unet model, achieves an overall accuracy of 79\%. Hyperparameter tuning identifies a guidance scale between 5-10 and a noise level of 300 as optimal for the denoising process. Dice scores are used to evaluate anomaly map performance, achieving 0.34 average dice score with 0.45 threshold, comprising keeping valuable information and resulting a realistic segmentation map, for the anomaly map acquisition. Omitted from the calculation are cases misclassified by the classifier model and those with low confidence levels. The study provides visual presentations of anomaly heat maps and binary segmentation maps with varying thresholds to showcase the model's performance.

Discussion

This study tackles the challenge of early pancreatic tumor detection using deep learning, specifically denoising diffusion models guided by a classifier. Despite promising outcomes, cautious interpretation is warranted, excluding misclassified cases and low-confidence instances. Further research should focus on refining the model and expanding datasets for real-world clinical applicability, solidifying the proposed deep learning approach's role in advancing pancreatic tumor detection for improved cancer diagnosis.

Abstract #64 Gait Monitoring in Cancer Patients Using IMU and Pressure Mat Technology

Authors

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Introduction

Taxane-platinum agents, widely used in the treatment of breast and gynecological cancers, lead to chemotherapy-induced peripheral neuropathy (CIPN) in approximately 75% of patients. This condition begins in the toes and persists indefinitely for 50% of these women, compromising their Quality of Life (QoL) and increasing the risk of falls and injuries. Despite its prevalence, current methods for CIPN detection largely rely on patient self-reporting, which is subject to bias due to concerns over treatment cessation. Addressing the need for precise monitoring, this study introduces a novel approach combining Inertial Measurement Units (IMU) and TekScan pressure mat to track patients' gait variability throughout chemotherapy treatment, targeting CIPN-induced mobility and balance issues, aiming to surpass the limitations of self-reporting by precisely identifying patient-specific gait changes.

Methods

Twenty-eight female cancer patients participated in this study. Participants were outfitted with six IMUs attached to their feet, ankles, lumbar, and sternum. Patients were then instructed to walk normally on a Tekscan® Strideway™ pressure mat, which captures only the dynamics of a foot-print (step) while IMUs capture feet, ankle and body dynamics during walk trials. Using timings collected from each step, acceleration signals collected by the IMUs were segmented into precise gait events: heel strike, toe off, swing and foot flat. Implementing machine learning similarity measurements including Euclidean and/or Mahalanobis distances, we calculated gait variability distributions and conducted interval duration analysis to detect new gait patterns or any divergence from a patient's baseline which was recorded prior to the initiation of chemotherapy treatment.

Results

Our proposed approach effectively identified variability in gait patterns among participants, attributable to both inherent individual differences and disease-related effects. However, detected variability among medically determined neuropathy patients was significant, achieving accuracy of 80% detection. An optimal threshold for differentiating between natural and disease-related gait changes is anticipated to improve with the inclusion of additional participants.

Discussion

This study suggests a new method of underscoring the variability in how patients' physical functionalities are affected by chemotherapy induced CIPN. Such assessment can support clinical decisions, potentially guiding the adjustment of chemotherapy dosages to optimize a patient's outcomes and reduce the severity of negative effects, improving her quality of life (QoL). The primary limitation currently encountered is the study's delimited participant count. As more patients enroll in the study, the approach will be further improved and validated for detecting other diseases that may affect gait dynamics.

Abstract #66 Integrating Accelerometers and Neural Networks for Enhanced Soccer Analytics and Injury Prevention

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Introduction

This paper introduces a novel approach to soccer analytics by integrating wearable accelerometer data with computer vision, analyzed through Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs), to predict the trajectory and direction of soccer balls. This dual-faceted method not only aims to refine player performance and game strategy but also focuses on reducing injury risks by examining the biomechanics of soccer kicks. This venture into integrating technology with sports science marks a significant step toward redefining athlete training, game tactics, and safety protocols.

Methods

We adopt an interdisciplinary strategy, collecting data through accelerometers and high-definition video recordings. This dual approach enhances our dataset, allowing us to closely examine how players move and how the ball behaves. We use CNNs to track the ball in video footage. This allows us to not only follow the ball's path accurately but also derive various attributes that are critical to our analysis, such as speed, direction, and even predictions of future positions. RNNs are used to analyze the data from accelerometers, which record the players' movements. RNNs are particularly adept at handling sequential data, making them ideal for interpreting the time-series data from accelerometers. This analysis reveals patterns in player behavior and potentially risky movements that could lead to injuries. RNNs help us understand the physical demands of the game on players and identify ways to optimize performance while minimizing injury risks.

Results

Initial research and analyses suggest that CNNs and RNNs are ideally suited for our objectives, capable of accurately predicting outcomes in soccer dynamics. We were able to use CNNs to track where the ball and players are in videos, in real time. We also found that there are no existing products that have our dual approach of analyzing accelerometer data and video footage using CNNs and RNNs. We've been working on experiments with accelerometers and built an LSTM model for analyzing the data in an unsupervised learning context. This model enhances our understanding of kicks by identifying patterns in player movements during these critical moments.

Discussion

The broader implications of our work extend well beyond soccer, proposing a new way to integrate cutting-edge technology into sports science. This research has the potential to revolutionize professional sports, providing novel tools for performance improvement and injury prevention. As we continue working on this project, our focus will remain on validating our model's effectiveness in practical settings.

Quality Improvement

Abstract #21 Increasing Lung Cancer Screening in an IM Resident Clinic: A Quality Improvement Initiative

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Introduction

Over the course of six months a cohort of patients under the care of six resident physicians at OU Internal Medicine were followed with the purpose of increasing lung cancer screening in eligible patients as a quality improvement initiative. Eligibility was determined using the most recent guidance from the USPSTF for lung cancer screening.

Methods

During the course of this project there were two distinct PDSA (Plan, Do, Study, Act) cycles which were performed and analyzed for improvement in the measured outcome. A new charting platform was implemented prior to the start of this QI initiative and prior to the start of the project the incompatibilities of the two systems had to be reconciled. Based on these resident cohorts there were 20 patients between these resident panels that had been screened prior to any intervention.

Results

The first intervention included EMR optimization achieved with the pinning of a health maintenance module to the provider home screen. This simple change is attributed to increasing the screening by about 10% (increase of 2 additional screenings) over a single clinic week session. The second intervention involved creating and posting flyers in the IM clinic to prompt both patients and providers to discuss this screening. At the end of that clinic session week there was an increase in screening by 30% (an additional 6 screenings accomplished).

Discussion

While the sample size was certainly small these simple interventions demonstrated a significant increase in lung cancer screening rates. In addition to increasing screening rates, there were structural and institutional barriers identified which were found to impede timely and accurate provider notification of eligibility for screening. Identifying and rectifying these barriers will undoubtedly further increase lung cancer screening which has the potential to identify suspicious lung lesions in a more timely manner leading to decreased morbidity and mortality.

<u>Abstract #31</u> SBIRT-OK: Practice Facilitation Efforts to Improve Behavioral Health in Primary Care

Authors

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Introduction

Oklahoma has the 7th highest rate of suicide and 12th highest smoking rate in the United States. Additionally, drug overdose deaths have increased by 112% from 2019 to 2022. SBIRT-OK (Screening, Brief Intervention, and Referral to Treatment in Oklahoma) is a combined effort of the Oklahoma Department of Mental Health and Substance Abuse Services (ODMHSAS) and the Oklahoma Primary Healthcare Improvement Cooperative (OPHIC) to help Oklahoma clinics implement SBIRT, an evidence-based approach to improve behavioral health problems. This project aimed to describe practice goals and tactics used by clinics during SBIRT-OK practice facilitation to determine where clinics were in most need of assistance.

Methods

Primary care practices in Oklahoma were recruited and enrolled. Each practice completed a baseline practice assessment and selected goals related to SBIRT implementation. The practice then planned interventions utilizing the DMAIC Model (a data-driven quality improvement strategy): **D**etermine opportunities for improvement, **M**easure current performance and processes, **A**nalyze data, **I**mprovements, and **C**ontrol improved processes in order to substantiate quality improvement. Each practice facilitation visit was tracked in REDCap and categorized according to goal and DMAIC process for analysis.

Results

Overall, 49 practices enrolled in the SBIRT-OK study. These practices received 1,758 practice facilitation encounters between January 2020 and November 2023. The goals selected most often for facilitation encounters were implement universal annual screening (70.0%), other (8.2%) (e.g., administration tasks, tablet support for screening questionnaires, and improve payment processes), improve primary care (4.7%), implement data driven quality processes (3.4%), improve teamwork (3.0%), and improve brief intervention/brief treatment processes (2.5%). There were 3,450 DMAIC tactics selected for the facilitation goals, summarized as follows: Determine opportunities for improvement: educate/inform staff (30.1%), review reports/research (8.8%), and detail guidelines (3.7%); Measure processes: observe/interview (25.8%), diagram workflow (3.0%); Analyze: brainstorm/prioritize (5.3%), analyze performance data (3.9%); Improvements: implement new process/protocol (3.0%); and Control processes: process training (1.0%).

Discussion

Given the poor state of behavioral health care and the needs of Oklahomans, we are not surprised that participating practices spent most of their time in preliminary stages of SBIRT implementation, more specifically, working to implement universal annual screening. However, the extensive use of project resources for the first step of SBIRT (universal annual screening), with a focus on tactics in the earlier stages of DMAIC, suggests further efforts are needed to fully implement SBIRT in practices to ensure universal screening results are being followed up with brief intervention and/or referral, when needed.

Abstract #32 Impact of Health Fairs on Influenza Vaccine Rates: A Quality Improvement Project

Authors

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Introduction

Influenza (flu) vaccines reduce flu transmission, severity, hospitalization, ICU admission, and death. Annually, the United States spends over $1 billion on flu-related costs. This quality improvement (QI) project aimed to increase the influenza vaccination rates at OU Tulsa Family Medicine (OU TFM) for patients over 6 months of age by 2% by January 1, 2024.

Methods

We identified vaccination barriers using a Fishbone Diagram among clinic providers and staff, which included access, education, and misinformation. TFM leadership committee, involving stakeholders from various departments, organized health fairs in October and November 2023, educating patients and providing flu vaccinations. Patients were informed via mailed letters. Two fairs were held in October and November 2023. Quantitative data on flu vaccine administrations were extracted from clinic EMR (Centricity and EPIC). Stakeholder feedback was collected anonymously through Qualtrics.

Results

In 2022, vaccination data for flu in the TFM clinic, collected via Centricity, indicated rates of 27%, 32%, and 35% for October, November, and December, respectively. In 2023, EPIC-collected data revealed rates of 23% in October, 19% in November, and 10% in December. Satisfaction scores on event organization and execution ranged from 6 to 10 on a scale of 1-10, with a mean of 8.34 (±1.47). Positive feedback included interprofessional collaboration; event organization; patient education; and high student involvement. Negative feedback included event date scheduling conflicts (non-football weekend), marketing efforts, and communication to patients, and challenges with ordering and documenting flu shots.

Discussion

In the summer of 2023, TFM switched electronic medical records (EMRs), which included workflow changes and lead to issues with documentation of vaccines given elsewhere or declined. This change in flu vaccine definition and documentation with the new EMR effected data comparison and was likely a reflection in the lower 2023 vaccine rates. The comparison is inadequate because the previous EMR (Centricity) complied the flu vaccine rate by including patients who received or reported receiving the vaccine elsewhere in the numerator and eligible patients without documented declination in the denominator, while the new EMR (EPIC) does not exclude declined cases in the denominator. Although an increase in flu vaccination rates was not accomplished throughout our QI initiative, the most significant outcome was the development of a new workflow to administer flu vaccines and provide other health-related services during the fairs. Future PDSA cycles could include clinic education on workflow implementation, expanded marketing efforts, and continued efforts toward increasing flu vaccine rates.

Abstract #40 Enhancing CRC Screening Rates by Getting Our FIT Together at Tisdale Clinic

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Introduction

Colorectal Cancer (CRC) is one of the leading causes of cancer-related deaths in the United States, affecting both men and women. Early detection is achieved through screening, such as the fecal immunochemical test (FIT) which detects blood in the stool. Screening is recommended for individuals at the average age of 45 years old. Despite the benefits of screening, many individuals remain underserved or unaware of the importance of CRC screening. In 2023, 55.8% of adults ages 45-75 received CRC screening test in Oklahoma. This quality improvement (QI) project aimed to increase CRC screening rates among patients aged 45 and above at Tisdale clinic by 5% from February 1 - March 31, 2024.

Methods

Three Plan, Do, Study, Act (PDSA) Cycles were implemented during the project period. The first cycle, Provider Flags, involved providers receiving flags two weeks in advance for each FIT test ordered, prompting follow-up with patients via reminder call upon completion. The second cycle, FIT Video, entailed physicians/ALPs showing patients a 40-second video on test collection when ordering FIT tests. The third cycle, the March Madness, consisted of a month-long staff and patient engagement activities with prizes to incentivize patients to complete screening. The monthly OU primary care dashboard was used for data collection.

Results

Baseline data from Q4 2022 revealed a CRC screening rate of 47% and a completion rate of 20.6% for ordered FIT tests. Following the PDSA Provider Flags cycle, 10 out of 14 (71.4%) FIT tests were returned. For the PDSA FIT Video cycle, 5 out of 7 patients (71.4%) reported feeling more comfortable after watching the video and agreed to do FIT testing; providers did not perceive it as adding an unreasonable amount of time. In the PDSA March Madness cycle, 32% of ordered FIT tests were completed. Overall, the CRC screening rate increased by 4%, reaching 51%.

Discussion

The results of the PDSA cycles showed that staff education, provider reminders, patient centered care, and patient engagement all play a pivotal role in patients completing preventive screenings. Clinics should implement multifaceted approaches to address key drivers to improve patient outcomes. Future PDSA cycles could include utilizing the waiting room televisions to show the video and sending electronic messages via the EMR.

Abstract #43 Hospital Transitions of Care for Adult Patients: A Quality Improvement Project

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Introduction

Transition of care (TOC) visits reduce medical errors and decreasing the need for readmission and unnecessary healthcare costs. It is estimated that 20% of patients experience an adverse event following discharge, while 1 in 12 is readmitted within 30 days. Annually, this increases healthcare costs by $16 billion. This quality improvement project aimed to increase the number of TOC visits completed by OU Family Medicine (OUFM) patients discharged from the OUFM team at Hillcrest Medical Center (HMC).

Methods

We assessed TOC appointment scheduling and hospital discharge workflow to identify areas of focus. The first PDSA cycle involved establishing a clinic employee to schedule appointments and streamline communication. In the second cycle we designated days during which senior residents contacted this employee to get appointments for patients prior to their discharge. Data on discharged patients was obtained through a billing report. A review of these patients was performed to assess number of TOC appointments scheduled and attended.

Results

Baseline aggregate data was pulled from the Hillcrest Epic EMR system as a billing report showing the total number of patients admitted to the OUFM inpatient team. This report initially included all discharged patients, but only Family Medicine and Tisdale Clinic patients were included in our data. This data was cross-referenced with OUFM's Epic to determine how many patients were scheduled for hospital follow up appointments. We also analyzed how many of these appointments were kept. From this we calculated the total percentage of TOC appointments attended. Baseline data of the 2 months prior to the first PDSA cycle were used for comparison. The percentage of patients attending TOC appointments increased from 54.9% to 64.6% at the end of the second PDSA cycle.

Discussion

Our data consisted of OU Tulsa Family Medicine patients admitted to Hillcrest Medical Center. This limited the total number of data points, but the decision was made based on ability to reliably track data and schedule appointments. We were limited in ability to obtain data quickly due to recent EMR transition and reliance on other departments. There was an increase in both number of scheduled and completed TOC visits. Workflows established through the QI project helped the hospital team and clinic staff to schedule TOC appointments prior to patients leaving the hospital, which led to a similar improvement in completed TOC visits. Future PDSA cycles could include establishing a standardized phrase in discharge paperwork to reinforce importance of TOC visits with patients.

Abstract #65 Evaluating Oklahoma Primary Care Practice Needs During the COVID-19 Pandemic

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Introduction

During the COVID-19 pandemic, Oklahoma was at increased risk for SARS-CoV-2 infection compared to other states due to its health disparities, high prevalence of comorbidities, and under-resourced rural healthcare providers. The NIH-funded Community-engaged Approaches to Testing in Community and Healthcare settings for Underserved Populations (CATCH-UP) program aimed to increase SARS-CoV-2 testing capacity and improve COVID-19-related processes of care across Oklahoma during the pandemic. To inform our strategy, we first conducted a needs assessment of participating primary care practices. Here, we report our baseline findings.

Methods

CATCH-UP enrolled 37 Oklahoma primary care practices across the state. At baseline, Academic Detailers (ADs) & Practice Facilitators (PFs) assisted practices in completing a Practice Assessment Survey (PAS) to 1) evaluate if practices were using defined COVID-19-related protocols based on a 5-point Likert scale ranging from 'no protocol used' to 'protocol used all of the time', 2) identify needed quality improvement interventions, and 3) prioritize two interventions to begin implementing. We used descriptive statistics to summarize PAS findings and Fisher's exact tests to evaluate differences in self-reported protocol usage by practice characteristics.

Results

Our ADs and PFs visited practices between February and May 2021. Thirty (81%) practices completed a PAS. Locations varied between metropolitan/micropolitan (56.7%) and small towns/rural areas (43.3%). Ten (33.3%) were solo-provider practices and four were multi-specialty (13.3%). Only about half of practices reported having a protocol used most or all of the time for providing COVID-19 vaccinations (45%), using personal protective equipment (PPE) (54%), and reporting COVID-19 test results to the Oklahoma State Department of Health (OSDH) (57%). Most practices had no or only partial protocols in place for community health strategies, e.g., community vaccination campaign. Self-reported needs seldom differed by practice type, location, or size. However, practices consistently using protocols for PPE use were more likely to be single specialty clinics and urban practices (100% vs 0%, P=0.0154 and 79% vs 21%, P=0.0230, respectively). Topics most frequently selected for intervention included developing processes for reporting COVID-19 test results to OSDH (77%) followed by improving patient and practice education on COVID-19 (71%).

Discussion

Our results suggest Oklahoma primary care practices needed support implementing basic response protocols to the COVID-19 pandemic. This need is likely due to several factors, including the novelty of the COVID-19 pandemic and the lack of pandemic response experience in primary care. Future CATCH-UP analyses will evaluate whether the CATCH-UP practice interventions improved the identified care gaps.

Abstract #72 Guiding Growth: Resident Handbook's Influence on Comfort and Competence in Inpatient Care

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Introduction

Residency is recognized as a challenging period in a physician's career, characterized by steep learning curves and inherent programmatic challenges. A comprehensive resident survival guide was developed by two pediatric residents to enhance the efficiency of OU-Tulsa pediatric residents and reduce barriers to essential information, such as admission criteria, direct extension numbers, vaccine schedule, and patient management protocols. The aim of our Quality Improvement (QI) project was to assess the impact of the resident survival guide on residents during their inpatient rotations.

Methods

Following handbook development, each resident received a physical copy and access to an electronic PDF version. A 15-question survey including demographic, and pre/post-handbook use comfort/efficiency assessments was created. Surveys were disseminated via a Qualtrics email after inpatient rotations from July to December 2023. Responses were categorized by training level and analyzed collectively. Quantitative data was managed via Excel, while Microsoft Teams facilitated digital distribution of the handbook, augmenting project efficiency and dissemination efforts.

Results

A total of 25 surveys were completed, representing a 52% response rate. Eighty-eight percent of respondents indicated using the handbook during their inpatient rotation with 71% using it at least three times a week. Fifty-seven percent indicated they "strongly agreed" and 38% "somewhat agreed" on the handbook improving their comfort level and decreasing barriers to information as well as their ability to be more efficient in navigating the inpatient system. Moreover, 86% "strongly agreed" to recommending continued handbook use.

Survey respondents were majority PGY-1 residents (56%), followed by PGY-2 (24%) and PGY-3 (20%). When looking solely into the impact on PGY-1 residents, 57% "strongly agreed" and 36% "somewhat agreed" that the handbook improved comfort level and decreased barriers to information needed to navigate the inpatient setting. Fifty percent of PGY-1 respondents "strongly agreed" and 43% "somewhat agreed" that the handbook improved efficiency in navigating the inpatient setting. Majority of residents reported mainly using physical copy of the handbook compared to the digital copy.

Discussion

The resident handbook enhanced comfort and efficiency in inpatient rotations. Varying levels of rotation exposure may have influenced responses, particularly for PGY-1 residents. Moreover, differences in rotation frequency, workload, and timing could have impacted resident feedback in completing the survey. Future plans include updating the handbook based on resident input after six months, with ongoing surveys to gauge sustained efficiency improvements following revisions. These steps aim to continuously improve the handbook's effectiveness in facilitating residents' experiences during inpatient rotations.

Social/Behavioral & Community Service

Abstract #5 A State by State Comparison of Peripheral Artery Disease Risk and Vascular Surgery Workforce to Identify Vascular Surgery Deserts

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Introduction

The shortage of vascular surgeons in the United States is exacerbated by a maldistribution of the current workforce and training programs relative to populations in greatest need of vascular care. We sought to identify states with the largest discrepancies between their population's relative peripheral artery disease (PAD) risk profile and the density of vascular surgeons and trainees to identify vascular surgery deserts.

Methods

The Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) estimates the prevalence of chronic conditions and risk factors for chronic disease. We analyzed these data for risk factors of PAD to calculate states' PAD risk scores. States were grouped by decile and scored based on the relative proportion of their population with each risk factor. Risk factor's contribution to the development of PAD were weighted to accurately calculate PAD risk scores based on each state's risk factor profile. PAD risk scores were then compiled with the density of vascular surgeons and trainees in each state to arrive at the final score for degree of need.

Results

The three states with the highest PAD risk scores were Arkansas, West Virginia, and South Carolina. The three states with the greatest degree of need were Mississippi, Oklahoma, and Nevada.

Discussion

To address inadequacies in vascular care, we need to align vascular provider availability with areas of greatest need. This requires redistribution of the existing workforce and recruitment of new vascular surgeons to critical areas identified here as vascular surgery deserts.

Abstract #7 Assaults and Microaggressions Against Psychiatric Residents: Findings from a US Survey

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Introduction

Workplace violence against healthcare workers (HCWs) is a recognized worldwide occupational hazard. Younger individuals, those with limited work experience, and those working over 40 hours per week are particularly vulnerable. Previous studies highlight that psychiatric residents encounter higher rates of assault compared to other specialties, leading to adverse effects such as burnout and trauma. Despite its prevalence, workplace violence is often underreported, which in turn hinders policy development and the creation of necessary support systems. The most recent data on assaults towards psychiatric residents, who are at a particularly high risk of workplace violence, is over ten years old. This study provides updated information about violence against psychiatric trainees.

Methods

A survey of 33 multiple-choice questions were sent anonymously to 674 psychiatric residency and fellowship training programs in the US between June 9th and September 6th, 2021. The survey asked questions about experiences of physical, verbal, and sexual assault as well as microaggressions experienced during training and their psychological and physical impacts. The survey also examined incident reporting and what training their workplace provided on how to report or de-escalate assaults.

Results

The study surveyed 275 psychiatric residents across 29 US states. Of these, 78.9% (n=78.9) reported experiencing assault during their training. Verbal assaults were most prevalent (94.5%,n=94.5), followed by physical (28.1%, n=28.1) and sexual (7.8%, n=7.8) assaults. Many incidents occurred in emergency rooms (66.8%, n=66.8) and inpatient wards (85.3%, n=85.3). Despite the percentage of assaults, reporting rates were low. At least one type of microaggression was experienced by 86.9% (n=86.9) of trainees. 35.3% of individuals in the LGBTQ+ community experienced sexual assault. Although 92.7% (n=92.7) of residents reported receiving training on assault within their program, 25% (n=25) of residents noted a lack of training in identifying and addressing microaggressions.

Discussion

Results indicated that the vast majority of US psychiatric residents experienced some type of assault in the workplace. Physical assault rates were slightly lower than previous studies, but alarmingly, nearly one-third of participants experienced them. LGBTQ+ and minority residents faced higher risks of assault. Based on the results, microaggressions impacted residents similarly to assaults, yet reporting rates were low for both assaults and microaggressions. This may stem from insufficient training in recognizing, responding to, and managing assault. Future research should explore preventive strategies and support mechanisms for affected residents. Training programs should prioritize interventions and research to better combat the impact of violence on psychiatric residents.

Abstract #8 Identifying Obstacles Patients Faced Before a Lower Extremity Amputation

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Introduction

Despite advances in care and technology, there is an increase in the number of patients in the United States requiring non-traumatic lower extremity amputations for complications due to end-stage peripheral arterial disease (PAD) and diabetes. Few studies have evaluated patients' perspectives on barriers to limb salvage before major lower extremity amputation. We hypothesized that we would identify universal themes regarding obstacles patients experience that impede limb salvage.

Methods

We completed 15 semi-structured interviews with adult patients who underwent at least one major lower extremity amputation (i.e., above- or below-knee) to manage complications of diabetes and/or PAD. Using purposeful sampling, we recruited participants from a large tertiary referral vascular surgery clinic identified via an electronic medical record query. All interview recordings were transcribed, and then two team members – using a theory-driven deductive process – coded each transcription independently. The research team met to reconcile discrepancies, reach a consensus, and refine our codebook. Saturation was reached. Searching for core concepts, the coded transcripts were continuously analyzed to identify themes.

Results

The mean age of our respondents was 61.5 years; 66.7% were male, 80% were non-married, and 40% were non-white. The mean and median distance traveled to healthcare services were 11 (SD = 7) miles and 8 (2, 26) miles, respectively. The most common barrier patients cited was a perceived difficulty accessing providers with sufficient training in vascular health. For instance, participants frequently mentioned difficulty obtaining a referral, inadequate care, and misdiagnosis. Additional themes included concerns with patient-provider communication, a shortage of shared decision-making, and a need for more personal awareness of amputation risk. Finally, participants reported a tendency to delay seeking care, citing gaps in health insurance, transportation challenges, and fear of increasing financial burden.

Discussion

Patients reported barriers to limb salvage at the healthcare, patient-provider, and individual levels. They most often cited concerns centering around access to providers trained in vascular health. This service gap may contribute to the communication failures and inadequate care reported by participants. Notably, financial and transportation issues were ongoing concerns, impacting personal delays. Implementable opportunities include educating PCPs and patients about amputation risk and prevention strategies and developing systems-based solutions through outreach and collaboration networks. Further research is needed to confirm if similar and additional themes would emerge at a regional and national level.

Abstract #9 Females and Child Maltreatment Perpetration: A Cross-Sectional Analysis of Nationals Trends

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Introduction

Child maltreatment is prevalent amongst all socioeconomic levels, ethnicities, and backgrounds, yet information about individuals committing such acts—specifically among females—is sparse. Thus, our primary objective was to describe the sociodemographic characteristics of females who have substantiated or indicated child maltreatment, with a secondary objective to compare these characteristics with males.

Methods

A cross sectional study of individuals listed as perpetrating maltreatment within child protective services (CPS) cases in the National Child Abuse and Neglect System's (NCANDS) 2019 Child File was conducted. Individuals were listed as perpetrating maltreatment if at least one form of maltreatment was substantiated/indicated. Child deaths were excluded due to limited data. STATA 16.1 was utilized to list data to be at the individual suspected of perpetrating maltreatment level. Then "perpetrator ID" was used to identify duplicates to allow for unique counts of characteristics. Descriptive statistics, chi-square, and Student's t-test were conducted with a significance threshold of $P<0.05$.

Results

After excluding those with missing data, our sample comprised 474,050 individuals listed as perpetrating maltreatment. The sample composition was 55.7% (n=264,193) female and 44.3% male (n = 209,857). The average age for females was 32.6 (SD = 9.3) years compared to males at 35.1 (SD = 11.0) ($t = 85.4$, $P<0.001$). Differences in ethnoracial groupings by sex were statistically significant ($X2(7)=2700$, $P<0.001$)—with the largest deviations between sexes occurring among White, Hispanic, and Multiracial groupings. We also found significant differences between sexes by the relationship of the child to the individual listed as perpetrating maltreatment ($X2(10)=45,885$, $P<0.001$). Overall, most individuals were biological parents—with 85.6% (n = 226,154) of females in this category compared to 61.95% (n=130,008) of males; however, representation was reversed for categories of step-parents, other relative-non foster parents, and unmarried partners of parents with males having higher percentages within each category. Finally, more females (47.2%, n=121,403) had prior substantiations/indications compared to males (35.7%, n=73,295) which was statistically significant ($X2(2)=6,263$, $P<0.001$).

Discussion

Within the population assessed, females were younger than their male counterparts, and more likely a biological parent and primary caregiver, which is consistent with previous evidence. Notably, the finding that more females were listed as previously perpetrating maltreatment requires further investigation to determine if substantiated cases involving females are managed with alternative outcomes, thus allowing children to remain within the home. Further analysis is planned to continue evaluating these relationships.

Abstract #11 Adverse Childhood Experiences and Peripheral Arterial Disease

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Introduction

Adverse childhood experiences (ACEs) have a lasting effect on an individual's body due to maladaptive stress responses affecting multiple biological systems. One in two adults in the United States (US) has experienced at least one ACE. While ACEs have been associated with several chronic conditions, the relationship to peripheral arterial disease (PAD) has not yet been determined. Lower extremity PAD is a chronic, atherosclerotic disease characterized by the reduction of blood flow to the legs and feet. Unrecognized PAD is a significant predictor for adverse cardiovascular events, amputation, and death. Recognizing the association of ACEs with PAD allows for identification of patient-specific risk factors and for early detection of the disease. The study aims to determine the relationship between ACE exposure and the development of PAD. We hypothesize that the incidence of ACEs among patients with PAD contributes to the development of the disease.

Methods

In this pilot study, we surveyed 106 patients diagnosed with PAD in an academic, outpatient vascular surgery clinic from 2022-2024 to identify prevalence of ACEs. The survey included 10 standardized questions based on the original CDC-Kaiser ACE study. Completed surveys (n=73) were used in the descriptive data analysis. Microsoft Excel was used to graphical analyze preliminary data.

Results

In this PAD cohort, 63% experienced at least 1 ACE, and 19% experienced ≥4 ACEs. About half of the patients were female (n=33, 45%), with 14% of females experiencing ≥4 ACEs compared to 5% of males (n=40, 55%). Individuals who identified as African American (n=15, 20%) reported a higher incidence of experiencing ≥1 ACEs compared to other race/ethnic backgrounds. A mean age difference was observed in the group without ACEs (73 y) compared to the group with ≥4 ACEs (64 y), suggesting an 9-year earlier onset of PAD. Additionally, patients diagnosed with PAD before the age of 55 had reported at least one ACE. Furthermore, a higher prevalence of ≥4 ACEs among persons aged ≥65 was noted in individuals with PAD (11%) compared to the US (7.7%).

Discussion

This study population profile provides emerging evidence that including ACEs in a risk assessment model may have significant impact in the early detection of PAD and the prevention of adverse consequences in later adulthood.

Abstract #14 Parent Well-Being, Home Learning Environment, and Child Development among Families in Kenya

Authors

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Introduction

During early childhood, cognitive and socioemotional skills rapidly develop, with long-term implications for later life outcomes. One of the most critical influences on child development is the home learning environment (HLE). In the context of high stress, parents' well-being may be particularly important for promoting resilience and supporting their child development. For example, parents' self-efficacy is associated with a more positive HLE and improved child adjustment. Conversely, depressed parents tend to engage in fewer positive interactions with their children and their children exhibit more emotional problems. There is a need to examine these relations in sub-Saharan Africa, where high rates of poverty and depression may create barriers to supporting child development. Thus, using a large sample of families from Kenya, this study investigated associations between parents' well-being, HLE, and child cognitive and socioemotional development.

Methods

This study conducted secondary analysis using data from the Kenya Life Panel Survey (KLPS). The present study included 1,633 school-aged children (49% female; M age = 7.7) and their parents. Parent well-being was measured using self-efficacy and depressive symptoms. HLE was measured using an index including learning activities and the number of children's books at home. Child cognitive development was assessed with a composite index that includes math, language, and executive function. Child socioemotional difficulties and prosocial behaviors were measured using the Strengths and Difficulties Questionnaires. We estimated a path model using FIML procedures to test the relations among parent well-being, HLE, and children's development controlling for sociodemographic variables.

Results

The path model represented an acceptable fit to the data with $\chi2 = 42.87$ (9), $p < .001$; SRMR = .01; RMSEA = .05; and CFI = .96. Parent depression was associated with cognitive development and socioemotional difficulties, $\beta = -.10$, $p < .001$. and $\beta = .18$, $p < .001$ respectively. Parent self-efficacy was associated with prosocial behaviors, $\beta = .13$, $p < .001$. The indirect path from parent self-efficacy to cognitive development and prosocial behaviors through HLE was significant, $\beta = .01$, $p = .003$ and $\beta = .01$, $p = .03$ respectively.

Discussion

The results suggest unique relations between different aspects of parents' well-being and child development and provide implications for informing family-focused interventions in sub-Saharan Africa. This study highlights the importance of supporting parents' self-efficacy and reducing depression as a means of improving child's learning and development. By addressing parent well-being, we may be able to reduce income-related disparities in child development.

Abstract #15 Treatment of Peripheral Arterial Disease for Family Physicians Serving Rural and Indigenous Populations

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Introduction

Peripheral arterial disease (PAD) is a multifactorial complication that results in the narrowing and hardening of extremity arteries. In Oklahoma, a state made up of largely rural and Indigenous populations, PAD often progresses to complications resulting in limb amputation. Oklahoma is ranked 50th for overall health system care and leads the country in amputation rates. Due to these compounding factors, there is a special need for primary care providers (PCPs) to have an enhanced understanding of PAD. Therefore, we worked to identify gaps in patient care and develop resources that can be utilized by PCPs caring for disadvantaged communities.

Methods

Education of PCPs is beneficial in reduction of amputation rates, with early intervention as the pinnacle in prevention. To educate PCPs treating under-resourced communities, we took a tri-phasic approach: (1) conduct an abbreviated ethnographic study at tribally-operated medical facilities (2) conduct free screenings of participants (3) conduct training modules with distribution of educational materials to participants and providers. With this approach, we are able to gather the barriers facing medical facilities and aid in diagnosis and treatment of PAD. We then used a post survey to measure the efficacy of the educational interventions in closing gaps in provider resources.

Results

From preliminary phases, 64.2% of post-visit surveys have been completed, and indicate that PCPs feel less comfortable treating and diagnosing PAD and foot deformities compared to diabetic foot complications. PCPs have indicated that they feel uncomfortable educating PAD with chronic limb threatening ischemia. PCPs feel that their clinic is less equipped to perform tests/services for absent pedal pulses or other evidence of PAD. The majority of PCPs feel that their practice could benefit from the implementation of protocols in their clinic for patients with PAD. Based on these findings, early phases suggest education and intervention could result in lowered amputation rates.

Discussion

Studies have shown that progression to PAD can often be underestimated. Threats to limb loss and mortality among subjects with PAD indicates a stronger consideration of treatment measures. Furthermore, Native American populations are 4x more likely to die from preventable causes, of which PAD could be factored into. The data gathered from this study can be used to improve the treatment of vascular care in rural communities, populations with high amputation rates, and eventually the country at large. Knowledge of effective screening for PAD and prevention of limb amputation is beneficial for any institution treating patients with risk factors of PAD.

Abstract #18 An Investigation into the Pandemic's Effect on Breastfeeding Rates: A National Analysis

Authors

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Introduction

Research has shown breastmilk to be the ideal source of infant nutrition. Breastfeeding is associated with decreased rates of acute childhood illness as well as long-term complications such as metabolic diseases. Given the evidence supporting the health impacts of breastfeeding, the American Academy of Pediatrics recommends practices such as direct feeding within the first hour of life, newborn staying in the room with mother, and exclusive breastfeeding until at least 6 months of age. Safety procedures during the COVID-19 pandemic to mitigate the spread of the virus altered many of these practices. As such, our objective was to determine if the percentage of mothers reporting ever breastfeeding or pumping breast milk changed during the first year of the pandemic.

Methods

We conducted a cross-sectional study using data from the CDC's Pregnancy Risk Assessment Monitoring System System (PRAMS). PRAMS—which is conducted in 46 states, the District of Columbia, and US territories, and accounts for 81% of live births—assesses maternal behaviors and experiences occurring before, during, and shortly following pregnancy. To determine the impact of COVID-19 on breastfeeding, we assessed responses to the question: "Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?" Using data from June 2018 to February 2020, we forecasted trends in maternal breastfeeding, via Auto Regressive Integrative Moving Average (ARIMA) modeling, for March 2020 through March 2021 to compare to the actual rates in the data to determine if the COVID-19 pandemic had a significant impact on breastfeeding initiation.

Results

Before the pandemic, the percentage of mothers reporting ever initiating breastfeeding/feeding breast milk ranged from 86.65-89.65%. During April 2020, the actual percentage of mothers reporting ever initiating breastfeeding/feeding breast milk decreased to 84.87%—significantly lower than the forecasted rate for that month (88.06%; 95%CI: 86.77-89.35%).

Discussion

Our findings show that the COVID-19 pandemic significantly affected breastfeeding rates in April 2020. Though the decline in the rate of breastfeeding was limited to one-month, short delays in initiation of breastfeeding or pausing after initiation may not only impair a mother's milk production but also the infant's ability to latch. As colostrum, which is abundant for the first 5 days after birth, provides significant immune benefits there may also be a disruption in passive immunity that is passed to the infant from the mother. Future research should assess possible contributing factors to preventing initiation of breastfeeding/pumping breast milk to better prepare for future pandemics.

Abstract #24 Peripheral Effects of Gun Violence in an Academic Medicine Setting

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Introduction

The escalating frequency and media spotlight on mass shootings in the US have precipitated heightened levels of anxiety among the public. The emotionally charged atmospheres of hospitals in conjunction with their open availability to the public render them especially vulnerable to such attacks. Healthcare professionals in the surrounding community of a hospital where a shooting occurs may experience secondary trauma, even if they were not physically present at the location of the event. In addition to affecting well-being, these events may also influence healthcare workers' perceptions of patients, particularly if the perpetrator was a patient. The current study examines the potential repercussions of a shooting incident that unfolded within a community hospital in the US Midwest in 2022.

Methods

Faculty, staff, and trainees from a medical school affiliated with the affected hospital were invited to partake in an optional survey initiated six months post-incident. Of the participants, 15 worked at the hospital directly impacted by the shooting, while 259 worked across various medical settings within the same city. The survey examined the psychological impact of the firearm incident (including measures of anxiety, depression, and PTSD), participants' emotional exposure to the event, perceptions of safety in clinical environments, and attitudes toward patient care after the event.

Results

Findings indicate that six months after the shooting, a quarter of respondents expressed ongoing concerns about workplace safety, despite the majority not being present at the hospital where the incident occurred. Half reported their worldview had changed for the worse. No significant differences in anxiety, depression, or PTSD were found between respondents who worked at the hospital where the shooting occurred and those who did not. However, those who had experienced prior assaults by patients demonstrated exacerbated emotional distress with significantly higher PTSD scores. Among clinicians, 40% expressed heightened inclinations to discontinue care for patients exhibiting aggression, while 20% indicated a reduced likelihood of prescribing controlled substances.

Discussion

The study's outcomes underscore the potential far-reaching trauma of hospital shootings, extending beyond direct victims and observers to peripheral members of the medical community. Consequently, such incidents may exert a broader impact on the surrounding healthcare landscape than previously acknowledged, potentially resulting in diminished work satisfaction, compromised mental health, and attenuated patient care quality. These implications underscore the importance of preventive measures to mitigate adverse outcomes in the future and the need for longitudinal mental healthcare for those affected, especially those with a prior history of assault.

Abstract #26 Pediatric Resident Burnout and Programmatic Assessments: National and Local Perspectives

Authors

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Introduction

Burnout is a state of mental and physical exhaustion related to work or caregiving activities. Resident physicians are susceptible to developing burnout during training, due to various reasons. Burnout has been shown to lower resident performance in patient care, systems-based practice, problem-based learning and improvement, professionalism, and communication skills. Our objective was to assess rates of resident burnout and resident reported satisfaction related to their pediatric residency program at the national and at the OU-Tulsa level from 2021-2023.

Methods

A national survey was administered by the Association for Pediatric Program Directors late spring/early summer from 2021-2023 of pediatric residents, including those at OU-Tulsa, assessing various components of well-being and potential drivers of it . The survey included questions about burnout, as well as work and program environments. For this analysis, we selected 4 components including resident burnout, perceived quality of work environment, mentoring, and education. We plotted trends in responses for the components to compare local and national percentages.

Results

For the three years assessed, national response rates were 55%, 53%, and 59% while our rates were 75%, 70.8%, and 62.5%. From 2021-2023 the percentage of residents experiencing burnout increased nationally (2021: 42%, 2022: 60%, 2023: 60%) whereas the percentage of OU-Tulsa residents remained relatively consistent across years (2021: 59%, 2022: 60%, 2023: 60%). The percentage of residents answering they were 'somewhat/very satisfied' with their overall work and learning environment decreased nationally (2021: 77.5%, 2022: 70%, 2023: 72.2%) and locally (2021: 82.4%, 2022: 66.74%, 2023: 53.3%). Similarly, the percentage of residents answering 'agree/strongly agree' about career mentoring provided by their program also decreased nationally (2021: 52.7%, 2022: 43.1%, 2023: 44%) and locally (2021: 41.2%, 2022: 40%, 2023: 6.7%). Finally, the percentage of residents answering 'agree/strongly agree' to resident education being a high priority in their program also decreased nationally (2021: 73.1%, 2022: 62.2%, 2023: 64.4%) and locally (2021: 88.2%, 2022: 93.3%, 2023: 46.7%).

Discussion

Our findings offer actionable areas for program improvement. Before 2023 results, formal inpatient capping was implemented allowing consistent delivery of supplementary inpatient education. This change was made after residents expressed interest in inpatient education regardless of hospital census. Over the next academic year at OU-Tulsa, measures will be taken to address these areas including a national collaboration focusing on providing skills to enhance local professional development opportunities for faculty regarding career mentoring. By addressing the quality of resident work environment, mentoring and education, we expect overall burnout to improve.

Abstract #33 Understanding the Connection of ACE Score and Risk Taking

Authors

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Introduction

Childhood adversity has been linked to risk-taking later in life. However, this relationship has primarily been examined by surveys and self-report data. Behavioral tasks may offer a better proxy to examine risk-taking in real time. This study examined whether adverse childhood experiences would not only be associated with the results of a risk-taking survey but also be associated with risk-taking behavior on two computerized behavioral tasks.

Methods

224 people from the Prolific Academic survey platform participated in this study. Participants completed a traditional ACEs scale followed by the Domain Specific Risk-Taking (DOSPERT) scale. After this, they completed two computerized behavioral tasks that were purported to measure risk-taking behavior in a gamified context. The first was the Angling Risk Task, which involved a computer game about fishing where participants cast a rod up to 30 times to gain points by catching red fish. One fish in the virtual pond is blue, and if they caught the blue fish, they lost all their points. The second task was the Game of Dice task which involved betting on virtual money by making risky versus non-risky bets.

Results

The average ACE score among participants was 3.50 (SD=2.75). ACEs were significantly correlated with risk-taking scores on the DOSPERT scale, $r=0.22$, $p<0.001$. ACE scores were not correlated with either of the risk-taking behavioral tasks, $r=-0.04$, $p=0.598$ for the Angling Risk Task and $r=-0.04$, $p=0.599$ for the Game of Dice task. We also conducted linear regressions examining associations between ACEs and the DOSPERT scale and both behavioral tasks. ACEs were still significantly associated with DOSPERT scores when controlling demographic variables, $B=1.81$, $SE=0.51$, $p<0.001$. ACEs were not associated with either of the behavioral tasks when controlling for these demographic variables.

Discussion

While ACE scores correlated with risk-taking scores on the DOSPERT scale, this connection did not extend to the behavioral tasks. However, the DOSPERT scale itself did not align significantly with the behavioral tasks, which could possibly be attributed to the absence of substantial stakes in the tasks, since the participants did not earn real money or rewards, only points. A challenge of measuring risk-taking in a laboratory setting, rather than by self-report or retrospectively, relates to ethical challenges in this kind of research. Because of the lack of relationship between the risk-taking scale and behavior on the tasks, these results cannot provide definitive conclusions on the relationship between ACEs and risk-taking as measured in real time.

Abstract #36 Tailoring the "NOURISH-OK" Food is Medicine Intervention for People Living with HIV

Authors

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Introduction

People living with HIV (PLWH) are disproportionately affected by food insecurity and life adversity that may contribute to increased risk for diabetes and other cardiometabolic conditions through diet and stress-related mechanisms. Thus, nutrition-based interventions designed to support physical and mental wellbeing may be particularly helpful for this population. Formative evaluation, defined as the collection and review of feedback during program development to improve outcomes, is underutilized in food is medicine (FIM) research. The aim of this study is to describe findings from our formative evaluation of a FIM intervention, including foods and curricular components, to better ensure its acceptability and utilization as part of an upcoming randomized controlled trial.

Methods

The NOURISH-OK (Nutrition to Optimize, Understand, and Restore Insulin Sensitivity in HIV for Oklahoma) study aims to address insulin-resistance and other comorbidities experienced by people living with HIV through a FIM intervention. We conducted a total of 5 focus groups (n=21) using semi-structured discussion questions among people living with HIV with a history of food insecurity. Questions generated discussions about food box contents, related recipes, and excerpts from the self-care curriculum and a food "sorting" activity allowed participants to share what food box items they would and would not eat and why. Transcribed audio recordings and photographs from the food sorting activity were analyzed for major themes related to food preferences and curriculum needs.

Results

Major themes during analysis included a strong preference for familiar and versatile foods, such as canned chicken and dehydrated vegetables and frequent rejection of unfamiliar or otherwise unliked items, such as tofu, sardines, and lentils. Most participants voiced limited knowledge of the relationship between nutrition and socioemotional wellness and requested the curriculum provide more explicit examples of how food can be used to support these aspects of health. Curriculum-specific feedback detailed participants' preference for simplicity and the ability to choose how to engage with the curriculum including a printed workbook, online access to materials, and the option to receive text message reminders.

Discussion

This formative evaluation identified multiple opportunities for improving components of the NOURISH-OK intervention to help it better align with the community's stated interests and needs. Feedback will be used to guide revisions to the curriculum, including more information about the connection between food and stress and recipes that combine familiar and unfamiliar food items to promote overall consumption of the food box items.

Abstract #38 Food as Medicine: Evaluating the Outcomes of the Food First Pharmacy

Authors

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Introduction

Food insecurity is defined as having limited access to adequate and nutritious food, which can lead to compromised health and well-being across the lifespan especially among people with chronic comorbidities. The University of Oklahoma's Food First Pharmacy (FFP) is a "screen and intervene" food insecurity response program that operates at the Bedlam-Longitudinal clinic for uninsured adults and provides a variety of medically-tailored foods and healthy cooking supplies at no cost to patients. This study describes an evaluation of the program on nutrition-related outcomes.

Methods

To assess pre-post changes among FFP participants who newly enrolled in 2023 (n=41), we used data from self-report baseline and follow-up surveys (food security and fruit/vegetable intake) and medical records (BMI) review. We also qualitatively reviewed responses from an open-ended survey question to understand patient perspectives on how the FFP is helping them. We calculated descriptive statistics for each outcome and used paired samples t-tests to evaluate pre-post changes.

Results

Among newly-enrolled participants (n=41), all but four reported some degree of food insecurity (9.8% marginal, 46.3% low, and 34.2% very low) at baseline. Among those with some degree of food insecurity at baseline (score >0) with follow-up data (n=27), food security improved from pretest to posttest as indicated by a significant decline in food insecurity (M=3.9 to 3.2 (t(26)=2.65, p=0.014)., reflecting a medium effect size (Cohen's d=0.51). Overall, changes in fruit/vegetable intake were not significant (M=3.1 to 3.3 daily servings), but nearly one-third (30.0%) of participants reported an increase of >1 F/V daily serving. Among participants who were overweight/obese at baseline (> 25 BMI) (n=23), 60.9% experienced a BMI reduction at follow-up (M=1.3 BMI unit reduction, SD=0.9). Review of open-ended survey responses collected from all new and established patients (n=152) confirm program impact including foods helping to meet basic household food needs (food security), improved eating habits, and specific cooking supplies, such as food processors, being particularly helpful for supporting the nutritional health of people with dental issues.

Discussion

As a "screen and intervene" program, findings suggest the FFP is meeting its primary goal for supporting essential food security needs of patients and that the program is perceived as beneficial by many participants. More studies are needed to explore the ongoing barriers to eating fruits and vegetables within this population and how this program may be useful in helping to further support patients in meeting healthy body composition goals.

Abstract #39 Patient Utilization Patterns of the OU "Fresh Tuesday" Produce Table

Authors

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Introduction

An estimated 14.3% of Oklahomans are affected by food insecurity, which can act as a barrier to achieving a balanced diet and is independently associated with increased risk for obesity, diabetes, and hypertension. In response to the established linkages between food insecurity and chronic disease, clinic-based "screen and intervene" approaches to food insecurity are becoming increasingly popular across the US, including food pharmacy initiatives. The "Fresh Tuesdays" Produce Table at OU Family Medicine Clinic serves as an extension of the Bedlam-Longitudinal Clinic's OU Food First Pharmacy Program (FFP). This study aims to assess produce table utilization rates in 2023 and Supplemental Nutritional Assitance Program (SNAP) participation rates among produce table users.

Methods

We reviewed produce table sign-in logs for all patients accessing fresh produce during 2023, along with survey data on SNAP participation that was gathered from a smaller sample between 11/7/23 and 2/27/24. Data was compiled in REDCap, and descriptive statistics were generated for the number of unduplicated produce table participants and number of visits. We compiled weekly pounds of produce supplied from food bank invoices to estimate the average pounds of produce given to each visitor.

Results

In 2023, a total of 1,339 unduplicated patients visited the produce table 3,692 times and received an estimated average of 7.8 pounds of produce per visit. Among these participants, 61.9% (n=829) came once, 29.8% (n=399) came two to six times, and 8.3% (n=111) came seven or more times. Of patients accessing produce, only 17.8% (n=238) were enrolled in the FFP. Based on data from 11/7/23 through 2/27/24, 31.5% of produce table visitors reported having SNAP benefits.

Discussion

The "Fresh Tuesdays" Produce Table is a convenient source of fruits and vegetables that is readily utilized by many OU Family Medicine patients. The impact of this service could be furthered through direct education with patient visitors about other programs designed to support long-term nutrition security, such as Double Up Oklahoma and SNAP. For those who do not qualify for federal food assistance, the produce table may serve as a buffer against food insecurity.

Abstract #41 Sociomoral Climate at a Large Academic Pediatric Practice

Authors

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Introduction

Fueled by the national employee retention crisis, our department set out to explore ways to improve workplace climate. Our primary objective was to determine if respondent HR-classification, race/ethnicity, generation, or gender identity were associated with higher sociomoral climate (SMC) scores.

Methods

A survey study was conducted in 2022 and 2023 including OU-Tulsa Department of Pediatrics faculty, residents/fellows, and staff. Fall 2022 responses were classified as pre-data which led to the department adding interventions including frequent 'listening' meetings, and changes related to professionalism, leadership development, and clarifying and unifying expectations. Fall 2023 responses were classified as post-data. Data were collected anonymously via a REDCap survey. Optional demographic variables were collected alongside respondent HR classification. The SMC Scale, a twenty-one-item measure with five subscales, was utilized to assess employee perceptions of the department. Mean SMC scores were considered positive (>3), neutral (=3), or negative (<3). Straight line and partial responses were omitted from analysis (n=27). Multiple linear regression was utilized to determine if the intervention period (pre vs. post), respondent HR-classification (faculty vs. Staff vs. Resident/fellow), race/ethnicity, generation, or gender were associated with higher SMC scores. A $p<0.05$ was the threshold for significance.

Results

A total of 163 responses were retained for analysis with 74 (45.4%) from the pre-period and 89 (54.6%) from the post-period. Between the pre- and post-periods faculty scores remained consistent (pre M=3.51; SD=0.73, post M=3.53, SD=0.90) while staff scores increased (pre M=2.85, SD=0.72; post M=3.09, SD=0.90) and resident/fellow scores decreased (pre M=3.75, SD=0.40; post M=3.34, SD=0.54); however, changes were not statistically significant. The results of the multiple linear regression were statistically significant (R^2=0.30, $F_{(16, 146)}$=3.86, p<0.00). While the post-period was not significantly associated with SMC scores (B=0.03, p=0.83), staff classification (B=-0.59, p<0.00) and being a man (B=-0.46, p=0.01) were both associated with lower scores. Given the poor post-response (pre=77%, post=50%) from residents/fellows, the model was re-run excluding this group (n=27) with minimal effect (R^2=0.29, $F_{(15, 120)}$=3.32, p<0.00). Staff classification (B=-0.60, p<0.00) and being a man (B=-0.54, p<0.01) were statistically significant along with the 'prefer not to answer' race category (n=28; B=-0.61, p<0.01).

Discussion

While our findings did not indicate a difference between the pre- and post-periods, findings related to staff scores being lower than faculty scores as well as men having lower scores compared to women are both important and will be explored in future research. While not statistically significant, staff SMC scores did move from the negative to positive category.

Abstract #42 Success of Educational Program to Promote Limb Preservation within Indian Health Clinics

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Introduction

Based on a 12-year review of state hospital discharge data, American Indians with diabetes and peripheral arterial disease in Oklahoma have one of the highest rates of lower limb amputation. To promote collaboration, exploration, and improved patient outcomes, we initiated a pilot outreach program, "Caring for Our Feet," with one tribal nation. This interim report aims to assess the initial impact of partnering with primary care practices (PCPs) for a statewide limb preservation program to help educate primary care providers. The program's primary objective is to identify practice needs in recognizing at-risk patients and implementing effective prevention. We hypothesize that direct in-person engagement will significantly improve awareness of amputation risk.

Methods

The study design incorporates tenets from practice-based research, implementation science, and national amputation prevention guidelines. Using a multimodal approach, surveys, semi-structured interviews, clinic workflow observations, provider and clinic staff education, and free non-invasive patient peripheral arterial disease (PAD) screening were performed. A multidisciplinary limb salvage team visited primary care sites, engaging directly with each practice manager, primary care practitioners, and the supporting nursing and technical staff. Each practice was asked to recruit high-risk patients for free arterial screening using lower extremity arterial duplex imaging and ankle-brachial index measurements. Descriptive statistics were calculated for all quantitative pre- and post-survey responses. We used the Wilcoxon Signed Rank Test to assess the changes in scores from baseline to the end of the study.

Results

All four PCPs participated, with 34 practitioners initially consenting and 30 (88%) completing the study. Pre- and post-surveys showed practitioners felt more comfortable diagnosing, treating, and educating patients with diabetic foot complications, varying levels of severity in peripheral arterial disease, and foot deformities after the intervention. Overall, 27/28 (96%) measures showed improvement, with 21/28 (75%) of these measures with statistically significant improvement (p-value <0.05). Twenty patients were successfully screened, with 40% having a new diagnosis of peripheral arterial disease.

Discussion

We report the initial success of our first intervention between a tribal nation's PCPs and a multidisciplinary specialty team, specifically focusing on limb preservation. A positive working relationship and a robust methodology are demonstrated for all four practices enrolled, the practitioner program completion rate was high, and the survey data shows the educational sessions to be effective. In addition, positive interactive small group discussions, collaborative clinic observations, and targeted patient screening occurred seamlessly. No modifications to the current protocol are deemed necessary before engagement with a second tribal nation.

Abstract #44 Multi-Perspective Interviewing to Describe In-Home Remote Monitoring Acceptance among Older Adults, Informal Caregivers and HCBS Providers

Authors

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Introduction

Background & Problem:

There is little research examining in-home, remote assessment monitoring (RAM) technology acceptance among nursing home eligible, community-dwelling older adults with chronic illness who recently experienced an inpatient hospitalization. Older adults and their informal caregivers are often introduced to and offered the technology installation during this situational transition. Technology acceptance is a potentially significant barrier to improving health outcomes among this population. The role of home and community-based services (HCBS) providers in older adult RAM technology acceptance is not well known and should be evaluated as a contributor. Senior Technology Acceptance Model, Transitions Theory, Health Locus of Control, and Technological Competency as Caring in Nursing serve as theoretical underpinnings for this research.

Central Research Question and Aims:

How do nursing home-eligible, community-dwelling older adults go about deciding to accept RAM technologies in their homes? Do HCBS providers play a role? It was expected that this study would uncover a qualitative description for use by HCBS providers to address the decision-making process leading to acceptance of these technologies among this population.

Methods

Multi-perspective interviewing with older adult, their informal caregiver, and HCBS provider using semi-structured phone interviews to arrive at a qualitative description of RAM acceptance among this population. Initial descriptive coding, in vivo coding, and provisional coding resulted led to frequency coding analysis and a coding landscape.

Results

37 interviews were conducted; after excluding interviews that did not meet study eligibility criteria, 34 interviews remained (older adults = 15, informal caregivers = 8, HCBS providers = 11) resulting in 7 triads. Theoretical constructs were consistently present among all interviews and aligned with interview guide prompts (benefits, drawbacks, barriers, and facilitators). Synchrony was found among older adult, informal caregiver, and HCBS provider interviews. Informal caregivers were most interested in RAM technology to support older adult and alleviate caregiver burden. There were hints of ageist rhetoric among HCBS providers signaling opportunities for improvement. Findings suggest implications for HCBS provider practice and protocol/policy. There are also ethical implications for surveillance technologies and healthcare/coordination.

Discussion

Future analysis to compare coding landscapes across triad participants and possible mixed methods research using multivariate analyses to study strength and relationship between theoretical constructs is possible. Implications for care coordination include HCBS providers as technology facilitators and a paradigm shift from reactive to proactive care coordination using RAM technology.

Abstract #52 Exploring Patient Preferences for Adverse Childhood Experiences Education: A Focus Group Study

Authors

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Introduction

Adverse Childhood Experiences (ACEs) include potentially traumatic events and environmental aspects during childhood and increase the risk of negative health outcomes such as heart disease, suicidality, and obesity. While existing research has confirmed the prevalence and consequences of ACEs, understanding how patients prefer to receive education on this topic remains unexplored. This study aims to explore patient perspectives and preferences concerning the delivery of ACEs education in internal medicine clinics.

Methods

We conducted two one-hour, in-person focus group sessions with (n=8) patients at an academic internal medicine clinic. Moderator-led discussions focused on participants' current understanding of ACEs and their effects on adult health, impressions of various ACEs infographic posters, and preferences for ACEs education during doctor's visits. The focus groups were recorded, transcribed, and analyzed using conventional content analysis.

Results

Participants varied in ACEs familiarity and their associations with health conditions such as anxiety, depression, and autoimmune disorders. The ACEs infographic posters effectively initiated meaningful discussions, highlighting the message centered on "breaking the cycle." Participants recognized the posters' utility as engagement tools in doctor's offices, They preferred infographics with clear definitions, such as "intimate partner violence" instead of "mother treated violently," and separate categories for "alcohol abuse" and "smoking" instead of grouping as "substance use." Posters including steps to improve health were favored. Participants suggested that an ACEs poster in a doctor's office would make them more likely to talk with their doctor about their ACEs, which could lead to more patient-centered care and provision of resources to address ACEs. They also welcomed the idea of an optional ACEs screener in pre-appointment paperwork.

Discussion

Although the effects of childhood trauma on adult health are now more widely known, how to incorporate this knowledge into patient care is not well studied. Asking patients about their knowledge and preferences may help guide clinicians to improve patient education, trust, and quality of care. This initial qualitative research reveals an openness and interest in the inclusion of an ACEs discussion as part of their primary care visit. The preliminary results provide hints for managing the disclosure of ACEs, promoting healthy coping skills, improving trauma response, and preventing the perpetuation of generational trauma. The next steps include a collection of additional data from other locations, broad public health education, and research on improved health outcomes.

Abstract #53 Addressing What Matters Most for Older Adults with Multimorbidities: Preliminary Results

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Introduction
Two-thirds of older adults have multiple chronic conditions (MCC) that interfere with their health-promoting daily activities. Older adults with MCCs often have functional limitations, and may benefit from an intervention that addresses personal factors, and unique environmental and social contexts. These can impact adherence to lifestyle changes necessary to manage MCCs effectively, contributing to overall enhanced health. The ActivOT intervention uses a combination of occupational therapy (OT) and behavioral activation (BA) techniques to help older adults with MCC improve health-promoting daily activity. The purpose of this presentation is to report changes in performance and satisfaction with health-promoting daily activity associated with the ActivOT intervention.

Methods
Participants were randomized into either an education-only control or the ActivOT treatment group. The ActivOT intervention group received 10 weekly one-hour occupational therapy services in the participants' homes. Our primary outcome measure was the Candian Outcome Performance Measure (COPM), which facilitated the identification, ranking, and self-reported performance and satisfaction with of up to five most important goals. AssessMeasurements were repeated at 10-weeks and 22-weeks.

Results
There were 17 participants (n=9 Tx, n=8 Control) with an average age of 73.0 years old (SD = 6.9), and 3.9 chronic conditions (SD = 1.4). The COPM performance score at baseline (out of 10) was similar for the treatment group (M=3.6, SD=1.6) and control group (M=3.3, SD=1.1). At 10-week follow-up, the treatment group average increased to 7.0 (SD=1.7) and further increased to 7.2 (SD=1.0) at 22-weeks. In comparison, the control group average increased to 5.9 (SD=2.0) at 10-weeks and then decreased to 5.0 (SD=2.2) at 22-weeks. The average COPM satisfaction score at baseline for the treatment group (M=2.0, SD=0.6) was slightly lower than the control (M=2.6, SD=1.7). At 10-week follow-up, the treatment group average increased to 6.4 (SD=2.6) and further increased to 7.1 (SD=1.3) at 22-weeks. In comparison, the control group average increased to 5.2 (SD=2.2) at 10-weeks and then decreased to 4.6 (SD=2.5) at 22-weeks.

Discussion
The ActivOT intervention is showing promising preliminary results for improving engagement in health-promoting daily activity for this population. On the COPM at the 10-week mark, the performance and satisfaction scores for self-identified goals increased in both the treatment and control group, however, at 22-weeks, only the treatment maintained improvements. Allied health professionals are skilled at understanding how health behaviors affect the complex management of MCCs and are beneficial for the interprofessional team caring for this population.

<u>Abstract #56</u> Connecting Education to Workforce: Findings from a Statewide Survey of Social Workers

Authors

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Introduction

This project highlights the state of social work in Oklahoma. Recent literature suggests that Oklahoma, like much of the U.S., is facing a shortage of qualified social workers. A survey of social workers across the state provided data for this project. Researchers asked social workers about social work education, financial burdens and resources, and workforce needs. The survey assessed burnout using the Copenhagen Burnout Inventory. Finally, researchers used the data provided to examine connections between these factors in an attempt to illuminate the source of ongoing workforce issues.

Methods

This project uses both quantitative and qualitative methods for data collection. Researchers developed a survey using Qualtrics software to be disseminated to social workers across the state with the help of university social work alumni communications programs. Survey respondents were adults over the age of 18 and were asked to consent to the survey before beginning.

Results

The total number of survey participants was 312. Forty responses were excluded due to significant portions of data missing (80% or more of the survey) and 21 were excluded due to the respondent not working in the social work field in Oklahoma. This left a final number of valid cases as 251. Results include information about the demographics of social workers in Oklahoma, as well as characteristics of their employment settings, education and licensing levels, and debt and income. Researchers also measured burnout and client characteristics. Relevant comparative findings included education levels vs. burnout, rural vs. urban characteristics, and how burnout and job satisfaction may be correlated with plans to leave the field of social work. High rates of social workers who are sole providers in the family and high rates of social workers holding a second job are also correlated with dissatisfaction and plans to leave the field.

Discussion

The results of this survey provide a wealth of insight into the current state of the social work workforce in Oklahoma. Relationships between burnout and other variables can suggest future directions for policy or workplace needs for social workers. Perspectives directly from the workforce can then inform the relative amounts of public attention paid to problems such as low pay, licensure issues, and a lack of professional respect and support, among others. By assessing levels of burnout and low job satisfaction, as well as their relation to other workforce variables, we can find areas of improvement across the state.

Abstract #58 Using Illustrations to Elicit Perspectives About Food Among People Living with HIV

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Introduction

Food insecurity is a multifactorial, household-level, graded phenomenon that disproportionately affects people living with HIV (PLWH) and may contribute to health disparities in this population. Due to its complex nature, qualitative methods can be helpful in exploring personal viewpoints toward food and its impact on health. The aim of this study is to elucidate perspectives on the lived experience of PLWH affected by food insecurity.

Methods

The NOURISH-OK (Nutrition to Optimize, Understand, and Restore Insulin Sensitivity in HIV for Oklahoma) study seeks to address insulin resistance and other comorbidities experienced by PLWH through a randomized controlled trial food is medicine (FIM) intervention. To help develop the intervention, we conducted semi-structured interviews (n=24) to elicit perspectives on food access, food sourcing and preparation, and non-nutritional behaviors used to cope with food insecurity that ultimately influence participants' relationship with food. Participants were first asked to "draw their relationship with food" and then asked to further explain their drawings through six follow-up questions. Two researchers used an independent, open-coding process to identify elements of the illustrations. Initial codes were compared and reconciled, then were analyzed to identify major themes.

Results

Researchers identified four prominent themes (code domains): Preferred Food Choices, Emotional Responses, Food Environment, and Food-Health Dynamics. Drawings that depicted Preferred Food Choices most commonly featured fruit, animal products (meat/eggs), and drinks. Emotional Responses conveyed both positive and negative emotions, such as happiness, love, and sadness. Food Environment covered a wide range of images conveying food sourcing, preparation, and consumption with some drawings depicting nature-based settings, including where food is grown and/or eaten. Food-Health Dynamics primarily illustrated the influence of food on physical activity, smoking, and GI issues.

Discussion

This study suggests that food conveys multiple meanings for PLWH affected by food insecurity beyond nutrition, including psychological and environmental connections, which may influence food- and other health-related behaviors within this study population. Self-reflective drawing exercises can be a beneficial, novel approach in the narration of the participants' lived experiences and can tease out the complex relationship between food and identity. Nutrition interventions should recognize the important role that food plays in people's lives and aim to integrate aspects of self-identity to help ensure meaningful relevance for populations.