

Conference proceedings

Conference Proceedings: Southeastern Regional Society of Academic Emergency Medicine Meeting, 2024

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Academic Medicine & Surgery

The 2024 Society of Academic Emergency Medicine (SAEM) Southeastern Regional Meeting Research Forum showcased a peer-reviewed selection of emergency medicine research, innovations, and case reports presented in oral format. The event took place on July 13, 2024, in Orlando, Florida at the University of Central Florida. Dr. Julianna Jung delivered the keynote address. Awards were presented to top submissions in three categories: Fellow, Resident, and Student.

RESEARCH ABSTRACT WINNERS

1ST PLACE RESIDENT PRESENTATION

Drake Dixon, MD - "Atomized Intranasal 1% Lidocaine as Effective Trigeminal Neuralgia Pain Crisis Treatment: A Case Report"

1ST PLACE FELLOW PRESENTATION

Abigail Alorda, MD - "Rapidly Progressing Ecchymosis or Necrotizing Fasciitis: A Case Report"

1ST PLACE STUDENT PRESENTATION

Mahie Patil

Assessing ADHD Prevalence and Comorbidities in the United States: Insights from the Substance Abuse and Mental Health Services (SAMHSA) Data

2ND PLACE STUDENT PRESENTATION

Krish Patel

How Accurate is a New Screening Tool for Detecting Subarachnoid Hemorrhage?

3RD PLACE STUDENT PRESENTATION

Ekansh Parekh

Craniofacial Injuries in Mixed Martial Arts

RESEARCH ABSTRACTS

1. ATOMIZED INTRANASAL 1% LIDOCAINE AS EFFECTIVE TRIGEMINAL NEURALGIA PAIN CRISIS TREATMENT: A CASE REPORT

Drake Dixon MD, Kevin Sze DO, Jennifer Elfman PharmD, Shayne Gue MD, Andrew Little MD, Mary McClean MD
HCA Florida Osceola Hospital, University of Central Florida College of Medicine

INTRODUCTION

Trigeminal neuralgia (TN) is a chronic pain disorder characterised by unilateral, recurrent, short lived episodes of electric shock-like pain involving the distribution of the trigeminal nerve. There are well studied treatment options to manage the pain, such as carbamazepine, but are not highly efficient as rescue therapy as they take significant time to titrate to an effective dose for pain control. This case report highlights the use of aerosolized intranasal lidocaine as a possible treatment option in emergency conditions.

PATIENT PRESENTATION

Patient is a 37 year old male with past medical history of TN, who presented with severe right sided TMJ pain, radiating to the forehead and jaw. Patient was started on daily prednisone, carbamazepine, and hydrocodone-acetaminophen 5 days earlier, when he had been initially diagnosed with TN. Patient currently stated that pain was worsened by moving the jaw, due to which he could not talk, eat, or brush his teeth, and frequently used his phone to type on as a means of communication. He received IV morphine, dexamethasone, and ketorolac, with no relief of symptoms. He then received 1 ml of 1% intranasal atomised lidocaine into each nostril, which provided significant relief of symptoms.

DISCUSSION

First line therapies for trigeminal neuralgia include carbamazepine and oxycarbazepine, however, in the emergent setting, they are of little to no use due to time it takes for up-titration. As demonstrated in this case, patient experienced significant relief after administration of atomised lidocaine, which is easily obtainable in the Emergency Department.

CONCLUSION

Given the significant improvement of pain symptoms after administration of intranasal lidocaine in this case, we believe it is a promising and safe modality of abortive therapy for TN pain in the acute setting, and that larger randomised control studies should be conducted in the future to further investigate the efficacy of this treatment.

2. RAPIDLY PROGRESSING ECCHYMOSIS OR NECROTIZING FASCIITIS: A CASE REPORT

Abigail Alorda, MD, Stephanie Cohen, DO, Shayne Gue, MD, Jovans Lorquet, MD
HCA Florida Osceola Hospital, University of Central Florida College of Medicine, Orlando, FL

BACKGROUND

Necrotizing fasciitis (NF) is a rare, life-threatening soft tissue infection characterized by rapid necrosis of muscle fascia and subcutaneous tissue. Due to its aggressive and often occult presentation, NF is associated with significant morbidity and mortality, requiring a high level of clinical suspicion for timely diagnosis and intervention.

CASE PRESENTATION

A 40-year-old male with a history of diabetes mellitus and neuropathy presented to the emergency department with progressive discoloration and swelling of his right toe following minor trauma. Despite minimal reported pain, vital signs and laboratory findings were concerning for sepsis, with imaging negative for acute fracture or subcutaneous air. Given the rapid progression and clinical deterioration,

necrotizing fasciitis was suspected. Surgical intervention included right hallux amputation and partial first metatarsal resection. Cultures were positive for *Staphylococcus aureus*. During his inpatient course, the patient developed acute renal failure secondary to *Staphylococcus*-associated glomerulonephritis, requiring temporary dialysis.

DISCUSSION

This case highlights the critical need for early recognition of necrotizing fasciitis, especially in patients with underlying comorbidities such as diabetes. It also illustrates the potential for rare systemic complications like *Staphylococcus*-associated glomerulonephritis, further complicating patient management and recovery.

CONCLUSIONS

Necrotizing fasciitis demands urgent surgical management to prevent severe outcomes. Awareness of atypical presentations and secondary complications is essential to improving patient prognosis.

FUNDING

This research was supported by HCA Healthcare and/or an HCA Healthcare affiliated entity.

3. ASSESSING ADHD PREVALENCE AND COMORBIDITIES IN THE UNITED STATES: INSIGHTS FROM THE SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES (SAMHSA) DATA

Mahie Patil, Sanjana Konda

Orlando Science High School, Orlando, Florida; Brown University, Providence, Rhode Island

This study analyzes 2022 data from SAMHSA's Mental Health Client-Level Data (MH-CLD) to investigate ADHD prevalence and comorbidity. The findings reveal that 10.70% of the 5,899,698 patients were diagnosed with ADHD, indicating a high demand for targeted resources. ADHD prevalence declines with age, highest in children aged 0-11, and decreases with educational attainment, emphasizing the need for early intervention. Employment challenges are significant, with the highest ADHD prevalence among those not in the labor force. Racial disparities show Black individuals have the highest ADHD rates (9.71%) and Asian individuals the lowest (5.05%). Geographic differences indicate higher prevalence in the Midwest and South. Gender disparities and marital status also influence prevalence, with males and never-married individuals showing higher rates. ADHD shows strong comorbidity with Oppositional Defiant Disorder, Pervasive Developmental Disorder/Autism Spectrum Disorder, and Conduct Disorder. Effective ADHD management requires collaborative efforts from educators, employers, healthcare providers, and policymakers to create supportive environments and tailored approaches considering demographic

variables, comorbid conditions, and socio-economic factors.

4. HOW ACCURATE IS A NEW SCREENING TOOL FOR DETECTING SUBARACHNOID HEMORRHAGE?

Krish Patel

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INTRODUCTION

The subarachnoid space in the brain contains crucial blood vessels and cerebrospinal fluid. Aneurysms in these vessels can lead to subarachnoid hemorrhage (SAH), a serious stroke subtype with high morbidity and mortality rates. SAH treatment includes procedures like coiling and clipping, but these are available only at comprehensive stroke centers (CSCs), necessitating urgent diagnosis and transfer to specialized facilities.

METHODS

This IRB-approved study was conducted by Polk County Fire Rescue (PCFR) in Florida. PCFR, serving an 850,000-person population, implemented a three-step SAH protocol. The protocol uses both Ottawa SAH criteria and recurring symptoms, such as new-onset seizures and high systolic blood pressure, that were identified by EMS. Acute management included administering labetalol, levetiracetam, and ondansetron.

RESULTS

Of 2175 stroke patients, 80 screened positive for SAH and were eligible for transfer. Patients had a median age of 66, and 33% had an initial systolic BP over 220 mmHg. The interfacility transfer rate dropped from 12.9 to 3.6% after implementing the protocol.

CONCLUSION

The PCFR protocol's effectiveness suggests its potential for nationwide implementation. Early SAH recognition and prompt transfer to CSCs reduce complications and improve outcomes. Accurate field diagnosis by EMTs can prevent unnecessary transfers and enhance patient care. Future improvements may include portable diagnostic tools and enhanced EMT training to further improve SAH patients' prehospital care.

5. CRANIOFACIAL INJURIES IN MIXED MARTIAL ARTS

Ekansh Parekh, Garv Bhasin

Flower Mound High School, Flower Mound, Texas;
Brown University, Providence, Rhode Island

BACKGROUND

Sepsis is a medical emergency, with mortality that exceeds that of myocardial infarction, stroke and trauma. Early administration of fluids and antibiotics are important time-

sensitive treatment measures for sepsis patients. Every 1-hour delay in antibiotic administration = 4-8 % increase in hospital mortality, especially in septic shock. If sepsis is detected in the prehospital phase, then these treatment measures could be instituted even earlier, which may improve the patients' prognosis.

METHODS

This is an IRB approved prospective observational study conducted as part of our county EMS system's quality and research program. Our EMS system is one of the largest in our state, responding to more than 115,000 calls per year, and covering a geographic footprint of over 2,010 square miles. Our prehospital sepsis protocol includes medical patients 18 years or older with abnormal vital signs per the Centers for Disease Control with two or more positive SIRS criteria + altered mental status, presence of risk factors (immunocompromise, indwelling foley catheter, cancer, nursing home resident) and a positive shock index defined as a shock index > 1 or a modified shock index of <0.7 or > 1.3. These patients are considered sepsis alerts, and are given 30ml/kg intravenous fluids. In 2022, we introduced prehospital antibiotics for patients considered to be in septic shock, defined as a MAP < 70 mmHg. Hypotension management included dopamine followed by epinephrine or norepinephrine (not a change). We examined mortality rates before and after the introduction of prehospital antibiotics.

RESULTS

The median age of the cohort was 71 years, IQR 61-80, 45% female, 84% White, 13% Black, and 3% other. Over the 4 years (2 years before and 2 years after protocol change), 1,447 consecutive sepsis alert patients were called on, with an ultimate sepsis diagnosis accuracy of 59-64%. Of those admitted to the hospital after transport, the diagnostic accuracy rose to 92%. Lactate was elevated 48-56% of the time. Approximately 9% of the cohort had a MAP < 70 mmHg. The mortality rate for patients given ceftriaxone in the field compared to those without was significantly lower (15.8% vs 6.8%, P=0.0307, z-test for proportions).

CONCLUSION

Our county EMS experience with implementing prehospital antibiotics demonstrates that in carefully screened sepsis patients, prehospital antibiotics significantly reduce mortality, keeping other parameters in the protocol the same.

6. THE PSYCH BEHIND PSYCHEDELICS: EXPLORING HALLUCINOGEN USE AS A MARKER FOR UNTREATED MENTAL HEALTH DISORDERS

Liyana Ahmed, Sanjana Konda

Seminole High School, Sanford, Florida; Brown University, Providence, Rhode island

INTRODUCTION

Hallucinogens are drugs that, while having potential benefits if used safely, can greatly harm an individual's mental state if misused. They can cause long-term harm to human consciousness, can cause individuals to harm themselves or others, and can even be fatal in worst cases. However, they do have the potential of mitigating the effects of mental disorders such as anxiety or depression, which can cause people with mental illness to be more likely to use them, despite their dangers.

METHODS

Data was taken from the National Survey on Drug Use and Health (NSDUH), obtained through the Substance Abuse and Mental Health Services Administration (SAMHSA) database. Using age group as a control variable, different variables were run through a crosstab in order to find significant data pointing to the implications of hallucinogen use.

RESULTS

The data from the crosstab showed three key findings about hallucinogen use: Those with mental illness or substance abuse issues were substantially more likely to use hallucinogens, the hallucinogen use greatly increased with the pandemic along with further mental health issues, and those who used hallucinogens were more likely to abuse other illegal substances, primarily in a younger population.

CONCLUSION

The positive correlation between mental health issues and hallucinogen use emphasizes the need for better mental health services, especially after the COVID-19 pandemic. While many may use hallucinogens for recreational purposes rather than due to a mental illness, the use of hallucinogens to possibly self-treat mental illness is significant and highlights the need for safer and more accessible mental health treatments. The positive correlation between hallucinogen use and other drug use indicates the widespread drug abuse problem, especially within a younger population in which drugs pose a larger neurological threat.

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8. PATTERNS OF HEAD INJURY IN INFANTS AND TODDLERS PRESENTING TO THE EMERGENCY DEPARTMENT

Pranav Anbalagan, Benjamin Jamal

Lake Nona High School, Orlando, Florida; Brown University, Providence, Rhode Island

OBJECTIVE

The study aims to determine the value of helmets in preventing pediatric traumatic brain injury. It will investigate cases involving various recreational vehicles, including ATVs, bicycles, motorcycles, watercraft, and more.

METHODS

This is an observational cohort study of pediatric cases ranging from the ages of 5 to 17. JMP, a statistical analysis software, was used to find relationships between outcomes after recreational vehicle accidents and the use of a helmet

by analyzing the p-value to determine the significance of a relationship.

RESULTS

Results indicated a relationship between the use of a helmet and several other variables, such as TBI Severity in the emergency department, occurrence of fractures, whether the patient was admitted or discharged, ICU stay, prevalence/necessity of CT scans, and various TBI-related CT findings, including extra-calvarial soft tissue swelling or a fracture of the skull.

CONCLUSIONS

These findings help conclude the strengths of using helmets in recreational vehicles for the pediatric population as a prevention method to refrain from a possible TBI occurrence. Also, the findings indicate the importance of incorporating helmet laws/regulations or, if there are already existing ones, highlight the need for more enforcement when utilizing recreational vehicles such as the ones discussed.

9. AI IN OPHTHALMOLOGY - A BIBLIOMETRIC ANALYSIS

Ronith Bokisam, Daniel Zhao

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OBJECTIVE

This study aims to determine the prevalence of AI integration in ophthalmology. AI in Ophthalmology has been an exponentially growing field and recent bibliometric analyses have yet to be made substantial regarding this topic.

INTRODUCTION

AI integration in ophthalmology has been prevalent for 20 years, however recently, new shifts in the field have created technological underpinnings. The reason for the construction of this bibliometric analysis is to provide researchers and educators with a relevant and recent depiction of the field and provide a just understanding of where the field is headed.

MATERIALS AND METHODOLOGIES

The materials used were 998 articles extracted from the Web of Science. To distinguish and extrapolate articles, the search “TS=ophthalmology AND TS=(Artificial Intelligence OR AI OR ChatGPT OR machine learning OR LLM)” diagnostic was used. This populated articles relevant to the field allowing for a critical examination of data in VOSViewer. VOSViewer assisted in the creation of the bibliometric analysis. Data from the Web of Science was also extrapolated by publication year, allowing for the creation of a bar graph for easier comprehension.

RESULTS AND CONCLUSION

The results showed that the most prevalent countries involved in AI in Ophthalmology research were the United States and the People’s Republic of China. The most prevalent Institutions were Stanford University, Harvard Medical School, Singapore National Eye Center, and Singaporean National University. The authors mainly came from the United States and the People’s Republic of China. The implications of this data provide future researchers with countries that have an established foundation in this research as well as countries that are developing the latest research.

10. EARLY-ONSET DEMENTIA: A BIBLIOMETRIC ANALYSIS

Misha Choudry, Sofia Malik

Trinity Preparatory School, Winter Park, Florida; Washington University, St. Louis, Missouri

A bibliometric analysis was conducted with a focus on global literature from 1967 to 2024 to conduct a thorough analysis of the scientific literature on early onset dementia (EOD) and its symptoms. A review of 2,433 articles focused on EOD revealed a marked upward trend in publications, especially after 1991. The United States led the world in research output, followed by the United Kingdom and Japan. The most active college was University College London. As the first study of its kind, it uses bibliometrics to analyze the global field of EOD (1967–2024) using a variety of indicators, offering fresh perspectives on the areas of greatest interest and emerging trends in the field.

11. ADVANCES IN AUTISM: A BIBLIOMETRIC ANALYSIS

Mehereen Chowdhury, Murdoc Gould

Canterbury School, Fort Myers, FL; University of London, Birkbeck

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by challenges in social interaction, communication, and repetitive behaviors. It affects individuals differently, with symptoms ranging from mild to severe, hence the term “spectrum.” Globally, ASD prevalence estimates vary, but the World Health Organization suggests approximately one in 160 children worldwide have ASD.

METHODS

This bibliometric analysis was performed by gathering data from the Web of Science Core Data Collection, using keywords such as machine learning, autism spectrum disorder, and deep learning. These articles were then analyzed using VOS Viewer. Maps were generated using sorting methods, focusing specifically on organizations, countries, and keywords.

RESULTS

This paper analyzed 501 research articles about AI treatment research for Autism Spectrum Disorder (ASD) from 2007 to 2023. The distribution of research output and impact across different countries reflects a variety of factors shaping their positions in the global scientific community. Leading this is the United States, which stands out with 164 publications and a substantial 4988 citations. England follows closely with 90 publications and 1089 citations. Leading keywords included Machine learning” and “Autism spectrum disorder”.

CONCLUSION

The application of artificial intelligence (AI) in diagnosing autism spectrum disorder (ASD) is rapidly growing, as evidenced by a review of 501 research articles from 2007 to 2023, which shows a notable increase in publications over the past 16 years. AI, particularly through machine learning and deep learning, is becoming more prevalent in the medical field. Current ASD screening methods, which rely on extensive assessments and subjective scoring, are being enhanced by AI to improve efficiency and accuracy. For example, a new AI-driven screening system using Convolutional Neural Networks (CNNs) has shown superior performance over traditional methods, featuring a mobile app and a dynamic database for continuous learning. Deep learning techniques applied to neuroimaging and natural language models analyzing text from parent dialogues further support early and accurate ASD diagnosis. Research output varies by country, with the United States leading in publications and citations, followed by England, while other countries show varied levels of impact. Leading institutions like Stanford University and McGill University drive significant advancements, supported by global contributions from universities such as Abu Dhabi University and the Chinese Academy of Sciences. Prominent figures like Dennis Wall, who founded Cognoa, also contribute significantly to the field. Keywords such as “Machine learning” and “Autism spectrum disorder” reflect the focus on integrating emerging technologies to better understand and address ASD.

12. BIBLIOMETRIC ANALYSIS ON THE EPIDEMIOLOGY OF ALZHEIMER’S DISEASE

Anayah Chowdhury, Garv Bhasin

Canterbury School, Fort Myers, Florida; Brown University, Providence, Rhode Island

INTRODUCTION

Alzheimer’s disease presents a complex global health issue. It is represented by a decline in cognitive function, starting with memory impairment and extending to impact reasoning, language abilities, and spatial awareness. This paper seeks to analyze research papers regarding Alzheimer’s disease and catalog the metadata associated with each paper.

METHODS

The dataset collected was obtained using an advanced search on the Web of Science database for the keywords “Epidemiology” and “Alzheimers”, not case sensitive. A total of 2,055 articles were finally retrieved for analysis which range from dates of January 1986 to June 2024. Papers were analyzed based on the country of origin, institution, and date published.

RESULTS

The leading country in publications was the United States (40.1%), followed by England (12.8%) and the Netherlands (7.9%). Karolinska Institute leads with 62 publications on Alzheimer’s disease. Columbia University follows closely with 58 publications. The University of California San Francisco and the University of Pittsburgh share the third position. In 1989, there were minimal publications on Alzheimer’s disease. The year 2022 recorded the highest number of publications. The leading article, “The global prevalence of dementia: A systematic review and meta-analysis,” had 3,267 citations.

CONCLUSION

Alzheimer’s disease remains a global challenge despite decades of research, lacking long-term treatments. Institutions like the Karolinska Institute, Columbia University, UCSF, and Pitt contribute significantly, with a publication growth in 2022 post-COVID-19. While current treatments offer symptomatic relief, there’s a need for disease-modifying therapies targeting its mechanisms. Increased research investment aims to uncover new therapeutic targets, biomarkers for early detection, and personalized treatments for Alzheimer’s patients.

13. TRACK AND FIELD-RELATED LOWER-EXTREMITY MUSCULOSKELETAL INJURIES: A RETROSPECTIVE STUDY DISCUSSING INJURY ANALYSIS, STRESSORS, AND COMPREHENSIVE MANAGEMENT

Vedha Dande, Jasra Elahi

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OBJECTIVES

Nationally recognized as a popular adolescent and adult sport, track and field (TAF) has aggregated injuries which are niche to the activity. With a focus on lower-extremities, there has been a displayed trend in knee and ankle injuries which can be related strains/sprains. Studies have suggested sex-based susceptibilities, with females presenting as a target population with a 18% higher risk of injury. By studying the variable factors that provide details on injury prevalence such as body part location and diagnosis, this study aims to provide beneficial information, from a clinical perspective, on how healthcare providers and sports educators can navigate treatment and safety for TAF athletes.

METHODS AND MATERIALS

The National Electronic Injury Surveillance System (NEISS) database was queried during a ten-year time span (2013-2024) to analyze lower-extremity track and field-related musculoskeletal injuries.

RESULTS

Approximately 128,761 TAF-related lower-extremity injuries were reported over the span of ten years. Varied distribution presented that 58% (n=74,636) of females reported lower-extremity TAF injuries while only 42% (n=54,125) of males did, contending that females were 1.4 times more likely to experience these incidents. The majority of reported cases were displayed in adolescents aged 15 (n=17,502) and 14 (n=17,405) years old. Pre-puberty age incident reports increased 1.5-2 times per year until their peak at 14 and 15 years old, which followed an estimated 50% decrease during the following years until a median of about 1,300 injuries during the early twenties. From diagnoses, there were 1,067 reported cases of strain/sprains associated with female patients with 733 cases present in males. The category of strain/sprains ranked the highest, followed by fractures (females n=184, males n=163), excluding other/not stated cases. The ankle presented as the body part with the majority number of incidents with 39,261 cases being presented, followed by injury to the knee with 37,823 injuries.

CONCLUSION

Analysis from this study identifies knee and ankle injuries to be the most common lower-extremity TAF injury amongst athletes, displaying greater aggregation with female patients. Adolescents displayed greater susceptibility to injuries, with prevalent diagnoses being sprains/sprains. Amongst identified preventative methods, patient-specific treatment plans focused on mitigating risks and/or decreasing stressors were suggested such as proper nutrition, identifying intrinsic and extrinsic risk factors, and utilizing e-Health technologies. Future research which is more evocative of the patient experience and displays the effectiveness of treatment plans specific to various common diagnoses should be conducted to aid especially susceptible populations.

14. PREVALENCE IN INDIVIDUALS WITH UNDIAGNOSED ADHD

Carissa Du, Daniel Zhao

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BACKGROUND

Attention deficit/hyperactivity disorder (ADHD) is a disorder characterized by inattention, hyperactivity, and impulsivity. It is one of the most prevalent disorders seen in individuals today, and the primary treatment is pharma-

cological interventions. These interventions include stimulants and non-stimulants. Diagnosing ADHD is typically more difficult in women due to a range of different symptoms between the sexes. Although ADHD has been advocated for in the modern age, misdiagnoses are still common, resulting in ADHD being mistaken for other disorders. This study aims to find the prevalence of undiagnosed ADHD.

METHODS

A web-based survey was administered, asking questions based on an adult screening for ADHD. These questions were from the Adult ADHD Self-Report Scale (ASRS-V1.1), and two additional questions were formulated to determine whether the individual was initially diagnosed with ADHD and whether they take medications for it. The Adult ADHD Self-Report Scale is split into two parts where part A determines the symptoms and part B further probes into specific symptoms.

RESULTS

The total percentage of the prevalence of undiagnosed ADHD is 14%. Out of the participants in the survey, twenty-eight out of two hundred individuals had undiagnosed ADHD. 55% of the 28 were women, while 45% were men. The first two questions on the ASRS-V1.1 contained the most significant p-value in response to the percentage of undiagnosed ADHD in adults.

LIMITATIONS

Recall bias may occur because this is a web-based survey.

CONCLUSION

Although advocacy for ADHD has increased for the last twenty years, our study found that 14% of 200 individuals are undiagnosed with ADHD. 55% of surveyed individuals were women, also supporting the conception that women are more undiagnosed for ADHD than men. This conclusion calls for more advocacy for ADHD diagnosis and awareness.

15. UPPER EXTREMITY INJURIES IN SWIMMING

Daniel Go

Lake Highland Preparatory School, Orlando, Florida

Given the rise of swimming as a casual, competitive, artistic, and health-related activity in the past few years, it has become increasingly important to look at injuries that can be caused by swimming. Through studying swimming-related injuries to the upper extremities, swimmers can understand how to prevent major, long-lasting injuries and how to treat these injuries if they occur. The National Electronic Injury Surveillance System (NEISS) Database was used to analyze data on swimming-related injuries to the upper extremities in the last five years. In these past five years, 82,834 injuries to the upper extremities of swimmers have been reported to the Emergency Department (ED). The study highlights the most common upper-extremity-

related injury in swimming and how to prevent it, as well as how to treat it. In addition, it is vital to note that future research could delve into possible equipment that would help prevent the injury altogether.

16. SEATBELT IMPACT ON TBIS IN SCHOOL-AGE CHILDREN

Aaditya Jandhyala, Benjamin Jamal

Orlando Science High School, Orlando, Florida; Brown University, Providence, Rhode Island

OBJECTIVE

Traumatic brain injuries (TBIs) are head injuries that disrupt the brain. They can occur from falls, traffic accidents, sports injuries, and military injuries. TBIs can cause a variety of symptoms, some of which include dizziness, headaches, photosensitivity, kidney damage, and axonopathy. Therefore, it is important to prevent TBIs as much as possible. The objective of this study is to determine how the use of seatbelts in school-age children (Ages 5-17) affects outcomes of TBIs in motor vehicle collisions.

METHODS

This is an observational cohort of pediatric patients who sustained a TBI. This cohort was then filtered to remove all patients who did not get their TBI from a traffic accident.

RESULTS

The cohort has 169 patients with a median age of 15. 39% of the subjects had reported not wearing a seatbelt before the TBI while 43% did report wearing a seatbelt. It was found that alteration of consciousness, loss of consciousness, TBI severity, ICU admission, and hospital admission were linked to not using a seatbelt in univariate models ($p < 0.05$). In a multivariate model, wearing a seatbelt was found to significantly reduce TBI severity ($R^2 = 0.6953$, $p < 0.001$), hospital admissions ($R^2 = 0.2522$, $p = 0.003$), ICU admissions ($R^2 = 0.5281$, $p = 0.016$), abnormal head CTs ($R^2 = 0.4519$, and $p = 0.010$).

CONCLUSION

Lack of a seatbelt is associated with increased TBI severity, ICU admissions, hospital admissions, and abnormalities in CT scans. This supports the idea of educating children and parents about the increased risks that are linked to not wearing a seatbelt.

17. PREDICTORS OF MORBIDITY AND MORTALITY AFTER A FALL-RELATED TBI

Nghi Khuat, Garv Bhasin

Orlando Christian Preparatory, Orlando, Florida; Brown University, Providence, Rhode Island

OBJECTIVE

The research seeks to investigate predictors of morbidity and mortality in patients after a fall-related Traumatic Brain Injury (TBI).

METHODS

This study analyzed the predictors of a subset of patients who come to the emergency department (ED) of a Level 1 trauma center that diagnoses TBI after a fall. Furthermore, the study seeks to determine the effects of the presence of abnormal head Computed Tomography (CT) scan as a predictor in determining outcomes such as hospital admission, in-hospital death, and Intensive Care Unit (ICU) admission. Demographic variables such as age, sex, race, and marital status, as well as symptoms associated with the TBI injury such as seizures, vomiting, loss of consciousness (LOC), post-trauma amnesia (PTA), alteration of consciousness (AOC), were all variables included in the multivariate model.

RESULTS

1439 participants were enrolled, of which 833 (57%) patients were male. The median Glasgow Coma Scale (GCS) score for patients was 15, and 87% of the patients experienced mild TBI. Predictors that were statistically significant in predicting in-hospital death, both in the presence and absence of abnormal head CT in the multivariate model, were age in years, loss of consciousness, and diastolic blood pressure. Predictors that were statistically significant for hospital admission both in the presence and absence of abnormal head CT in the multivariate model were loss of consciousness, age in years, and patient diastolic blood pressure. Finally, predictors for ICU admission that were significant in the presence and absence of abnormal head CT in the multivariate model were GCS score and loss of consciousness.

CONCLUSION

The presence of Abnormal Head CT increased the R^2 value in all 3 of the outcomes of hospital admission, in-hospital death, and ICU admission. This could indicate that abnormal head CT in the patient plays an important role in predicting various health outcomes, emphasizing the importance of early interventions.

18. BARRIERS TO THE SCREENING AND DIAGNOSIS OF BREAST CANCER

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OBJECTIVE

The objective of this study is to analyze various factors preventing women from getting screened for Breast cancer.

INTRODUCTION

Breast cancer predominantly affects women over the age of 50, presenting with symptoms such as painless lumps and changes in breast size. Diagnosis primarily occurs through mammography and biopsy. Treatment options span from surgery to chemotherapy, contingent on the cancer stage. While preventative measures of stress such as lifestyle adjustments like weight management and reduced alcohol intake can reduce cases of breast cancer, challenges persist in accessing timely screening and treatment, especially in low- and middle-income areas of the country. Methods: This survey engaged 88 US adults, focusing on mothers affected by breast cancer. Administered to ensure distinct responses, it included questions covering family history, personal risk factors, menstrual cycles, pregnancies, barriers to mammograms, and strategies for enhancing healthcare support and awareness.

METHODS

This survey engaged 88 US adults, focusing on mothers affected by breast cancer. Administered to ensure distinct responses, it included questions covering family history, personal risk factors, menstrual cycles, pregnancies, barriers to mammograms, and strategies for enhancing healthcare support and awareness. Results

Participant ages were distributed as follows: <18 (1.14%), 18-30 (38.64%), 31-40 (23.86%), 41-50 (21.59%), >50 (14.77%). A family history of ovarian or breast cancer was reported by 66 participants (75%). Identified risk factors included family history (80.68%), smoking (65.91%), alcohol consumption (55.68%), obesity (46.59%), early menarche (38.6%), and late menopause (30.68%). Awareness of recommended breast cancer screening was high, with 76 participants aware (86.36%). A majority (80.68%) believed earlier mammograms were warranted.

CONCLUSION

The study reveals US women delay mammogram screenings due to financial concerns and fear of diagnosis. Implementing widespread medical aid initiatives can alleviate the stigma of having breast cancer, ultimately increasing screening efforts and reducing the progression and severity of breast cancer in women.

19. BIBLIOMETRIC ANALYSIS OF SMALL CELL LUNG CANCER IN GERIATRIC POPULATIONS

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INTRODUCTION

Small cell lung cancer is a subset of lung cancer that accounts for 15% of all lung cancer cases. Heavy smoking has been linked to the progression of this disease, as seen through data linking 80-90% of small cell lung cancer

deaths to smoking. Small cell lung cancer predominantly impacts individuals ages 65 and older. Due to the size of small cell lung cancer cells, this disease is far more deadly than non-small cell lung cancer because the small cells are able to proliferate throughout the body quickly. The aim of this particular study is to analyze the literature published about Small cell lung cancer in geriatric populations on a global scale from 1979 to 2023.

METHODS

This bibliometric analysis was performed by gathering data from the Web of Science Core Data Collection, using keywords such as small cell lung cancer, SCLC, ES-SCLC, oat cell cancer, etc. The search was also filtered to include only the elderly population by using keywords such as 65+, elderly, geriatric patients, and baby boomers. These articles were then analyzed using VOS Viewer. Maps were generated using sorting methods, focusing specifically on organizations, countries, and keywords. Results

This particular bibliometric analysis analyzed 7,710 articles spanning from 1979 to 2023. The United States, the People's Republic of China, and Japan produced the most publications on Small cell lung cancer in geriatric patients. When analyzing keywords used in papers regarding Small cell lung cancer in geriatric patients, many of the keywords related to the treatment and therapy of small cell lung cancer. Conclusion

The USA may have the leading number of publications regarding small cell lung cancer because lung cancer is still the leading cause of cancer deaths in the country. Additionally, $\frac{2}{3}$ of all of the patients who are dying from lung cancer in the US are geriatric patients. After the USA, the People's Republic of China and Japan most likely have a high number of publications because the average age of their population is 45. Due to the fact that small cell lung cancer is a disease that is mainly diagnosed later on in life, more of the population may be at risk for developing small cell lung cancer. This bibliometric analysis shows that as time progresses, the focus of the United States, the People's Republic of China, and Japan is to increase research on therapeutics and treatments to help remedy Small cell lung cancer in order to decrease fatal lung cancer diagnoses in geriatric patients. If these countries continue their research efforts as before, more advancements in treatment can be made to ultimately find a cure for small cell lung cancer, particularly impacting geriatric populations.

20. VALUE OF HELMETS IN PREVENTING PEDIATRIC TRAUMATIC BRAIN INJURY

Parth Patel, Benjamin Jamal

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OBJECTIVE

To study the value of helmets in preventing pediatric traumatic brain injury. This study will be investigating cases for

a variety of recreational vehicles including ATV's, bicycles, motorcycles, watercrafts, and more.

METHODS

This is an observational cohort study of pediatric cases ranging from the ages from 5- 17. JMP, a statistical analysis software, was used to find relationships between outcomes after recreational vehicle accidents and the use of a helmet, by analyzing the p value to determine significance of a relationship.

RESULTS

Results indicated there was a relationship between the use of a helmet and several other variables such as TBI Severity in the emergency department, occurrence of fractures, whether the patient was admitted or discharged, ICU stay, prevalence/necessity of CT scans , and various TBI related CT findings including extra-calvarial soft tissue swelling or a fracture of the skull.

CONCLUSIONS

These findings help conclude the strengths of using helmets in recreational vehicles for the pediatric population as a prevention method to refrain from a possible TBI occurrence. Also the findings help indicate the importance of incorporating the use of helmet laws/regulations or if there are already existing ones , rather highlights the need for more enforcement when utilizing recreational vehicles such as the ones discussed.

21. A BIBLIOMETRIC RESEARCH ANALYSIS OF NEUROIMAGING USE FOR TBI

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INTRODUCTION

With Traumatic Brain Injuries being responsible for about 190 deaths per day in the United States, proper management of this condition is a key research initiative. Neuroimaging is often used to diagnose and monitor severe TBIs, but there is concern that the method is not being used as often as needed to avoid negative patient outcomes. This paper gives an overview of the research efforts relating neuroimaging to TBI care, looking at the timeline, keywords, and organizations involved.

METHODS

The Web of Science database was used to identify and collect data via keyword search from 9,981 research papers spanning from 1983-2024 found to be relating neuroimaging use to traumatic brain injuries. Network maps were produced using the VOSViewer software to visualize the interconnectedness of research initiatives between notable

countries and organizations, as well as the most prevalent keywords.

RESULTS

The United States proves to be the most established and influential country of the research paper dataset, producing 45% of the studies and a leading number of citations. England is in second place producing only 7% of the studies, with less than 20% of the citations that America possesses in the field. Harvard Medical School, the University of Pittsburgh, and University of California San Francisco are organizations in the lead for producing the most research in the field, each with over 220 studies, with UCSF and the University of Cambridge being the most influential in the field having the most citations. The publications in this field have shown a dramatic increase in number over the past twenty-five years, showing a slight increase in 2020. Only 8.5% of the studies were categorized as radiology nuclear medicine, with 39% being in clinical neurology and 33% in neurosciences.

DISCUSSION

America is known to be highly funded for research initiatives, and with traumatic brain injuries being a growing issue in the country, its lead in the field of research is not surprising. Harvard Medical School, the University of Pittsburgh, and University of California San Francisco are also known to be some of the highest NIH funded institutions in the country, allowing them to remain as the leading organizations for the field. The elderly population in America aged 75 and up have seen an increase in TBIs over time, and quarantine activity in 2020 may have led to greater TBIs and in turn more studies published. With most of the papers falling into general categories like "clinical neurology" and "neurosciences," it is evident that neuroimaging research for TBI is not a niche area of research, and is already well-incorporated into common practice.

CONCLUSION

Using neuroimaging for mild TBIs is shown to hold some value in predicting the length of hospital stay and future readmission. This information can be valuable for informing patients, with the possibility of boosting morale and hopefully improving patient outcomes. With CT scans being so valuable in visualizing hemorrhagic damage, it is important for continuous research to be done to improve resolution, with the aim of detecting microhemorrhages that can increase in size and harm. Through greater collaborations between countries, hopefully new solutions in neuroimaging technology can be found and shared.

22. CONTINUOUS QUALITY IMPROVEMENT FOR PREHOSPITAL STEMI DEVELOPING IMPROVED TRIAGE RATES AND ACHIEVEMENT OF GOLD STANDARD <90-MINUTE DOOR TO BALLOON TIME

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BACKGROUND

ST-elevation myocardial infarction (STEMI) is a type of myocardial infarction caused by a buildup of plaque or clot in the coronary arteries. There are approximately 750,000 STEMI cases each year in the United States. The American Heart Association's Mission Lifeline initiative aimed to optimize prehospital emergency medical services (EMS) and enhance STEMI triage rates through improved standardized protocol. This study evaluates the implementation of Mission Lifeline techniques by Polk County Fire Rescue (PCFR) on improved door-to-balloon (DTB) times and triage rates.

METHODS

Data from PCFR, Florida's 4th largest EMS, was analyzed quarterly from 2015 to 2023. The study included patients presenting coronary symptoms or chest pain in prehospital care >35 years of age.

RESULTS

Among 2,585 patients, the percentage meeting the 90-minute EMS-to-Balloon time increased from 74% in 2015 to 84% by the year 2019. The average annual under-triage rate for STEMI decreased from ranging from 2% in 2015 to 4% in 2017 to below 1% after the year 2020, reaching as low as 0% in 2021 and 2023. Over-triage rates initially fluctuated, increasing to a height of 12% by 2017, but decreased to <3% by 2022 and further dropped to 0.6% of cases were over-triage by 2024.

CONCLUSION

Implementation of Mission Lifeline procedures, including pre-hospital 12-lead ECG use and hospital pre-activation, significantly enhanced STEMI care. These interventions led to improved DTB times and more accurate prehospital STEMI identification, underscoring the importance of coordinated, protocol-driven prehospital STEMI care in improving patient outcomes.

23. RETROSPECTIVE LONGITUDINAL REVIEW OF PATIENTS WITH VENTRICULAR FIBRILLATION IN AN OUT OF HOSPITAL SETTING

Shiva Sajja

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BACKGROUND

Approximately 400,000 out-of-hospital cardiac arrests will occur yearly in North America of which 100,000 will be by ventricular fibrillation or pulseless ventricular tachycardia. This study was a retrospective longitudinal review of 80 patients found with ventricular fibrillation in an out-of-hospital setting treated by the Polk County EMS.

METHODS

Inclusion criteria for the study comprised all patients over the age of 18 for whom a call was made for unresponsiveness. Data for this project included all cardiac arrests due to RVF in the calendar year 2022.

The study was designed to look for statistical significance correlations between treatment confounding variables and sustained ROSC (return of spontaneous circulation).

RESULTS

80 patients sustained cardiac arrest due to ventricular fibrillation in the study in the year of 2022. The overall age range was 27 to 80 years old. The study population was 71% White, 19% African American, 8.7% Hispanic and 1% other. 95% received epinephrine, 89% utilized an advanced airway, 60% underwent hypothermia protocol, 24% utilized an AED device, and 14% used a mechanical CPR device. 76% were pronounced dead in the ER or the hospital and 19% survived to discharge. In the survivor population, CPR was initiated in 13 minutes or less and defibrillation occurred in 23 minutes or less. No confounding variables were found to have a significant p-value, but epinephrine use showed a trend toward statistical significance for the outcome of sustained ROSC with a value of .05346.

LIMITATIONS

Further research would need to observe and analyze each patient's economic status, education level, and healthcare access to observe how demographic and sociocultural differences interact to produce discrepancies in healthcare outcomes.

CONCLUSION

19% of patients survived out-of-hospital cardiac arrests in the Polk County hospital system. This was statistically higher than the national average.

24. CRANIOFACIAL INJURIES IN RUGBY

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INTRODUCTION

Rugby is a sport popular in Europe and Australia that resembles American football. A key difference between Rugby and American Football is the lack of pads or protective equipment, which increases the risk of head-to-head collisions and craniofacial injuries. Despite the in-depth research done on head and neck injuries, there is an insufficient amount of research relating to intracranial injuries in rugby. This paper aims to analyze patterns and differences in rugby-related craniofacial injuries.

MATERIALS AND METHODS

An analysis of facial and neck injuries, including the ear, mouth, and eyes, was performed using the National Electronic Surveillance System (NEISS) datasets from 2014-2023. These datasets conveyed patient information such as sex, race, weight, age, diagnosis, treatment date, body part, disposition, and injury location that occurred while playing rugby.

RESULTS

During the study period, a total of 35,583 intracranial injuries were estimated to occur in emergency departments across the nation. Among these cases, 27,669 (77.8%) were male, and 7,914 (22.2%) were female. The three most common injury sites were the head (19,261 cases, 51.4%), face (13,261 cases, 35.4%), and neck (2,115 cases, 5.6%). The most frequent diagnoses were lacerations (9,906 cases, 25.8%), internal injuries (9,543 cases, 24.9%), and concussions (8,617 cases, 22.5%).

CONCLUSION

In 35,583 total cases, 77.8% of diagnoses were male and 22.2% were female. There has been a downward trajectory in the annual injury rate, going from 5,033 cases in 2014 to 2,862 cases in 2023. Most diagnoses were internal injuries, lacerations, and concussions. Prevention and recovery of intracranial injuries needs to be focussed on more in rugby. Players should be given more time to recover and should consider wearing protective equipment to minimize injury.

25. MARIJUANA USAGE AMONG ADOLESCENTS AND ITS EFFECTS

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BACKGROUND

Marijuana comes from the many parts of the cannabis sativa plant. Cannabis sativa contains delta-9-tetrahydrocannabinol which is the dominant psychoactive substance in marijuana. Marijuana usage is on the rise. It is becoming stronger and more dangerous because of the significantly greater amounts of THC and more accessible because of legalization and relaxed laws. This paper aims to examine the usage of cannabis in adolescents aged 12-17 and determine the multifaceted effects and dangers that come with the usage.

METHODS

This study used data from the National Survey on Drug Use and Health collected in 2022. The database was queried and tested until significant numbers were found. Age was added as a control variable to ensure the data was of just adolescents aged 12-17 and not a wide array of ages. We com-

pared adolescents who use marijuana to adolescents who did not use marijuana in four topics: gender, race, number of school days skipped, and grades.

RESULTS

The overall pooled prevalence of cannabis use in adolescents ages 12-17 is 11.4% (95% CI: 10.70%-12.20%), which can be argued to be significant. Cannabis use was slightly more prominent among females than males and in white adolescents, Hispanics, and blacks. The higher the marijuana use, the more likely adolescents are to skip class and the less likely they are to perform well grade-wise.

DISCUSSION

Approximately 1 in 10 individuals who try marijuana get addicted. When narrowing the pool down to just teenagers, that number increases to 1 in 6 adolescents who try marijuana being addicted. Therefore, there is a need to educate teenagers and their families about the effects and consequences of marijuana use. These consequences are greater and more severe than most think.

26. FACTORS AFFECTING ROSC IN CARDIAC ARREST CASES

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OBJECTIVE

To determine the most significant factors that affect ROSC in cardiac arrest patients.

INTRODUCTION

Cardiac arrest is one of the leading causes of death in the United States, with most cases resulting in death. However, cardiopulmonary resuscitation (CPR) is an effective way to treat an individual undergoing cardiac arrest. CPR has been demonstrated to increase the rate of spontaneous circulation (ROSC).

MATERIALS AND METHODOLOGIES

This retrospective observational study aims to analyze the factors affecting the resuscitation of spontaneous circulation (ROSC) in the Polk County Fire Rescue database. Polk County responds to more than 115,000 emergency calls annually and has created a database of cardiac arrest cases to be analyzed. The data analysis tool being used is JMP version 18.0.1 for Macbook. This study analyzes how the different variables of age, sex, drug administration, first monitored rhythm, resuscitation attempted, the arrest being witnessed, and defibrillation affects ROSC in the cardiac arrest cases that PCFR recorded.

RESULTS

The Polk County Fire Rescue (PCFR) database includes 1364 cardiac arrest cases to which PCFR responded to. Of the cohort, 832 (61.0%) were male and 532 (39.0) were female. The median age was 66, with an interquartile range of 53.25-77. The factors found to be statistically significant (p -value<0.05) were the administration of drugs, the first monitored rhythm, resuscitation attempted, the arrest being witnessed, and the defibrillation of the patient in the univariate test. However, the factors found to be significant in the multivariate test were drug administration, the arrest being witnessed, the first monitored rhythm, and the sex of the patient. The multivariate test also proved to be an acceptable model with an RSquare value of 0.180.

DISCUSSION & CONCLUSION

Although attempted resuscitation was insignificant in the multivariate test conducted, cardiopulmonary resuscitation (CPR) is still one of the most crucial steps in cardiac arrest cases. Additionally, drug administration was highly significant in both the univariate and multivariate tests, which signifies that emergency responders should increase their focus on rapidly administering drugs such as epinephrine to all of their cardiac arrest patients.

27. BIBLIOMETRIC ANALYSIS OF DEPRESSION IN POST-STROKE PATIENTS

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OBJECTIVE

This paper aims to analyze the global research landscape of post-stroke depression (PSD) between the years 1900 to 2024 using bibliometric analysis.

INTRODUCTION

Stroke is a life-threatening condition that increasingly damages cerebral tissue over time and can lead to serious post-effects, including depression, which can hinder a patient's recovery from stroke and reduce quality of life.

METHODS

The data used in this analysis was collected from the Web of Science Core Collection (WoSCC). An advanced search was performed using the keywords, "stroke" and "depression," on July 8th, 2024. From the Web of Science, bibliometric data was then extracted and analyzed in VOSviewer through four categories: countries, number of publications, keywords, and journals. Results

The bibliometric analysis resulted in 2,289 publications from the year 1900 to 2024. A gradual increase in the number of publications on post-stroke depression over the study period was observed. China was found to be the leading country for publications and funding on PSD, with the

United States following in second. The top keywords included: "stroke," "depression," and "poststroke depression." The Journal of Stroke had the highest number of publications on depression in post-stroke patients.

CONCLUSION

This study provides an overview of the current trends in articles published on PSD. Depression is an important topic to be considered in post-stroke patients due to its negative effects on post-stroke recovery and reduced quality of life, necessitating a call to attention and support for future research in this field. With continued research efforts led by the United States and China, improved treatments for patients with post-stroke depression can be implemented.

28. BIBLIOMETRIC ANALYSIS ON TENECTEPLASE FOR STROKE

Garv Bhasin

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INTRODUCTION

In recent years, tenecteplase has been competing with its predecessor alteplase as a treatment for acute ischemic strokes given its relative cost efficiency, lower dosage, and ease of administration. This paper seeks to analyze academic literature regarding the burgeoning usage of tenecteplase for stroke treatment across the world.

METHODS

The Web of Science database was used to collect the data from articles containing the keywords "Tenecteplase" and "Stroke" published from 1999 to 2023. The search resulted in 576 journal articles. This study analyzed metadata related to the country, institution, keywords, and date published for each article in the database pertaining to tenecteplase use for stroke.

RESULTS

The United States led in publications (260, 39.93%), followed by Australia (101, 15.51%), and a tie for third place between Canada and China (77, 11.83% each). The top three most prevalent keywords were tenecteplase (N=324), alteplase (N=284), and thrombolysis (N=244). The top institutions publishing on tenecteplase for stroke were the University of Melbourne followed by the University of Calgary. In 2023, the number of publications on tenecteplase for stroke was the greatest, making up 24.3% of all papers on the topic.

CONCLUSION

The surge in academic papers regarding tenecteplase in stroke in 2023 could be a good indicator of the drug's increasing prevalence as a treatment for stroke. Despite this finding, tenecteplase is currently not an FDA-approved therapy in the US as Genentech, the creator of the drug,

has yet to file for federal approval for acute ischemic stroke treatment.

29. ADOLESCENT OCD IN DEVELOPING NATIONS

Jacob Blaney

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This paper is a bibliometric analysis of research of adolescent obsessive-compulsive disorder (OCD) in developing nations. An analysis of 4,807 papers was conducted to show trends in these areas. The most significant research came from developed countries - with the United States and England having the most publications and the strongest citation strength. However, developing countries play an important role in the development of OCD research because of how they deliver different perspectives into the field given their more distant associations with developed nation's research. This study will use multiple indicators of bibliometrics, most notably bibliographic coupling and citation strength, to draw conclusions to show the various contributions of different nations to the field of adolescent OCD.

30. GLP-1 AGONISTS: A BIBLIOMETRIC ANALYSIS

Alia Hamed, Sofia Malik

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This paper conducts a bibliometric analysis on documents relating to GLP-1 Agonists from 1994-2024. Resources like the Web of Science Database and VosViewer were used to create intricate maps and images which could then be used to observe patterns within the documents generated from an expansive search in Web of Science. From this search, 9,006 documents were analyzed to detect trends in recent research and to see which organizations, authors, keywords, and countries have been the most prominent in these documents. Within the 9,006 results, it is evident that in the past five years, there has been an exponential increase of publications on topics concerning GLP-1 Agonists since 4,958 of them are from 2019 forward. It is necessary to closely examine the previous publications to see which key aspects are at the center of the most influential research in this field.

31. IMPACT OF OPIOID USE DURING PREGNANCY ON INFANT HEALTH OUTCOMES AND THE ROLE OF EMERGENCY DEPARTMENTS IN OPIOID ACCESSIBILITY

Sanjana Konda

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BACKGROUND

Opioid use during pregnancy in the United States has risen to a public health crisis level, with a 131% increase in opioid-related diagnoses at delivery between 2010 and 2017. Approximately 7% of women reported prescription opioid use during pregnancy in 2019, with 20% admitting to misuse. Opioid use during pregnancy has been associated with numerous obstetric complications, including placental in-

sufficiency, intraamniotic infection, fetal growth restriction, meconium passage, and neonatal abstinence syndrome (NAS).

OBJECTIVE

This study aimed to examine the effects of opioid use during pregnancy on infant health outcomes and to analyze the role of emergency departments in opioid accessibility during pregnancy.

METHODS

Data from the Pregnancy Risk Assessment Monitoring System (PRAMS) for 2019-2021 was analyzed using JMP 18. The dataset included responses from 41,166 individuals across 21 U.S. sites. Self-reported maternal behaviors and experiences before, during, and after pregnancy were evaluated, with a focus on opioid exposure and infant health outcomes.

RESULTS

Oxycodone (31.7%), hydrocodone (31.6%), codeine (24.4%), morphine (21.7%), and fentanyl (8.89%) were the most commonly reported opioids used during pregnancy. A significant correlation was found between codeine use and neonatal intensive care unit (NICU) admissions (77.27% associated admissions; $p = 0.0102$).

CONCLUSIONS

Pregnancy presents a crucial window for identifying and treating substance use disorders. Effective screening for opioid misuse and distinguishing between appropriate medical use and untreated substance use disorders can improve maternal and infant health outcomes. Prevention of pre-existing conditions necessitating opioid use during pregnancy remains a key public health strategy.

32. MAYER-ROKITANSKY-KUSTER-HAUSER SYNDROME: A BIBLIOMETRIC ANALYSIS

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BACKGROUND

Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is a rare congenital disorder affecting approximately 1 in 4,500 females, characterized by an underdeveloped uterus and a narrowed vaginal canal in individuals with a typical 46,XX karyotype. Although the exact etiology remains unknown, prior studies have explored genetic, embryological, and environmental factors, with ongoing research into potential candidate genes and complex genetic pathways.

OBJECTIVE

This study aimed to analyze research trends, identify publication patterns, assess citation networks, and highlight in-

ternational collaborations in MRKH research to better understand current knowledge and emerging topics.

METHODS

A bibliometric analysis was conducted using the Web of Science Core Collection database with the search term “MRKH,” retrieving 547 articles. Data on publication output, citation counts, and collaboration networks were extracted and analyzed.

RESULTS

The United States and China led in research productivity, with 83 and 73 documents published, respectively. Germany also showed significant contributions, particularly the University of Tübingen, which produced 22 documents. Aarhus University Hospital in Denmark demonstrated the highest total link strength (5392), reflecting strong collaborative ties. Dr. Katherine Rall, from the University of Tübingen, was identified as the most prolific author in the field.

CONCLUSIONS

Current MRKH research increasingly focuses on treatment approaches and therapeutic interventions. Further studies are needed to elucidate the genetic and environmental underpinnings of this complex condition.

33. BENEATH THE SURFACE: PAIN METRICS IN PATIENTS WITH SCOLIOSIS

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BACKGROUND

Scoliosis impacts around 7 million people in the United States. It can be of idiopathic, congenital, or neuromuscular origin. It is diagnosed in childhood or early teenage years. The disorder is classified by the abnormal curvature of the spine into various types - thoracic, lumbar, thoracolumbar, and combined. Symptoms of the condition include muscle atrophy, nerve compression, and pressure on the vertebrae. Common treatment modalities involve the use of braces, spinal fusion surgery, and physical therapy.

OBJECTIVE

The objective of this study is to analyse the correlation between the degree of curvature, type of scoliosis, and the varying pain levels of patients diagnosed with scoliosis.

METHODS

A Cross sectional survey was conducted through Alchemer, including a total of 55 participants, all of whom were diagnosed with scoliosis. The data was analysed through JMP.

RESULTS

Among 55 participants with scoliosis surveyed, a wide age range (16–77 years, median 36) and diverse racial backgrounds were represented. Statistical analysis revealed significant correlations between scoliosis curvature, scoliosis type, and reported pain levels, with Pearson correlation coefficients of 0.0412, 0.0184, and 0.0045, respectively. Many participants identified physical activity, prolonged standing, and stress as common pain triggers. Qualitative responses highlighted that despite scoliosis often being an “invisible” condition, it significantly impacts daily functioning, pain management, and participation in activities, underscoring the physical and emotional burden experienced by patients.

CONCLUSION

Although not all cases of scoliosis are instantly visible, many patients face struggles on a daily basis with what is occurring in their body beneath the surface. Scoliosis not only affects the structure of the body, but leads to varying degrees of pain based on type and extent of scoliosis. From pain management to participation in sports activities, to factors of daily living, scoliosis is a multifaceted disorder.

34. UPPER & LOWER EXTREMITY INJURIES IN TABLE TENNIS: AN ANALYSIS OF INCIDENCE, RISK FACTORS, AND PREVENTION STRATEGIES

Daniel Zhao

Brown University, Providence, Rhode Island

BACKGROUND

Table tennis is the fastest racket sport in the world, boasting ball speeds up to 100 km/h and global participation exceeding 850 million fans. Despite its physical and cognitive benefits, the sport carries significant injury risks, particularly to the upper and lower extremities. Common injuries include rotator cuff injuries, lateral epicondylitis, wrist and ankle strains, and lumbar strains, primarily due to the sport’s rapid, repetitive movements and lack of protective equipment.

OBJECTIVE

This study aimed to analyze the incidence and risk factors associated with upper and lower extremity injuries in table tennis, identify demographic trends, and propose preventive strategies to mitigate injury risk.

METHODS

Data from the National Electronic Injury Surveillance System (NEISS) from 2014 to 2023 was analyzed, focusing on emergency department visits related to table tennis injuries. Trends in injury types, demographic patterns, and hospitalization rates were assessed.

RESULTS

A total of 17,718 cases were reported, with a steady increase in injuries peaking in 2023 (2,262 cases). Males accounted for 65.7% of injuries, and the highest incidence was among individuals aged 15–19. The face (29.3%) and lower trunk (17.3%) were the most commonly affected areas. Most cases (94.7%) did not require hospitalization. Limitations included potential underreporting due to small sample sizes in some demographics.

CONCLUSIONS

The rising incidence of table tennis-related injuries, particularly among younger and male players, underscores the need for enhanced protective measures. Recommendations include the introduction of physical support equipment such as lumbar belts, mouthguards, and protective eyewear, along with promoting injury prevention awareness among players.

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